Retreat at Semmering 2016

DK Biomolecular Technology of Proteins, Vienna
DK Molecular Enzymology, Graz
Grand Hotel Panhans, Semmering
September 29–30, 2016
The DK Biomolecular Technology of Proteins (BioToP) provides an interdisciplinary research-based doctoral education at the interface of basic and applied science in the field of protein biotechnology. It is a joint PhD program of the Departments of Applied Genetics and Cell Biology, Biotechnology, Chemistry, Food Sciences and Technology, Material Sciences and Process Engineering and Nanobiotechnology, which together constitute the VIBT (Vienna Institute of Biotechnology) of the University of Natural Resources and Life Sciences, Vienna (BOKU).

Within BioToP four main research and education areas are defined:
- analysis, design and engineering of proteins
- biosynthesis, posttranslational modifications and trafficking of (recombinant) proteins
- expression systems and cell factories
- bioinformatics and molecular modelling.

This first joint meeting with the DK Molecular Enzymology provides an excellent opportunity for lively scientific discussions and networking of both faculty members and PhD students and aims in strengthening the interactions between the two doctoral programs.

C.O.

FACTS
DK Biomolecular Technology of Proteins (BioToP)
Start: 2010
Alumni: 31
Current PhD Students: 58
Research groups: 14
Associated groups: 14
Nations: 18

http://biotop.boku.ac.at
The DK Molecular Enzymology is a doctoral studies program offered jointly by the University of Graz and the Graz University of Technology since 2005. 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.

This joint DK research retreat in Semmering gives students and faculty from Vienna and Graz a great opportunity for interaction. The exciting science presented here will deepen our knowledge in complementary areas of protein expression, design, and engineering, enzyme mechanisms and macromolecular structures and modeling. Exchange between our DKs enriches student experiences while strengthening the national network of molecular bioscience researchers.

E.L.Z.

FACTS (2016)
DK Molecular Enzymology

Start: 2005
Alumni: 96
Current PhD Students: 43
Research groups: 15
Associated groups: 6
Nations: 22

www.dk.uni-graz.at
09:40 – 10:10  Arrival / Coffee Break

10:10 – 10:20  Opening Christian OBINGER

Session 1 Chair: Christian OBINGER

10:20 – 10:40  PREIMS, Marita
Electron chains fuel lytic polysaccharide monooxygenase

10:40 – 11:00  BHATIPROLOU, Krishna Chaitanya
Structural and functional characterization of intrinsically disordered regions of bacterial conjugation proteins: TraD and TraI

11:00 – 11:20  TOMEK, Markus
Pseudaminic and legionaminic acid transferases from the oral pathogen Tannerella forsythia

11:20 – 11:40  DORNISCH, Elisabeth
Gene-trap mutagenesis screen of haploid Hap1 cells with the bacterial toxin tilivalline reveals its interaction with protein phosphatase 2A activator PPP2R4

11:40 – 13:00  Lunch
THURSDAY SEPTEMBER 29th

PM

Session 2 Chair: Stefan SCHILD

13:00 – 13:10  LAURENT, Christophe
Computational based investigation of extracellular cellulolytic PPI

13:10 – 13:20  PUCHOL TARAZONA, Alejandro
Extracellular serine proteases degrade recombinant proteins produced
in Nicotiana benthamiana

13:20 – 13:40  VIERTLMAYR, Roland
Cloning, expression and purification of binary protein complexes involved
in lipolysis

13:40 – 14:40  Poster Session DK ME, Graz

14:40 – 15:00  Coffee Break

Session 3 Chair: Johannes GRILLARI

15:00 – 15:20  LOBNER, Elisabeth
Structural characterization of HER2–binding antibody fragments

15:20 – 15:40  PRESSLER, Katharina
Structural and physiological characterization of the secreted exonuclease Xds
of V. cholerae

15:40 – 16:00  ECKMAIR, Barbara
Analysis of anionic N-linked glycans by MALDI-TOF mass spectrometry

