

Sunday, April 23rd 2017

Registration

13:30 – 20:00

AULA *University of Natural Resources and Life Sciences (BOKU)*
Augasse 2-6, 1190 Wien

Pre-Symposium Doctoral Programmes **„BioToP“ & „MOLECULAR ENZYMOLOGY“***

Chair: **Dietmar HALTRICH, AT** *University of Natural Resources and Life Sciences, Vienna*

15:00 – 15:05

Dietmar HALTRICH, AT *University of Natural Resources and Life Sciences, Vienna*
Welcome & Introduction

15:05 – 16:00

PS1 **Stephen G. WITHERS, CA** *The University of British Columbia*
Discovery, Design and Development of Human Amylase Inhibitors:
from nM to pM

16:00 – 16:20

PS2 **Markus B. TOMEK, AT** *University of Natural Resources and Life Sciences, Vienna*
Pseudaminic and Legionaminic Acid Transferases from the
Oral Pathogen *Tannerella forsythia*

16:20 – 16:40

PS3 **Aysegül TURUPCU, AT** *University of Natural Resources and Life Sciences, Vienna*
Modeling and Simulations of Glycans and Glycosylated Proteins

16:40 – 17:00

PS4 **Martin PFEIFFER, AT** *Graz University of Technology, NAWI Graz*
Phosphoryl Transfer from α -D-Glucose 1-Phosphate Catalyzed by
Escherichia coli Sugar Phosphate Phosphatases - From Reaction
Mechanism to Biocatalyst Design

17:00 – 17:20

PS5 **Dina VORKAPIC, AT** *University of Graz, NAWI Graz*
Deciphering the Role of O-Glycosylation in *Vibrio cholerae*

17:20 – 17:45

Coffee Break Supported by DK BioToP & MOLECULAR ENZYMOLOGY

*This session is publicly accessible & the entrance is free; registration is required, registered participants of CBM12 are automatically registered for this session

Welcome & Opening Lecture

- 17:45 – 18:00 Welcome **Bernd NIDETZKY, AT** *Graz University of Technology, acib GmbH*
Birte SVENSSON, DK *Technical University of Denmark, Kgs. Lyngby*
- 18:00 – 19:00 Opening **Vincent EIJSINK, NO** *Norwegian University of Life Sciences, Oslo*
Structure, Function and Application of Lytic Polysaccharide
Monooxygenases (LPMOs)

Session 1 RARE SUGARS

Chair: **Birte SVENSSON, DK** *Technical University of Denmark, Kgs. Lyngby*

- 19:00 – 19:40 T1 **Hung Wen LIU, USA** *University of Texas at Austin*
Mechanistic Studies of GenK, a Cobalamin-Dependent Radical SAM
Enzyme Involved in Gentamicin Biosynthesis
- 19:40 – 20:00 T2 **Andrea STRAZZULLI, IT** *CNR Naples*
Engineering a GH89 α -N-Acetylglucosaminidase in an α -
Thioglycoligase for the Synthesis of α -N-Glycosides of Biomedical
interest
- 20:00 – 22:00 **Welcome Reception @BOKU**

Monday, April 24th 2017

Session 2 NOVEL ENZYMES

Chair: **Marco MORACCI, IT** *CNR Naples*

- 08:30 – 09:10 T3 **Magali REMAUD-SIMEON, FR** *INSA Toulouse*
Discovery and Engineering of New Specificities in GH13 and GH70 Families
- 09:10 - 09:30 T4 **Henrik ASPEBORG, SE** *KTH Royal Institute of Technology, Stockholm*
Metagenomics-Based Exploration of the Moose Rumen Reveals a Multitude of Microbial Strategies for Plant Cell Wall Deconstruction
- 09:30 – 09:50 T5 **Henrik STÅLBRAND, SE** *Lund University*
Structural Enzymology of Galactomannanases for Biosynthesis and Production of Defined Glycans
- 09:50 – 10:10 T6 **Joana GANGOITI, NL** *University of Groningen*
Lactobacillus fermentum NCC 2970 Employs a New Glycoside Hydrolase Family 70 4,3- α -Glucanotransferase Enzyme (GtfB) to Synthesize a Branched Polymer with Alternating (α 1 \rightarrow 3)/ (α 1 \rightarrow 4)-Linkages from Maltodextrins and Starch
- 10:10 – 10:30 T7 **Gurvan MICHEL, FR** *CNRS, Station Biologique de Roscoff*
Habitat and Taxon as Driving Forces of Carbohydrate Catabolism in Marine Heterotrophic Bacteria: Example of the Model Algae-Associated Bacterium *Zobellia galactanivorans*
- 10:30 – 11:00 **Coffee Break**

