

JSMC/JCB

International Workshop

Systems Biology of Microbial Infection

22nd-23rd September 2011, Jena/Germany

Technologie- und Innovationspark TIP Jena, 3rd Floor,
Beutenberg Campus, Wildenbruchstr. 15, D-07745 Jena

Organized by the Leibniz Institute for Natural Product Research and Infection Biology - Hans Knöll Institute - and BioControl Jena GmbH
with Support from the Jena School for Microbial Communication (JSMC) and the Jena Centre for Bioinformatics (JCB)



Programme 22nd September 2011

- 12.30 - 13.00 *Registration*
- 13.00 - 13.30 **Systems Biology of Fungal Infection**
A. Brakhage (Hans Knöll Institute, Jena, Germany)
- 13.30 - 14.00 **Mathematical Modelling of Stress Responses in Commensal and Pathogenic Yeasts**
K. Tyc, E. Klipp (Humboldt University Berlin, Germany)
- 14.00 - 14.15 *Coffee Break*



Systems Biology of *Aspergillus fumigatus* Infection

- 14.15 - 14.45 **Iron Homeostasis and its Role in Virulence of *Aspergillus fumigatus***
M. Schrettl¹, C. Jöchl¹, T. Heinekamp², E. Werner², I. Jacobsen², A. Brakhage², H. Haas¹ (¹Innsbruck Medical University, Innsbruck, Austria; ²Hans Knöll Institute, Jena, Germany)
- 14.45 - 15.15 **Modelling of Regulatory Interactions for Iron Homeostasis in *Aspergillus fumigatus***
J. Linde^{1,2}, P. Hortschansky¹, A. Brakhage¹, R. Guthke¹, H. Haas³ (¹Hans Knöll Institute, Jena, Germany; ²Friedrich Schiller University, Jena, Germany; ³Innsbruck Medical University, Innsbruck, Austria)
- 15.15 - 15.45 **RNAseq Analysis of *Aspergillus fumigatus* Mutants**
S. Müller¹, V. Valiante¹, M. Groth², A. Brakhage¹, R. Guthke¹ (¹Hans Knöll Institute, Jena, Germany; ²Fritz Lipmann Institute, Jena, Germany)
- 15.45 - 16.15 *Coffee Break*



Spatio-Temporal Approaches in Systems Biology of Infection

- 16.15 - 16.45 **Multi-Photon Imaging Reveals Mechanisms of B Cell Migration and Selection in Germinal Centres**
M. Meyer-Hermann (Helmholtz Centre for Infection Research, Braunschweig, Germany)
- 16.45 - 17.15 **Automated Image Analysis of the Interaction between Phagocytes and *Aspergillus fumigatus* during Infection**
F. Mech, A. Thywißen, R. Guthke, A. Brakhage, M. Figge (Hans Knöll Institute, Jena, Germany)
- 17.15 - 17.45 **Immuno-Pacman: Human Phagocytes vs Opportunistic Pathogenic Fungi - A Multi-Agent-Based Modelling Approach**
C. Tokarski¹, S. Hummert^{1,2}, F. Mech², M. Figge², S. Germerodt¹, A. Schroeter¹, S. Schuster¹ (¹Friedrich Schiller University, Jena, Germany; ²Hans Knöll Institute, Jena, Germany)
- 19.30 *Get-Together*



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Clinical Perspectives

- 09.00 - 09.30 **The Lung as Source and Target in Sepsis**
M. Bauer (University Hospital Jena, Germany)
- 09.30 - 10.00 **Identification of Sepsis Pathogens with Micro-Raman Spectroscopy**
U. Münchberg¹, B. Kampe¹, P. Rösch¹, M. Bauer², J. Popp^{1,3}
(¹Friedrich Schiller University, Jena, Germany; ²University Hospital Jena, Germany; ³Institute of Photonic Technology, Jena, Germany)
- 10.00 - 10.30 **Integrative Network Analysis of Gene Function and Drug Mode of Action in Methicillin-Resistant *Staphylococcus aureus***
I. Overton (Western General Hospital, Edinburgh, UK)
- 10.30 - 11.00 **Systems Biology Approaches to Study Host-Pathogen Relations: Nasopharyngeal Microbiota in Children**
E. van Someren, D. Bogaert, S. Huse, J. Rossen, R. Veenhoven, E. van Gils, J. Bruin, R. Montijn, M. Bonten, E. Sanders, M. van Erk, B. Keijser (TNO - Netherlands Organisation for Applied Scientific Research, The Netherlands)
- 11.00 - 11.30 *Coffee Break*

Systems Biology of *Candida* Infection

- 11.30 - 12.00 **A Dual-Systems Approach to Decipher Fungal-Host Invasion Mechanisms**
L. Tierney¹, D. Hnisz¹, J. Linde², S. Müller², R. Guthke², K. Kuchler¹
(¹Medical University of Vienna, Austria; ²Hans Knöll Institute, Jena, Germany)
- 12.00 - 12.30 **Transcription Landscapes in *Candida albicans* and *Candida dubliniensis* - A Cross-Species Analysis**
C. Grumaz, S. Lorenz, P. Stevens, E. Lindemann, J. Retej, U. Schöck, S. Rupp, K. Sohn (Fraunhofer Institute for Interfacial Engineering and Biotechnology, Stuttgart, Germany)
- 12.30 - 13.00 **The Core Filamentation Response of the Human Pathogenic Fungus *Candida albicans***
R. Martin¹, K. Hünninger¹, D. Albrecht², O. Kurzai¹ (Friedrich Schiller University, Jena, Germany; ²BioControl Jena GmbH; Germany)

13.00 - 14.00 *Lunch Break*

Intracellular Perspectives

- 14.00 - 14.30 **Systems Biology of Infection: Complex Entanglement of Host, Pathogen and Environment**
T. Dandekar (University of Würzburg, Germany)
- 14.30 - 15.00 **Database for Fungal Transcription Factors**
E. Shelest, E. Fazius (Hans Knöll Institute, Jena, Germany)
- 15.00 - 15.30 **Metabolism of Intracellularly Replicating *Listeria*: Isotopologue-Based Flux Analysis and Modelling**
T. Fuchs (Technical University of Munich, Germany)
- 15.30 - 16.00 **Modelling the Intracellular Replication of Hepatitis C Virus**
N. Sulaimanov, M. Binder, V. Lohmann, R. Bartenschlager, L. Kaderali (University of Heidelberg, Germany)
- 16.00 - 16.15 **Concluding Remarks**
R. Guthke (Hans Knöll Institute, Jena, Germany)
- 16.15 *End of Workshop*