16:00 – 16:20  SARKLETI, Florian
Taking lipid droplets by STORM

16:40 – 18:40  Almolympiade

19:15  Dinner Hotel Panhans

Get together, Panhans lounge/bar
Session 4 Chair: Wolfgang KROUTIL

09:00 – 09:20
SCHAFFNER, Irene
Chlorite dismutase: Combining X-ray/neutron crystallography

09:20 – 09:40
NIEDERHAUSER, Johannes
Towards the rational redesign of nonheme Fe(II) oxygenases

09:40 – 10:00
ALBRECHT, Bernd
Scaffolding for metabolic engineering endeavors

10:00 – 10:20
GOURINCHAS, Geoffrey
Characterization of long-range signal transduction in red-light modulated diguanylyl cyclases

10:20 – 10:30
Group Photo

10:30 – 11:00
Coffee Break

Session 5 Chair: Rupert TSCHELIESSNIG

11:00 – 11:20
MAURER, Manuela
Calculation of relative binding free energy in the water-filled active site of oligopeptide-binding protein A

11:20 – 11:40
STRANDBACK, Emilia
On the way to rescue the stability and activity of a cancer associated variant of human NQO1

11:40 – 12:40
Poster Session DK BioToP, Vienna
PROGRAM

FRIDAY SEPTEMBER 30th

PM

12:40 – 14:00 Lunch

Session 6 Chair: Andreas WINKLER

14:00 – 14:20 KALLOLIMATH, Somanath
In planta synthesis of polysialylated N-glycans and its biological activity

14:20 – 14:40 EGER, Elisabeth
Employing strictosidine synthases in the synthesis of tetrahydro-β-carbolines

14:40 – 15:00 NGUYEN, Minh
Constitutive expression and display of a bacterial β-mannanase
on the cell surface of Lactobacillus plantarum

15:00 – 15:20 LUKESCH, Michael
Tuning enzyme properties by residue-specific incorporation of non-canonical
amino acids

15:20 – 15:30 Closing Ellen L. ZECHNER

15:45 Departure
12 Chlorite dismutase: Combining X-ray/neutron crystallography to investigate structure-function relationships
Irene SCHAFFNER, Georg MLYNEK, Dominic PÜHRINGER, Stefan HOFBAUER, Leighton COATES and Christian OBINGER

13 Towards the rational redesign of nonheme Fe(II) oxygenases.
Johannes NIEDERHAUSER, Sarah PRATTER and Grit STRAGANZ

14 Scaffolding for metabolic engineering endeavors
Bernd ALBRECHT, Matthias STEIGER, Diethard MATTANOVICH and Michael SAUER

15 Characterization of long-range signal transduction in red-light modulated diguanylyl cyclases
Geoffrey GOURINCHAS, Stefan ETZL and Andreas WINKLER

16 Calculation of relative binding free energy in the water-filled active site of oligopeptide-binding protein A
Manuela MAURER, Stephanie B. A. DE BEER and Chris OOSTENBRINK

17 On the way to rescue the stability and activity of a cancer associated variant of human NQO1
Emilia STRANDBACK, Wolf-Dieter LIENHART, Christoph KÖBERL, Alti-Jana HROMIC, Jakob PLETZ, Venugopal GUDIPATI, Karl GRUBER, Rolf BREINBAUER and Peter MACHEROUX

18 In planta synthesis of polysialylated N-glycans and its biological activity
Somanath KALLOLIMATH, Alexandra CASTILHO, Clemens GRUBER, Daniel MARESCH, Friedrich ALTMANN, Sebastian GALUSKA, Herbert HILDEBRANDT, Rita GERARDY-SCHAHN and Herta STEINKELLNER

19 Employing strictosidine synthases in the synthesis of tetrahydro-β-carbolines
Elisabeth EGER, Desiree PRESSNITZ, Eva FISCHEREDER, Horst LECHNER and Wolfgang KROUTIL

20 Constitutive expression and display of a bacterial β-mannanase on the cell surface of Lactobacillus plantarum
Hoang-Minh NGUYEN, Elena Maria STELZER, Esther PLATTNER, Mai-Lan PHAM, Geir MATHIESEN, Dietmar HALTRICH and Thu-Ha NGUYEN