Session 3 GLYCOENGINEERING OF MACROMOLECULES

Chair: **Carlos FONTES, PT** *NZYTech Lda., Portugal*

- 11:00 – 11:40 T8 **Nico CALLEWAERT, BE** *University of Ghent*
Glycosylation Customization of Eukaryotic Biopharmaceutical Expression Hosts

- 11:40 – 12:00 T9 **Oliver SPADIUT, AT** *TU Wien*
Glycoengineering of Biopharmaceuticals by Using Glycoengineered Yeasts
- 12:00 – 12:20 T10 **Antoni PLANAS, ES** *University Ramon Llull, Barcelona*
Engineering Chitin Deacetylases for Deacetylation Pattern
- 12:20 – 12:40 T11 **Paul DeANGELIS, USA** *University of Oklahoma Health Sciences Center*
Expanding Glycosaminoglycan Chemical Space: Towards the Creation of Sulfated Analogs, Novel Polymers and Chimeric Constructs
- 12:40 – 13:40 **Lunch Break**

Session 4 MOLECULAR MODELLING

Chair: **Antoni PLANAS, ES** *University Ramon Llull, Barcelona*

- 13:40 – 14:20 T12 **Anne IMBERTY, FR** *CNRS Grenoble*
Microbial Lectins Binding to Human Glycans: Experimental and Computational Studies
- 14:20 – 14:40 T13 **Carme ROVIRA, ES** *University of Barcelona*
A Front-Face Mechanism 'Synthase' Engineered from a Retaining Hydrolase. Mechanistic Insight from QM/MM Metadynamics
- 14:40 – 15:00 T14 **Marcelo GUERIN, ES** *CIC bioGUNE, Derio*
Structural Snapshots of a Retaining Glycosyltransferase Along the Catalytic Cycle: Conformational Dynamics at the Active Site
- 15:00 – 15:20 T15 **Alexandra MALES, UK** *University of York*
Natural vs Unnatural: Computational and Experimental Studies Reveal the True Michaelis Complex Conformation of GH125
- 15:20 – 15:40 T16 **Kiyohiko IGARASHI, JP** *University of Tokyo*
Use of Advanced Atomic Force Microscopy to Understand the Mechanisms of CAZymes on their Substrate
- 15:40 – 17:00 **POSTER SESSION 1 & Coffee Break**
Even number presenters (except for short talks) will be available for discussion

Session 5 GLYCOSYL TRANSFERASES – SUSY*

Chair: **Vladimir KREN, CZ** *Academy of Sciences of the Czech Republic, Prague*

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| 17:00 – 17:40 | T17 | Tom DESMET, BE <i>Ghent University, Center for Industrial Biotechnology and Biocatalysis</i>
From Sucrose to Glycoside: Enzyme and Process Engineering |
| 17:40 – 18:00 | T18 | Jürgen SEIBEL, DE <i>University of Würzburg</i>
Synthesis and Application of Sucrose Analogues |
| 18:00 – 18:20 | T19 | Alexander GUTMANN, AT <i>Graz University of Technology</i>
Unlocking the Synthetic Potential of Sucrose Synthase in Biocatalytic Cascade Reactions |
| 18:20 – 18:40 | T20 | Lara TROBO MASEDA, ES <i>CSIC, Madrid</i>
Co-Immobilization of Glycosyl Transferases and Sucrose Synthase: Regioselective Glycosylation by Using Traces of UDP |
| 18:40 – 19:00 | T21 | Martin LEMMERER, AT <i>acib GmbH, Graz</i>
Integrated Process Design for Biocatalytic Synthesis by a Leloir Glycosyltransferase: UDP-Glucose Production With Sucrose Synthase |
| 19:00 – 21:00 | | <i>Free of Charge & Publicly Accessible Get Together Supported by EU Project SUSY @BOKU</i> |

