26th Austrian Carbohydrate Workshop

Vienna, 16.2.2023-17.2.2023

TUtheSky @ TU Wien, Getreidemarkt 9, 1060 Wien

Thursday, February 16th, 2023

11:30-12:00 Arrival

12:00-12:15 Welcome addresses

12:15-13:55 Session 1

Sugar synthesis by formolase in yeast cells

Matthias G. Steiger[1,2], Roghayeh Shirvani[1,2]
[1] TU Wien, Institute of Chemical, Environmental and Bioscience Engineering
[2] TU Wien, Doctoral college CO_2Refinery

Non-Traditional Sources of Polysaccharides

Bleha, Roman, Anderej Sinica
University of Chemistry and Technology, Prague, Department of Saccharides and Cereals

Detailed interrogation of mechanism reveals GDP-fucose synthase selectivity

Klara Kastner[1], Martin Pfeiffer[1], Denis Smyshliaev[1], Oriol Esquivias[2], Carme Rovira[2], Bernd Nidetzky[1],*
[1] TU Graz, Institute of Biotechnology and Biochemical Engineering
[2] University of Barcelona, Department of Inorganic and Organic Chemistry (Section of Organic Chemistry), Institute of Computational and Theoretical Chemistry

Enzymatic beta-elimination in natural product deglycosylation: C-C bond cleavage as a specialty of a conserved mechanism

Bitter Johannes; Nidetzky Bernd
TU Graz, Institute of Biotechnology and Biochemical Engineering

Expression and characterization of a b-galactosidase in molluscs

Julia Thoma[1], David Stenitzer[1], Reingard Grabherr[2] and Erika Staudacher[1]
[1] BOKU Vienna, Department of Chemistry (DCH)
[2] BOKU Vienna, Department of Biotechnology (DBT)

Functionalization and endothelization of polycaprolactone vascular grafts with hyaluronic acid-peptide conjugates

Tamilselvan Mohan[1,2,*], Fazilet Gürer[2], Florian Lackner[1], Rupert Kargl[1,2], Karin Stana-Kleinschek[1]

[1] TU Graz, Institute of Chemistry and Technology of Biobased Systems
[2] Laboratory for Characterization and Processing of Polymers, Faculty of Mechanical Engineering, University of Maribor, Smetanova Ulica 17, Maribor, 2000 Slovenia

Carbohydrate Metabolism Beyond Glycolysis

Haschemi, Arvand
Medical University of Vienna, Department of Laboratory Medicine

13:55-14:25 Coffee Break sponsored by

14:25-16:10 Session 2

Synthesis of C-Glycosidic Compounds via Corey-Seebach Reaction

Nina Schützenmeister[1,2]*, Jessica de Vries[1], G. Jacob Boehlich[2].
[1] Universität Wien, Department of Pharmaceutical Sciences
[2] Universität Hamburg, DE, Fachbereich Chemie

Process Chemistry at Thermo Fisher Scientific in Linz

Manuel Gintner, Thermo Fisher Scientific

Synthesis of 4-deoxy-4-fluoro-D-sedoheptulose and an approach for its radiolabeling precursor

Lukas Scheibelberger[1], Arvand Haschemi[2], Katharina Pallitsch[1]*
[1] University of Vienna, Institute of Organic Chemistry
[2] Medical University of Vienna, Department of Laboratory Medicine

3D printed vascular models from polysaccharides

Florian Lackner[1], Paola Surina[1], Tamilselvan Mohan[1], Rupert Kargl[1], Karin Stana-Kleinschek[1*]
[1] TU Graz, Institute of Chemistry and Technology of Biobased Systems

Molecular modelling and site-directed mutagenesis provides insight into saccharide pyruvylation by the *Paenibacillus alvei* CsaB enzyme

Cordula Stefanovic, Fiona F. Hager-Maier[1], Christina Schäffer[1],
[1] BOKU Vienna, Department of Chemistry (DCH)

Different modes of cellulose deconstruction by free and complexed cellulases

Gaurav Singh Kaira[1,2], Krisztina Zajki-Zechmeister[1] Manuel Eibinger[1], and Bernd Nidetzky[1,2,*]
[1] Institute of Biotechnology and Biochemical Engineering, Graz University of Technology, NAWI Graz, Graz, Austria
[2] Austrian Centre of Industrial Biotechnology (acib), Graz, Austria

Benchtop NMR Spectroscopy: Products and Carbohydrate Application Examples

Harald Todt, Jürgen Kolz
Magritek GmbH, Germany

Enzymes – From Basic Research Towards Industrial Application

Christoph Öhlknecht
Arkeon GmbH

16:10-16:40 Coffee Break and Photo Session sponsored by Waters™

16:40-18:20 Session 3

Cationic derivatives of polysaccharides

Rupert Kargl[1,2,*], Damjan Makuc[3], Janez Plavec[3],
Alja Štern[4], Bojana Žegura[4], Perica Bošković[5], Lucija Jurko[2]
[1] TU Graz, Institute for Chemistry and Technology of Biobased Systems (IBIOSYS)
[2] University of Maribor, Laboratory for Characterization and Processing of Polymers (LCPP)
[3] Slovenian NMR Centre, National Institute of Chemistry, Hajdrihova 19, SI-1000 Ljubljana, Slovenia
[4] Department of Genetic Toxicology and Cancer Biology, National Institute of Biology, Večna pot 111, 1000 Ljubljana, Slovenia
[5] Department of Chemistry, Faculty of Science, University of Split, Ruđera Boškovića 33, 21000 Split, Croatia