21 Tuning enzyme properties by residue-specific incorporation of non-canonical amino acids
Michael S. LUKEŞCH and Birgit WILTSCHI
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<td>Philipp ASCHAUER, Jörg LICHTENEGGER, Srinivasan RENGACHARI and Monika OBERER</td>
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<td>Enveloped virus-like particles: adsorption and elution in anion exchange chromatography media</td>
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<td>Kathrin GÖRITZER, Daniel MARESCH, Christian OBINGER and Richard STRASSER</td>
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Development of an ultra-high-throughput screening for H$_2$O$_2$ producing oxidoreductases using GFP-based sensors
Peter HERZOG, Dagmar BRUGGER, Leander SÜTZL, Christian OBINGER, Dietmar HALTRICH and Clemens PETERBAUER

$^{13}$C labeling of lipids- tracing the flux of fatty acids in the yeast S. cerevisiae
Daniela LIEBELT, Gerald N. RECHBERGER and Sepp-Dieter KOHLWEIN

Free energy calculation on stability of the 14-3-3 protein
Zuzana JANDOVA and Chris OOSTENBRINK

The cap makes the difference: investigation of cap architectures in monoacylglycerol lipases
Lina RIEGLER-BERKET, Philipp ASCHAUER, Srinivasan RENGACHARI, Jörg LICHTENEGGER, Andrea LEITMEIER, Christian GRUBER, Matthias SCHITTMAYER-SCHANTL, Nicole MAYER, Karl GRUBER, Rolf BREINBAUER, Ruth BIRNER-GRÜNBERGER and Monika OBERER

Plant-based glycan engineering of immunoglobulin E
Laura MONTERO MORALES, Alexandra CASTILHO, Daniel MAESCH, Friedrich ALTMANN, Kristina ILIEVA, Sophia KARAGIANNIS and Herta STEINKELLNER

Berberine bridge enzyme-like proteins in Arabidopsis thaliana participate in monolignol metabolism and stress response
Barbara STEINER, Bastian DANIEL, Alexandra JAMMER, Silvia WALLNER, Karl GRUBER, Tea PAVKOV-KELLER, Eric VAN DER GRAAFF, Maria MÜLLER, Thomas ROITSCH and Peter MACHEROUX

Pathway thermodynamics: metabolomics integrated pathway analysis
David Alejandro PEÑA NAVARRO, Matthias GERSTL, Christian JUNGREUTHMAYER and Jürgen ZANGHELLINI

Tuning receptor-ligand interactions via the incorporation of fluorinated tryptophan analogs
Felix TOBOLA, Emilie GILLON, Birgit WILTSCHI and Anne IMBERTY

Dye-decolorizing peroxidases – on the trail of a new peroxidase family
Vera PFANZAGL, Dominic PÜHRINGER, Andrea NICOLUSSI, Georg MLYNIEK, Gianantonio BATTISTUZZI, Kristina DJINOVIĆ-CARUGO, Paul G. FURTMÜLLER and Christian OBINGER

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LEADERS

DK Biomolecular Technology of Proteins

GROUP LEADERS

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<thead>
<tr>
<th>Name</th>
<th>Field</th>
<th>University</th>
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<tbody>
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<td>Friedrich ALTMANN</td>
<td>Chemistry</td>
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<td>Johannes GRILLARI</td>
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<td>Dietmar HALTRICH</td>
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<td>Alois JUNGBAUER</td>
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<tr>
<td>Lukas MACH</td>
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<td>Diethard MATTANOVICH</td>
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<td>Christian OBINGER</td>
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<tr>
<td>Chris OOSTENBRINK</td>
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<tr>
<td>Iain WILSON</td>
<td>Chemistry</td>
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ASSOCIATED GROUP LEADERS

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<thead>
<tr>
<th>Name</th>
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<tbody>
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<td>Brigitte GASSER</td>
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<td>Gunda KÖLLENSPERGER</td>
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<tr>
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<td>Jürgen ZANGHELLINI</td>
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</tbody>
</table>
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DK Molecular Enzymology

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