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Tuesday, April 25th 2017

Session 6 CARBOHYDRATE METABOLISM IN THE HUMAN GUT

Chair: **Lubbert DIJKHUIZEN, NL** *University of Groningen*

- 08:30 – 09:10 T22 **Natalie JUGE, UK** *IFR Norwich*
The Mucin-Degradation Strategy of *Ruminococcus gnavus*: The Importance of Intramolecular *Trans*-Sialidases.
- 09:10 – 09:30 T23 **Shinya FUSHINOBU, JP** *The University of Tokyo*
Structure of LnbX Lacto-N-Biosidase from *Bifidobacterium longum* and Its Indispensability for Growth on Human Milk Oligosaccharides
- 09:30 – 09:50 T24 **Harry BRUMER, CA** *University of British Columbia, Vancouver*
Polysaccharide Utilization Loci: Fuelling Microbial Communities
- 09:50 – 10:10 T25 **Maher ABOU HACHEM, DK** *Technical University of Denmark, Kgs. Lyngby*
Role of Human Gut Lactobacilli in the Bioconversion of Glyco-Conjugated Phytochemicals
- 10:10 – 10:40 **Coffee Break**

Session 7 CARBOHYDRATES IN HEALTH AND MEDICINE

Chair: **Magali REMAUD-SIMEON, FR** *INSA Toulouse*

- 10:40 – 11:20 T26 **Gerlind SULZENBACHER, FR** *CNRS, University of Marseille*
X-ray Structure of Human Lysosomal Acid-Alpha-Glucosidase Provides Insight into Pompe Disease
- 11:20 – 11:40 T27 **Andreas VOGEL, DE** *C-lecta GmbH, Leipzig*
Development of Industrial Enzymatic Production Processes for Carbohydrate Ingredients
- 11:40 – 12:00 T28 **Roberta IACONO, IT** *CNR Naples*
Pharmacological Enhancement of the Human Acid-Alpha-Glucosidase by Allosteric Chaperones
- 12:00 – 12:20 T29 **Liang WU, UK** *University of York*
Activity Based Probes for Functional Interrogation of Human Heparanase
- 12:20 – 13:20 **LUNCH BREAK**

Short Talks

Chairs: **Takashi KURIKI, JP** *Ezaki Glico Co. Ltd.*

& **Clemens K. PETERBAUER, AT** *University of Natural Resources and Life Sciences, Vienna*