Synthesis of alkyne functionalised C-glycosidic α-mannosides

Tobias Dorn[1], Tanja M. Wrodnigg[1]
[1] TU Graz, Institute of Chemistry and Technology of Biobased Systems

Current Investigations in Glycoside Hydrolase Profiling

Herwig Prasch[1], Tanja M. Wrodnigg[1]
[1] TU Graz, Institute of Chemistry and Technology of Biobased Systems

Isoiminosugar based probes for enzyme labeling

André Stephan Culum, Tanja M. Wrodnigg[1]
[1] TU Graz, Institute of Chemistry and Technology of Biobased Systems

Synthesis of Aminocyclopentanes as Powerful β-Glucosidase Inhibitors

Patrick Weber[1], Seyed A. Nasseri[2], Bettina M. Pabst[3], Herwig Prasch[1], Martin Thonhofer[1], Arnold E. Stütz[1], Werner Windischhofer[3], Stephen G. Withers[2], Tanja M. Wrodnigg[1]
[1] TU Graz, Institute of Chemistry and Technology of Biobased Systems
[2] MedUni Graz, Department of Pediatrics
[3] University of British Columbia, Chemistry Department

Investigations on a Novel Synthetic Concept for Isoiminosugars - ÄNDERN

Martin Thonhofer,* Andre Culum, Tobias Dorn, Herwig Prasch, Arnold E. Stütz, Patrick Weber, Tanja M. Wrodnigg
TU Graz, Institute of Chemistry and Technology of Biobased Systems

Novel catalytic and separation methods for valorization of lignocellulosic monosaccharides

Irina Delidovich[1]*
[1] TU Wien, Institute of Chemical, Environmental and Bioscience Engineering

18:20-18:30 Beer Break

18:30-19:10 GÖCH Plenary lecture Prof. Tom Wennekes

Decoding and perturbing human-microbe glycodynamics with tailor-made molecular tools

Tom Wennekes, Utrecht University, Netherlands

GÖCH Gesellschaft Österreichischer Chemiker

19:10 Poster Session and Social gathering

Friday, February 17th, 2023

09:00-09:45 Arkeon Plenary lecture Dr. Martina DelBianco

Synthetic carbohydrate-based materials

Martina DelBianco, Max Planck Institute of Colloids and Interfaces, Dep. of Biomolecular Systems

09:45-10:00 Coffee break sponsored by

10:00-11:30 Session 4

Detection and quantification of α-Gal epitopes in intact monoclonal antibodies by NMR spectroscopy

A. Hinterholzer[1,2], J. Moises[1], C. Regl[1,2], S. Schwap[1,3], E. Rapp[4,5], C.G. Huber[1,2], M. Schubert[1,2]
[1] Dept. of Biosciences and Medical Biology, University of Salzburg, Salzburg, Austria, mario.schubert@plus.ac.at
[2] Christian Doppler Laboratory for Innovative Tools for Biosimilar Characterization, University of Salzburg, Salzburg, Austria
[3] Bundesrealgymnasium Salzburg, Salzburg, Austria
[4] glyXera GmbH, Brenneckestraße, Magdeburg, Germany
[5] Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany

Species specific milk N-Glycosylation

Davide Ret
[1] TU Wien, Institute of applied synthetic chemistry

The *Tannerella serpentiformis O*-glycan

Stephanie Walcher[1], Fiona F. Hager-Maier[1], Christina Schäffer[1], Johannes Stadlmann[1], Hanspeter Kählig[2]
[1] BOKU Vienna, Department of Chemistry (DCH)
[2] University of Vienna, Department of Chemistry

Dynamics and stability of cellulose nanocrystals in high-ionic strength media

Vladimir Grachev[1], Peter Lang[2], Minne Pau[l] Lettinga[2,3], Wim Thielemans[1]
[1] Sustainable Materials Laboratory, Department of Chemical Engineering, KU Leuven KULAK, Kortrijk, Belgium
[2] IBI-4, Forschungszentrum Jülich, Jülich, Germany
[3] Physics of Soft Matter and Biophysics Group, Department of Physics, KU Leuven, Leuven, Belgium

Identification and characterisation of mollusc-derived core 1 β-1,3-galactosyltransferases

Marilica Zemkollari[1], Reingard Grabherr[2] and Erika Staudacher[1]
[1] BOKU Vienna, Department of Chemistry (DCH)
[2] BOKU Vienna, Department of Biotechnology (DBT)

Comparing nematode glycomes – what's still to be learnt?

