Program
Abstracts

Enzymes and Signals
A Research Summit
of the
DK Molecular Enzymology (Graz)
and the
DK Molecular Mechanisms of Cell Signaling (Vienna)

Enzymes and Signals
Aula
University of Graz
December 9 – 11, 2012
To survive, cells and ultimately multicellular organisms need to interpret the signals received from their environment and translate them into a fitting output – that is the expression of genes which will change the behavior of the organism – allowing them to thrive in a changed environment. Central for the operation of these processes is the maintenance of the correct architecture of cells and tissues, which is guaranteed by the structural proteins forming the cytoskeleton and its nuclear counterpart, and by the linker proteins connecting these structures to cellular organelles and signal transduction complexes. If these systems go awry, the whole organism is at risk.

The Max F. Perutz Laboratories are home to a strong group of scientists whose common long-term research goal is to investigate and understand signal transduction mechanisms in a variety of cell-based and organismal systems.

Our mission is to educate excellent PhD students to become independent researchers with a competitive professional profile, by fostering independence, inquisitive thinking, and scientific rigor.

The organization of joint PhD retreats with other PhD programs in Austria has high value in terms of scientific exchange and networking opportunities for PhD students and group leaders. We are delighted to participate in the joint retreat ‘Enzymes and Signals’ organized by the International PhD Program “Molecular Enzymology” in Graz in December 2012 and look forward to exciting talks and lively discussions.

M. B.

FACTS
DK Molecular Mechanisms in Cell Signaling
Start: 2008
Alumni: 1
Current PhD Students: 35
Research groups: 10
Associated groups: 5
Nations: 13

www.phd-cellular-signaling.at
The DK Molecular Enzymology is a doctoral studies program offered jointly by the University of Graz and the Graz University of Technology. Our research program aims to understand the molecular structures, mechanisms and the cellular functions of enzymes important to very broad aspects of biology. Moreover research objectives include the discovery of novel enzymes and the exploitation of these and known enzymes for biotechnological applications. Student projects are typically interdisciplinary and involve multiple DK laboratories and research stays in universities abroad.

The DK research summit “Enzymes and Signals” gives students and faculty from Vienna and Graz a unique opportunity for crosstalk. The exciting science presented here will deepen our knowledge in complementary areas while strengthening the national network of molecular bioscience researchers.

E.L. Z.

FACTS
DK Molecular Enzymology
Start: 2005
Alumni: 49
Current PhD Students: 55
Research groups: 17
Associated groups: 4
Nations: 12

www.dk.uni-graz.at
MONDAY DECEMBER 10th

09:30 – 9:50  Opening remarks  Vice Rector Peter SCHERRER, Ellen L. ZECHNER

SESSION 1:  CHAIR: Pavel KOVARIK

09:50 – 10:10  SCHNEDITZ, Georg
   It takes two to tango: Klebsiella oxytoca overgrowth and tilivallinae production induce antibiotic-associated hemorrhagic colitis

10:10 – 10:30  EBNER, Florian
   Modulating the immune response via TTP: Is a good offense the best defense?

10:30 – 10:50  RAGUZ, Josipa
   Raf kinase in epidermal inflammation

10:50 – 11:10  SEPER, Andrea
   Vibrio cholerae meets neutrophils

11:10 – 12:10  Coffee break and  Poster session (even numbers)

SESSION 2:  CHAIR: Sepp D. KOHLWEIN

12:10 – 12:30  WAGNER, Gabriel
   NMR Studies on the Vibrio cholerae regulatory system ToxRS

12:30 – 12:50  BONIECKA, Justyna
   MAPK-phosphatases control plant innate immunity

12:50 – 13:10  DANIEL, Bastian
   Expression and characterization of bicovalent flavoenzymes from Arabidopsis thaliana

13:10 – 13:30  EBNER, Michael
   Taming a Don Juan – The role of localization in activation and substrate specificity of notoriously promiscuous Akt/PKB

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PM

13:30 – 14:15 Lunch break

SESSION 3: CHAIR: Rolf BREINBAUER

14:15 – 14:35 EIKELSBERGER, Thomas
Characterization and biosynthetic application of human UDP-xylose synthase

14:35 – 14:55 PRATTER, Sarah
What α-KG dependent non-HEME Fe(II) oxygenases can do: Insights into the molecular mechanism of enzymatic alkyl-halogenation

