

Invitation

Dear Colleagues,

It is a great pleasure to invite you to the 4th International Conference on Complexity in Acute Illness in Cologne. The conference is held in the name of the Society for Complexity in Acute Illness (SCAI) whose major purpose is to promote the development, interpretation and dissemination of research concerning all aspects of complex modeling of acute illness and its consequences.

Complex systems approaches, involving *in silico* modeling, simulation of systems biology, chaos theory and artificial neural networks can augment the classical hypothesis driven approach that has largely failed to stem the tide of critical illness. The field of complex systems research is rapidly growing, gathering scientists from diverse disciplines (clinicians, basic and computer scientists, mathematicians etc.) across the world to engage scientific exchange focused on critical illness. The upcoming conference will present novel original research related to modeling inflammation, organ failure and outcome prediction as well as offering a platform for young researchers. We also look forward to continue the fruitful dialog between industry and academia in order to speed up the development of novel therapeutics and to improve clinical trial design. Investigators are asked to submit abstracts for posters and a young investigators award session.

Welcome in Cologne, a young city with a history of over 2000 years in the middle of Europe.

E. Neugebauer

Chairman of the Conference

This conference is gratefully sponsored by:

Deutsche
Forschungsgemeinschaft



DFG



Conference Information

Venue for the Conference:

Maternushaus
Kardinal-Frings-Str. 1-3 (near cathedral / main station)
50931 Cologne, Germany www.maternushaus.de
Phone: +49 221 1631-0

Registration: Via e-mail or fax. A Registration form is available at www.iccai.org

Registration Fees:

	until Aug 31	after Aug 31
Non-Trainees	100 €	150 €
Trainees	50 €	100 €

Registration fee includes course materials, refreshments and lunch.

Abstracts:

Abstract deadline is **AUGUST 12, 2005**

Please mail abstracts to:

sekretariat-neugebauer@uni-koeln.de

Accepted abstracts will be published in the Journal of Critical Care.

For further information please visit www.iccai.org

Organizing Society:

Society for Complexity in Acute Illness (SCAI)
www.scai-med.org

Scientific Committee:

G. An, G. Clermont, R. Lefering, E. Neugebauer,
R. Seydel, Y. Vodovotz, T. Witten

Conference Organisation:

G. Niklas, S. Schultz, G. Grass, M. Maegele
Biochemical and Experimental Division
Medical Faculty, University of Cologne
Ostmerheimer Str. 200, 51109 Cologne, Germany
Phone: +49 221 98957-0
Fax: +49 221 98957-30
E-mail: sekretariat-neugebauer@uni-koeln.de

Accommodation:

Please contact the Cologne Tourist Office
Unter Fettenhennen 19, 50667 Cologne
www.koelntourismus.de
Phone: +49 221 221 233-0

A limited number of rooms is available at the conference venue "Maternushaus"

SCAI

Society for Complexity in Acute Illness

Scientific Program and Call for Abstracts

4th INTERNATIONAL CONFERENCE ON

COMPLEXITY IN ACUTE ILLNESS

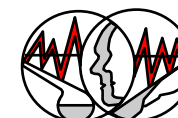
ICCAI 2005

September 29 – October 1, 2005

Cologne, Germany

Chairman:

Prof. Dr. E. A. M. Neugebauer
University of Cologne



Thursday, Sep 29, 2005

- 9:00 Welcome to Workshop Participants**
E. Neugebauer (D)
- 9:15 Tutorial on Dynamics**
R. Seydel (D)
- 10:30 Data and Format needed for Modeling - Expectations from Modelers to Bio Scientists**
G. An (US), J. Bartels (US), R. Brause (D),
G. B. Ermentrout (US), C. A. Hunt (US),
R. Lefering (D), R. Seydel (D)
- 13:30 Parallel WORKSHOP I:
Evidence Based Modeling: Data Quality**
Moderators: E. Neugebauer (D), G. Clermont (US)
Secretary: G. Grass (D)
- (a) Clinical Data:
Immunmonitoring A. Nierhaus (D)
Outcome J. Marshall (CND)
- (b) Experimental Data:
Cellular Models Y. Vodovotz, M. Yaffe (US)
Animal Models H. Redl (A)

It is the aim of the workshop to develop recommendations which data should be included/excluded in mathematical models.