Iain Wilson
[1] BOKU Vienna, Department of Chemistry (DCH)

11:30-12:00 Coffee break

12:00-13:30 Session 5

Properties and Applications of Chitin-Glucan and Cellulose Nanopapers
Andreas Mautner[1,*]
[1] Universität Wien, Institute of Materials Chemistry and Research

The N-Heterocyclic Carbene controlled Dehomologation of Aldoses - An NMR based Kinetic Study on the initial Attack of the Catalyst
Christoph Suster[1], Christian Stanetty[1], Marko Mihovilovic[1*]
[1] TU Wien, Institute of Applied Synthetic Chemistry

Shedding Light: A Modified Phosphatidylinositol for the Investigation of Peptide Assemblies
Viktor Savic[1], Christian Stanetty[1], Harald Sitte[2], Gerhard Schütz[3], Marko Mihovilovic[1*]
[1] TU Wien, Institute of Applied Synthetic Chemistry
[2] Medical University of Vienna, Institute of Pharmacology (Center for Physiology and Pharmacology)
[3] TU Wien, Biophysics Research Unit

Synthesis of Ostarine Glucuronide as reference standard for Doping Analysis
Michael Steinacher, Peter Gärtner
TU Wien, Institute of Applied Synthetic Chemistry

Synthesis of 3-deoxy-3-fluoro-D-Xylulose
Toda Stankovic[1], Lukas Scheibelberger[1], Katharina Pallitsch[1*]
[1] University of Vienna, Institute of Organic Chemistry

Isomer specific N-glycan analysis - when shape matters
Johannes Helm, Friedrich Altmann
[1] BOKU Vienna, Department of Chemistry (DCH)

13:30-14:00 Discussion about network activities
14:00 Closing remarks

Poster Session

Novel neutral galactosylated and phosphorylated N-glycan epitopes from protists

Alba Hykollari
University of Veterinary Medicine (VetMed) Vienna

Post-translational modifications of extracellular matrix protein biglycan orchestrate inflammation in calcic aortic valve disease

Sophia Mair, Can Gollmann-Tepeköylü
Medical University Innsbruck

Decorin binding proteins from European Borrelia – do structural differences influence ligand binding?

Libor Hejduk[1,2], Martin Strnad[1,2], Filip Dyčka[1], Libor Grubhoffer[1,2], Ján Štěrba1, Ryan O. M. Rego[1,2], Norbert Müller[1], Adriana Rathner[3]*
[1] Faculty of Science, University of South Bohemia, 37005 České Budějovice, Czech Republic
[2] Institute of Parasitology, Biology Centre, Czech Academy of Sciences, 37005 České Budějovice, Czech Republic
[3] Institute of Biochemistry, Johannes Kepler University, 4040 Linz, Austria

The Mouse N-Glycome Atlas – High-resolution N-glycan analysis dataset of 23 mouse tissues.

Johannes Stadlmann[1,4], Johannes Helm[1], Stefan Mereiter[2], Tiago Oliveira[2], Josef M. Penninger[2,3] and Friedrich Altmann[1].
[1] Institute of Biochemistry, Department of Chemistry, University of Natural Resources and Life Sciences (BOKU), Muthgasse 18, 1190 Vienna, Austria.
[2] Institute of Molecular Biotechnology of the Austrian Academy of Sciences (IMBA), Vienna BioCenter (VBC), Dr. Bohr-Gasse 3, 1030 Vienna, Austria.
[3] Department of Medical Genetics, Life Sciences Institute, University of British Columbia, Vancouver Campus, 2350 Health Sciences Mall, Vancouver, BC Canada V6T 1Z3.
[4] BOKU Core Facility Mass Spectrometry, University of Natural Resources and Life Sciences (BOKU), Muthgasse 18, 1190 Vienna, Austria.

Methylated N-glycans - is there immunological relevance?

David Stenitzer[1], Reka Mocsai[1], Harald Zechmeister[2], Ralf Reski[3], Eva Decker[3], Friedrich Altmann[1],*
[1] Department of Chemistry, University of Natural Resources and Life Sciences Vienna, Muthgasse 18, 1190 Vienna, Austria.
[2] Department of Botany and Biodiversity Research, University of Vienna, Rennweg 14, 1030 Vienna, Austria.
[3] Faculty of Biology, University of Freiburg, Schaenzlestrasse 1, 79104 Freiburg, Germany.

Structure determination of bacterial pyranose oxidase ancestors

Lukas Eckel, Dietmar Haltrich
[1] Institute of Food Technology, Department of Food Science and Technology, University of Natural Resources and Life Sciences (BOKU), Muthgasse 18, 1190 Vienna, Austria.

Paenibacillus alvei MnaA - a UDP-GlcNAc 2-epimerase involved in secondary cell wall polymer synthesis

Fiona F. Hager-Maier[1], Christina Schäffer[1]
[1] BOKU Vienna, Department of Chemistry (DCH)

Enzymatic processing of plant derived hemicelluloses

Hanna Vovk, Roland Ludwig
[1] Institute of Food Technology, Department of Food Science and Technology, University of Natural Resources and Life Sciences (BOKU), Muthgasse 18, 1190 Vienna, Austria.

Comparing glycosylation profile of human serum in Covid-19, long covid and ME/CFS patients

Salvatore Alessio
Medical University of Vienna