14:55 – 15:15 SCHOBER, Markus
Stereocomplementary sec-Alkylsulfatases for the Deracemization of sec-Alcohols

15:15 – 15:35 LECHNER, Horst
Norcoclaurine synthase - a "Pictet-Spenglerase"

15:35 – 16:35 Coffee break and Poster session (uneven numbers)

SESSION 4: CHAIR: Ivan YUDUSHKIN

16:35 – 16:55 IVASHOV, Vasy
Characterization of Pichia pastoris strains deficient in neutral lipid synthesis

16:55 – 17:15 POLO, Alessandra
Characterising neuropeptides involved in maturation and reproductive timing of Platynereis dumerilii

17:15 – 17:35 KUPKA, Thomas
M-Track: Detecting short-lived protein-protein interactions in vivo

19:30 Dinner at the Schlossberg-Restaurant
PROGRAM

TUESDAY DECEMBER 11th

AM
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SESSION 5: CHAIR: Peter Macheroux

09:00 – 09:20 SAWICKA, Ania
Genome-wide analysis of stress-induced histone H3 phosphorylation

09:20 – 09:40 WIENERROITHER, Sebastian
Brd4 regulates multiple steps of transcriptional activation at the inducible NO synthase (Nos2) gene

09:40 – 10:00 KNITTELFELDER, Oskar
Impact of fatty acid metabolism on global transcriptional control

10:00 – 10:20 MAJOROS, Andrea
Preliminary evidence for phospho-tyrosine independent signaling activity of Stat1

10:20 – 11:20 Coffee break and Poster session (even numbers)

SESSION 6: CHAIR: Roland Foisner

11:20 – 11:40 VOGL, Thomas
Synthetic promoters in the methylotrophic yeast Pichia pastoris

11:40 – 12:00 PAPINSKI, Daniel
Targets of Atg1 kinase in autophagy

12:00 – 12:20 ZAFFAGNINI, Gabriele
Molecular Mechanisms of Cargo-Selective Autophagy from yeast to humans

12:20 – 12:40 GRABNER, Gernot
Characterization of mice with neuron-specific deletion of monoglyceride lipase
TUESDAY DECEMBER 11th

PM

12:40 – 14:10 Lunch break

SESSION 7: CHAIR: Rudolf ZECHNER

14:10 – 14:30 MUSSBACHER, Marion
Nitric oxide signaling in adipose triglyceride lipase-deficient endothelial cells

14:30 – 14:50 IVKOVIC, Jakov
Design and Synthesis of Inhibitors of Dipeptidyl Peptidase-III

14:50 – 15:10 RENGACHARI, Srinivasan
Monoglyceride Lipases: Structure, Function and Evolution

15:10 – 15:30 HOFER, Peter
Adipocyte-type fatty acid-binding protein is involved in lipolysis by interacting with CGI-58

15:30 – 16:30 Coffee break and Poster session (uneven numbers)

SESSION 8: CHAIR: Sascha MARTENS

16:30 – 16:50 IKEDA, Kyojiro
Solving the problem of duplicating a set of organelles in eukaryotic cells

16:50 – 17:10 STASZEWSKA, Ilona
Molecular mechanism of plectin-mediated desmin network anchoring

17:10 – 17:30 VIDAK, Sandra
Nucleoplasmic Lamin A/C and LAP2α are reorganized in Hutchinson–Gilford Progeria Syndrome

17:30 Final remarks Manuela BACCARINI and buffet
1 Identification of transient PP2A<sup>RTS1</sup>-substrate interactions by a method called M-Track  
Bhumika BHATT, Thomas KUPKA, Ingrid MUDRAK, Stefan SCHUECHNER, Sonja KUDERER, Ingrid FROHNER, Wolfgang REITER, Gustav AMMERER and Egon OGRIS

2 Type I interferons in neutrophil-mediated immune responses to streptococcus pyogenes  
Virginia CASTIGLIA, Nina GRATZ, Florian EBNER and Pavel KOVARIK

3 Structural characterization of G0/G1 switch gene 2  
Ines ČERK, Lina RIEGLER-BERKET, Andreas BÖSZÖRMENYI, Barbara SALZBURGER, Irina CORNACIU, Christoph PILLIP, Sukrit SRIVASTAVA, Achim LASS and Monika OBERER