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| 13:20 – 13:25 | ST1 | Shifra LANSKY, IL <i>The Hebrew University of Jerusalem</i>
Multiple Conformational States of a Unique Extracellular Arabinanase Suggest a "Harpoon" Mechanism of Action |
| 13:25 – 13:30 | ST2 | Lucia FRAŇOVÁ, SK <i>Slovak Academy of Science, Bratislava</i>
Novel Substrates for Microbial Glucuronoyl Esterases – Enzymes with still Unexplored Biotechnological Potential |
| 13:30 – 13:35 | ST3 | Haiyang WU, FR <i>INSA Toulouse</i>
Characterization of an Unusual Multi-Modular GH10 Xylanase from Termite Gut |
| 13:35 – 13:40 | ST4 | Chartchai KHANONGNUCH, TH <i>Chiang Mai University</i>
Properties of a Novel Extracellular Exo-Type Amylase from the Insect-Parasitic Fungus <i>Cordyceps militaris</i> Produced during Cultivation on Rice Starch Based Medium |
| 13:40 – 13:45 | ST5 | Laura IANCU, NL <i>DuPont Industrial Biosciences, Leiden</i>
Esterases in Detangling the Complex Structure of Plant Biomass – With the Help of a CBM |
| 13:45 – 13:50 | ST6 | Josef VOGLMEIR, CN , <i>Nanjing Agricultural University</i>
<i>Shewanella woodyi</i> Galactokinases Phosphorylate Glucose at the 6-Position |
| 13:50 – 13:55 | ST7 | Dominic LAAF, DE <i>Department of Biotechnology and Helmholtz-Institute for Biomedical Research, Aachen</i>
Tailor-Made Neo-Glycoproteins: Synthesis, Screening and Application |
| 13:55 – 14:00 | ST8 | Beatriz TRASTOY, ES <i>CIC BioGUNE, Derio</i>
EndoS: an Enzymatic Tool to Glycoengineer Antibodies |
| 14:00 – 14:05 | ST9 | Elizabeth FICKO-BLEAN, FR <i>CNRS, Station Biologique de Roscoff</i>
Unraveling the Multivalent Binding of a Marine Family 6 Carbohydrate-Binding Module with its Native Laminarin Ligand |
| 14:05 – 14:10 | ST10 | Anna ARONSSON, SE <i>Lund University</i>
Structural Insights of RmXyn10A – a GH10 Xylanase with Diverse Aglycone Subsites |
| 14:10 – 14:15 | ST11 | Lluís RAICH, ES <i>University of Barcelona</i>
A Trapped Covalent Intermediate of a Glycoside Hydrolase on the Pathway to Transglycosylation. Insights from QM/MM Simulations. |

14:15 – 14:20	ST12	Lucy CROUCH, UK <i>Newcastle University</i> Novel Enzymes from the Human Gut Microbiota for Degrading N-Glycans
14:20 – 14:25	ST13	Viktoria BÅGENHOLM, SE <i>Lund University</i> Galactomannan Catabolism Conferred by a Polysaccharide Utilisation Locus of <i>Bacteroides ovatus</i>
14:25 – 14:30	ST14	Alicia LAMMERTS VAN BUEREN, NL <i>University of Groningen</i> How GOS Function to Enhance the Beneficial Properties of Infant Formula via Effects on the Microbiome
14:30 – 14:35	ST15	Hiroko YATSUHASHI, JP <i>Ezaki Glico Co. Ltd./ Institute of Health Sciences, Osaka</i> Qualitative and Quantitative Analyses of Glycogen in Milk
14:35 – 14:40	ST16	Natalia COMINO, ES <i>CIC bioGUNE, Derio</i> Structural Basis of Glycogen Biosynthesis Regulation in Bacteria
14:40 – 14:45	ST17	Lukasz Filip SOBALA, UK <i>University of York</i> Inhibition and Mechanism of GH99 - a Key Golgi N-Glycosylation Pathway Enzyme
14:45 – 14:50	ST18	Dejan PETROVIC, NO <i>Norwegian University of Life Sciences, Oslo</i> Fungal Lytic Polysaccharide Monooxygenases with Broad Xyloglucan Specificity
14:50 – 14:55	ST19	Daniel KRACHER, AT <i>University of Natural Resources and Life Sciences, Vienna</i> Biophysical Factors Influencing the Stability of Lytic Polysaccharide Monooxygenases
14:55 – 15:00	ST20	Johannes FÜHRER, AT <i>University of Natural Resources and Life Sciences, Vienna</i> Enzymatic Isotope Labeling of O-Glycans for Improved Tumor Biomarker Analysis
15:00 – 15:05	ST21	Sascha WEIDLER, DE <i>University of Bayreuth</i> Semisynthesis of Sialylated and Paucimannosidic Glycoforms of Human Interleukin 6
15:05 – 15:10	ST22	Johnny BIRCH, DK <i>Technical University of Denmark, Copenhagen</i> HEXPIN: Hetero-Exopolysaccharide – Milk Protein Interactions
15:10 – 15:15	ST23	Artur ROGOWSKI, IR <i>Megazyme, Bray</i> An Automatable, Enzyme-Coupled Assay Procedure for the Measurement of Endo-1,4- β -Xylanase Activity Employing a Novel Colourimetric Hexasaccharide Substrate
15:15 – 17:00		POSTER SESSION 2 & Coffee Break <i>Odd number & short talk presenters will be available for discussion</i>