- 13:30 Parallel WORKSHOP II:
Mathematical Modeling – Methods and Critical Appraisal**
Moderators: G.B. Ermentrout (US), R. Seydel (D)
Secretary: R. Lefering (D)
- (a) Differential Equations G.B. Ermentrout (US)
R. Seydel (D)
- (b) Agent Based Models G. An (US)
- (c) Probabilistic Models Ta'asan (US)
R. Lefering (D)
- (d) Neuronal Networks R. Brause (D)
- (e) Fitting Models to Data C. Constantine (US)
J. Bartels (US)
- (f) Synthetic, constructive, selectionist modeling methods relative to the traditional inductive mathematical approach C. A. Hunt (US)

It is the aim of this workshop to critically appraise the different approaches for their use in biological systems modeling (strength and weaknesses).

18:00 End of Parallel Workshops

The results of both workshops will be presented and discussed within the audience on Saturday morning.

Friday, Sep 30, 2005

- 9:00 Welcome and Introduction**
E. Neugebauer (President SCAI)
G. Clermont (Vice President SCAI)
U. Brückner (President ESS)
R. Hotchkiss (President Shock Society)
- 9:30 SESSION I:
World of Complexity – Successful Approaches**
Moderators: T. Buchman (US), B. Bouillon (D)
- Numerical weather forecasting U. Wesp (D)
Models in biology T. Buchman (US)
Systems biology of Insulin: Effects in sepsis M. B. Yaffe (US)
Questions that need to be answered J. Marshall (CND)
- 11:30 SESSION II:
Modeling Systems Biology and Variability**
Moderators: P. Cobb (US), R. Seydel (D)
- Systems biology approaches for sepsis and trauma P. Cobb (US)
Modeling physiologic variability M. Costa (US)
Synthetic, constructive, selectionist modeling methods A. Hunt (US)
Supercomputing acute illness – Modeling parasitic action T. Witten (US)
Uncertainty and variability: complexity at the bedside A. J. E. Seely (CND)
Computer simulations of drug effects in mental diseases and sleep disorders: from cellular to systemic functions A. Braun (D)
- 14:15 SESSION III:
Modeling Organ Function and Dysfunction**
Moderators: Y. Vodovotz (US), D. Schomburg (D)
- The evolution of complex systems analysis in traumatic brain injury B. Goldstein (US)
Development of a species-specific model of cerebral hemodynamics S. Daun, T. Tjardes (D)
Central role of danger signals in sepsis, trauma and hemorrhage: Insights from mathematical simulations Y. Vodovotz (US)
Gut-epithelial barrier function G. An (US)
Modeling of Interleukin 1-Signaling in pathways A. Hutzenthaler, T. Tjardes, J. Müller (D)
Heterogeneity of PMN's to a homogeneous traumatic impact C. Willy (D)

16:45 SESSION IV:

Academia, Industry and Complexity

Moderator: T. Petzinger (US), S. Chang (US)

Launchcyte: Modeling in business T. Petzinger (US)
Insilico T. Demeter (A)

Immunetrics: Industry trends for biomarkers and a platform for biomarker discovery S. Chang (US)

IBM: The Mating of Elephants – Or how the sexes in science can mate and produce idea offspring F. Busche (US)

Dinner

at the German Sports and Olympic Museum

Saturday, Oct 1, 2005

9:00 SESSION V: Workshop Reports

Moderator: G. An (US)

WS I: Evidence Based Modeling – Standards
E. Neugebauer (D), G. Clermont (US)

WS II: Mathematical Modeling – Methods and Critical Appraisal
G.B. Ermentrout (US), R. Seydel (D)

10:00 POSTER DISCUSSIONS

12:30 SESSION VI:

Modeling Molecular Systems and Pathways

Moderators: P. Cobb (US), H. Redl (A)

Approaches to genomic analysis W. Dörfler (D)
Methods for mining and modeling of proteomics data sets – Application to hemorrhagic shock B. Day (US)

Limitations of current approaches P. Cobb (US)
Titel to be announced D. Schomburg (D)

Selected Free Talk

13:45 SESSION VII:

Clinical Application of Models

Moderators: G. Clermont (US), J. Marshall (CND)

Epidemiology R. Hotchkiss (US)
Trauma trials M. Maegele, T. Tjardes, N. Yücel (D)

Sepsis trials G. Clermont (US)
Computer supported integration of brain chemistry and physiology as a basis for clinical interventions during neurointensive care U. Ungerstedt (S)

Selected Free Talk

15:00 Closing Remarks - Prizes