4 Characterization of a protostome melatonin biosynthesis pathway and its role in circalunar reproduction  
Mingli DU, Juliane ZANTKE, Agne VALINCIUTE, Kristin TESSMAR and Florian RAIBLE

5 Functional mapping of CGI-58 / ABHD5  
Matthias SCHITTMAYER, Catharina EBNER, Andras BÖSZÖRMENYI, Monika OBERER and Ruth BIRNER-GRIEKENBERGER

6 Recruitment of ZAP-70 to subcellular compartments activates distinct TcR-specific signaling pathways  
Michael EBNER, Ivan A. YUDUSHKIN and Ronald VALE

7 The role of LAP2α in chromatin regulation  
Kevin GESSON, Thomas DECHAT, Nikola WOISETSCHLAGER and Roland FOISNER

8 PNPLA1 mutations cause autosomal recessive congenital ichthyosis in golden retriever dogs and humans: Functional studies on wild-type and mutant PNPLA1 proteins  
Susanne GROND, Franz P.W. RADNER, Robert ZIMMERMANN, Catherine ANDRÉ, Judith FISCHER and Rudolf ZECHNER

9 Yeast quinone reductase Lot6p and its interactions with 20S proteasome and Yap4p  
Venugopal GUDIYATI, Wolf-Dieter LIENHART, Karin KOCH and Peter MACHEROUX

10 Diverse roles of HDAC1 and HDAC2 in brain development  
Astrid HAGELKRUYYS, Sabine LAGGER, Julia KRAHMER, Alexandra BEDEIR, Matthias ARTAKER, Christina MURKO, Simon WEISSMANN, Lukas KENNER, Christian SCHÖFER, Yunli XIE, Jürgen ZEZULA, Patrick MATTHIAS and Christian SEISER

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POSTER ABSTRACTS

11 Characterisation of bacterial hydroxynitrile lyases with a cupin fold
   Ivan HAJNAL, Andrzej LYSKOWSKI, Karl GRUBER, Ulf HANEFELD,
   Helmut SCHWAB and Kerstin STEINER

12 Function of Raf in liver cancer development
   Ines JERIC, Anna L. CAVALLO, Gabriele MAURER, Bartosz TARKOWSKI
   and Manuela BACCARINI

13 New horseradish peroxidase isoenzymes
   and their production in Pichia pastoris
   Florian W. KRAINER, Laura NÄTSAARI, Gerhard G. THALLINGER,
   Christoph HERWIG, Oliver SPADIUT and Anton GLIEDER

14 Unravelling the molecular structure and function
   of a bacterial type IV translocation signal
   Adam REDZEJ, Silvia LANG, Vinod KUMAR H.R., Christian J. GRUBER,
   Thomas RATTEI, Klaus ZANGGER, Gabriel WAKSMAN and Ellen L. ZECHNER

15 Characterization of the major protective outer membrane vesicle
   vaccine antigen of Vibrio cholerae by lipopolysaccharide-modifications
   Deborah R. LEITNER, Sandra FEICHTER, Kristina SCHILD-PRÜFERT,
   Gerald RECHBERGER, Joachim REIDL and Stefan SCHILD

16 In vivo horizontal gene transfer in Haemophilus influenzae
   Sabine LICHTENEGGER and Joachim REIDL

17 Polo-like kinase is necessary for flagellar attachment zone elongation
   and basal body rotation in Trypanosoma brucei
   Ana LOZANO, Graham WARREN and Christopher L. de GRAFFENRIED

18 Homologous and heterologous expression of dehydrogenases
   and oxidoreductases ofRalstonia eutropha H16
   Zalina MAGOMEDOVA, Christina ZACH, Petra KÖFINGER and Helmut SCHWAB

19 Mechanism of draxin signaling in axonal guidance
   Rajeshwari MELI and Friedrich PROPST

20 Congenital myasthenic syndrome due to plectin deficiency:
   Deciphering plectin’s role as an intermediate filament anchor
   at the neuromuscular junction
   Eva MIHALOVSKA, Rocio G. VALENCIA, Ruth HERBST and Gerhard WICHE