Session 8 CARBOHYDRATE OXIDOREDUCTASES / LPMOS

Chair: **Gideon J. DAVIES, UK** *University of York*

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| 17:00 – 17:20 | T30 | Leila LO LEGGIO, DK <i>University of Copenhagen</i>
Fungal LPMOs and their Interactions with Ligands: What Have We Learned from Crystal Structures? |
| 17:20 – 17:40 | T31 | Roland LUDWIG, AT <i>University of Natural Resources and Life Sciences, Vienna</i>
How a Newly Discovered Enzyme Shatters our Beliefs in the Function of Well-Known Fungal Oxidoreductases |
| 17:40 – 18:00 | T32 | Jennifer LOOSE, NO <i>Norwegian University of Life Sciences, Oslo</i>
Activation of Bacterial Lytic Polysaccharide Monooxygenases by Cellobiose Dehydrogenase and Mutational Mapping of Catalytically Important Residues |
| 18:00 – 18:20 | T33 | Manuel EIBINGER, AT <i>Graz University of Technology</i>
Auxiliary Activities and their Effect on the Cellulosic Surface: Swollenin and Lytic Polysaccharide Monooxygenase |
| 20:00 – open | | Conference Dinner @Rathauskeller* |

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Wednesday, April 26th 2017

Session 9 GLYCOSYL TRANSFERASES & SYNTHETIC APPLICATIONS

Chair: **Stephen G. Withers, CA** *The University of British Columbia*

- 09:00 – 09:40 T34 **Xi CHEN, USA** *University of California, Davis*
Saturation Mutagenesis and Screening of Sialyltransferase Mutants as Tools for Carbohydrate Synthesis and Analysis
- 09:40 – 10:00 T35 **Shonoi MING, USA** *U.S. Food and Drug Administration, Silver Spring*
Kinetic Characterization of *Neisseria meningitidis* Group C Polysialyltransferase
- 10:00 – 10:20 T36 **Motomitsu KITAOKA, JP** *National Agriculture and Food Research Organization, Ibaraki*
Practical One-Pot Enzymatic Glycosylation from Free Monosaccharide Employing Anomeric Kinase and Phosphorylase with Novel ATP-Regeneration System
- 10:20 - 10:40 T37 **Friedericke BÖNISCH, DE** *University Hamburg*
Biotechnological 5-O-Rhamnosylation of Small Molecules: A Unique Enzyme Activity to Create New-to-Nature Flavonoid Glycosides
- 10:40 – 11:10 **Coffee Break**

Session 10 BIOMATERIALS

Chair: **Carsten Andersen, DK** *Novozymes A/S, Bagsvaerd*

- 11:10 – 11:50 T38 **Thomas ROSENAU, AT** *University of Natural Resources and Life Sciences, Vienna*
Celluloses I and II - Some News from an Old Polymer
- 11:50 – 12:10 T39 **Maija TENKANEN, FI** *University of Helsinki*
Enzymatic Oxidations Enable Production of Novel Light-Weight Polysaccharide Aerogels
- 12:10 – 12:30 T40 **Marc VAN DER MAAREL, NL** *University of Groningen*
Structural Characteristics and Functional Properties of the Highly Branched Glycogen from the Extremophilic Red Microalga *Galdieria sulphuraria*
- 12:30 – 12:50 T41 **Pavla BOJAROVA, CZ** *Academy of Sciences of the Czech Republic, Prague*
Multivalent HPMA Glycopolymers as Efficient Lectin Ligands
- 12:50 – 13:00 Closing **Bernd NIDETZKY, AT** *Graz University of Technology, acib GmbH*
Closing Remarks