21 HDAC1 is a negative regulator of proliferation
   and tumorigenesis in the epidermis
   Mirjam MOSER, Mircea WINTER, Dominique MEUNIER, Carina FISCHER,
   Katharina MATTES, Beate LICHTENBERGER, Simon WEISSMANN,
   Patrick MATTHIAS, Maria SIBILIA and Christian SEISER

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22 The serine hydrolase ABHD6 degrades the lysosomal lipid bis(monoacylglycerol) phosphate (bmp)
Inna MRAK, Ulrike TASCHELER, Christoph HEIER and Robert ZIMMERMANN

23 Long-chain Acyl-CoAs Inhibit ATGL Activity
Harald M. NAGY, Magret PAAR, Christoph HEIER, Ines CERK, Catharina EBNER, Monika OBERER and Robert ZIMMERMANN

24 Cdc48 regulates apoptosis by NFκB1 homolog-dependent expression of mitochondrial Sod
Christine NETZBERGER, Ralf BRAUN, Silke WISSING, Tobias EISENBERG, Christoph RUCKENSTUHL, Barbara MOITZI, Julia RING, Maria Chiara MAURI, Mirela NISO-SANTANO, Guido KROEMER, Frank MADEO and Kai-Uwe FRÖHLICH

25 Nonheme-Iron Dioxygenases: From structure-function relationships via re-design towards whole-cell-factories
Johannes NIEDERHAUSER, Sarah PRATTER and Grit STRAGANZ

26 Architecture of the phagosome assembly site in autophagy
Thaddeaus PFAFFENWIMMER, Andrea BREZOVICE, Larissa WILHELM and Claudine KRAFT

27 Identification of novel hydrolytic enzymes possibly involved in non-polar lipid metabolism of the yeast Saccharomyces cerevisiae
Birgit PLOYER, Melanie CONNERTH, Albin HERMETTER and Günther DAUM

28 Determining the orientation of ligands bound to proteins by transferred paramagnetic relaxation enhancement NMR spectroscopy
Sergio PULIDO, Simone KOSOL, Christoph GÖBL, Walter HOHLWEG, Mario FABER and Klaus ZANGGER

29 Novel approaches to lipid droplet biology in the yeast Saccharomyces cerevisiae
Maja RADULOVIC, Heimo WOLINSKI and Sepp D. KOHLWEIN

30 Structural characterization of Monoacylglycerol Lipases of yeast and Bacillus sp. H257
Lina RIEGLER-BERKET, Srinivasan RENGACHARI, Philipp ASCHAUER, Andreas BOESZOERMENYI, Matthias SCHITTMAYER, Sepp D. KOHLWEIN, Robert ZIMMERMANN, Rolf BREINBAUER, Ruth BIRNER-GRÜNBERGER and Monika OBERER
31 An outer membrane vesicle vaccine against nontypeable \textit{Haemophilus influenzae} infections  
Sandro ROIER, Deborah R. LEITNER, Jeremy IWASHKIV,  
Kristina SCHILD-PRÜFERT, Mario F. FELDMAN, Georg KROHNE,  
Joachim REIDL and Stefan SCHILD

32 MAPK phosphatases control plant immune responses  
Volodymyr SHUBCHYNSKYY, Zahra AHATOLLAHI, Alois SCHWEIGHOFER  
and Irute MESKIENE

33 Discovery of \textit{Campylobacter fetus} subspecies-specific virulence factors explains host adaption  
Hanna SPRENGER, Sabine KIENESBERGER, Gerhard G. THALLINGER,  
Gregor GORKIEWICZ and Ellen L. ZECHNER

34 Mechanistic understanding of the bacterial bioluminescence  
Chaitanya R. TABIB, Thomas BERGNER, Silvia LANG, Karl GRUBER,  
Ellen L. ZECHNER and Peter MACHEROUX

35 Alkylsulfatases for the deracemization of sec-Alcohols:  
\textit{Benzylic Sulfate Esters}  
Michael TÖSCH, Markus SCHOBER, Tanja KNAUS, Rolf BREINBAUER  
and Kurt FABER

36 MEK1 negatively regulates the PI3K/AKT pathway via PTEN –  
a novel essential function of MEK1  
Katarina ZMAÍKOVICOVA, Veronika JESENBERGER,  
Federica CATALANOTTI, Christian BAUMGARTNER,  
Gloria X. REYES and Manuela BACCHARINI
**GROUP LEADERS**

<table>
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