

11th Carbohydrate Bioengineering Meeting

10-13 May, 2015

Espoo, Finland



Programme

Sunday 10.5.2015

16.00 **Opening of CBM11**
Chair: Birte Svensson

16.05 **Welcome speech**
President Tuula Teeri
Aalto University, Finland

16.20 **Opening lecture**
T1: From the first CBHI to biorefineries
Merja Penttilä
VTT, Finland

Glycomics, systems glycobiology and bioinformatics
Chair: Markus Linder

17.00 **T2: CAZyChip: a bioChip for bacterial glycoside hydrolases detection and dynamic exploration of microbial diversity for plant cell wall hydrolysis**
Claire Dumon
Université de Toulouse, France

17.20 **T3: A new generation of chromogenic substrates for high-throughput screening of glycosyl hydrolases, LPMOs and proteases**
Julia Schückel
University of Copenhagen, Denmark

17.40 **T4: Mining fungal diversity for novel carbohydrate acting enzymes**
Ronald P. de Vries
Utrecht University, The Netherlands

18.00 **End of the day**

19 - 21 **Get-together, Design Factory**

Monday 11.5.2015

Mechanisms of carbohydrate-acting enzymes I

Chair: Takashi Kuriki

- 9.00 Keynote lecture**
T5: The increasing diversity of lytic polysaccharide monoxygenases
Gideon Davies
University of York, UK
- 9.40 T6: Neutron and high-resolution X-ray structural studies of glycoside hydrolase family 45 endoglucanase from the basidiomycete *Phanerochaete chrysosporium***
Kiyohiko Igarashi
University of Tokyo, Japan
- 10.00 T7: New insight into substrate specificity and activity determinants of a starch debranching enzyme gained from substrate : enzyme crystal structures**
Marie S. Møller
Carlsberg Laboratory, Denmark
- 10.20 T8: Crystal structures of N-acetylhexosamine 1-kinase and UDP-glucose 4-epimerase in the GNB/LNB pathway from infant-gut associated bifidobacteria**
Shinya Fushinobu
University of Tokyo, Japan

10.40 Coffee break and poster viewing

Mechanisms of carbohydrate-acting enzymes II

Chair: Anu Koivula

- 11.20 T9: Crystal structure of the GTFB enzyme, the first representative of the 4,6- α -glucanotransferase subfamily within GH70**
Tjaard Pijning
University of Groningen, The Netherlands
- 11.40 T10: Catalytic mechanism of retaining glycosyltransferases: Is Arg293 on the β -face of EXTL2 compatible with it? Insights from QM/MM calculations**
Laura Masgrau
Universitat Autònoma de Barcelona, Spain
- 12.00 T11: Structure-function studies of enzymes in the oxidative D-galacturonate pathway**
Helena Taberman
University of Eastern Finland, Finland
- 12.20 Flash presentations (5 min each)**
Chair: Antoni Planas
- P15: A single point mutation near the active center is responsible for high efficiency of the *Thermotoga maritima* α -galactosynthase in the synthesis of known amylase substrate.**
Kirill Bobrov
B.P.Konstantinov Petersburg Nuclear Physics Institute, Russia

P16: Insights into LPMO diversity from structural and functional characterization of NcLPMO9C, a broad-specificity lytic polysaccharide monooxygenase

Anna S. Borisova

Swedish University of Agricultural Sciences, Sweden.

P32: Assisting effect of a carbohydrate binding module on glycosynthase-catalyzed polymerization

Magda Faijes

Universitat Ramon Llull, Spain

P43: Rational design of a novel cyclodextrin glucanotransferase from *Carboxydocella* to improve alkyl glycoside synthesis

Kazi Zubaida Gulshan Ara

Lund University, Sweden

P44: Development and application of a synthetic cellulosome-based screening platform for enhanced enzyme discovery

Johnnie Hahm

Novozymes, Inc. USA

P49: Neopullulanase subfamily and related specificities of the family GH13 - *in silico* study focused on domain evolution

Stefan Janecek

Slovak Academy of Sciences, Slovakia

P50: Characterization of a GH30 glucuronoxylan specific xylanase from *Streptomyces turgidiscabies* C56

Satoshi Kaneko

University of the Ryukyus, Japan

P53: Solution structures of glycosaminoglycans and their complexes with complement Factor H: implications for disease

Sanaullah Khan

University College London, UK

13.00 Lunch

Carbohydrates in health

Chair: Vladimir Kren

14.20 Key-note lecture

T12: Polysaccharide engineering: towards carbohydrate drugs and drug carriers

Takeshi Takaha

Ezaki Glico Co., Ltd. Japan

15.00 T13: Structure and mechanism of action of O-acetyltransferase (Oat) A

Anthony J. Clarke

University of Guelph, Canada

15.20 T14: Complete switch from α 2,3- to α 2,6-regioselectivity in *Pasteurella dagmatis* β -D-galactoside sialyltransferase by active-site redesign

Katharina Schmölzer

Austrian Centre of Industrial Biotechnology, Austria

15.40 Poster session and coffee

Carbohydrate and enzyme engineering I

Chair: Pedro Coutinho

16.40 T15: Structure and function in the GH53 β -1,4-galactanase family

Leila Lo Leggio

University of Copenhagen, Denmark

**17.00 T16: Determinants of substrate specificity in chitin oligosaccharide deacetylases:
How loops define the de-N-acetylation pattern**

Antoni Planas

Universitat Ramon Llull, Spain

**17.20 T17: Molecular basis for the epimerization of oligosaccharides by cellobiose
2-epimerase**

Wataru Saburi

Hokkaido University, Japan

17.40 End of the day

Tuesday 12.5.2015

Structure-function relationships of carbohydrate-acting enzymes I

Chair: Carsten Andersen

9.00 Key-note lecture

**T18: Sugar oxidoreductions at the crossroads of mechanistic enzymology and
biotechnological application**

Bernd Nidetzky

Technische Universität Graz, Austria

**9.40 T19: Functional characterization of a set of fungal lytic polysaccharide
monooxygenase secreted by *Podospira anserina***

Chloé Bennati-Granier

INRA, France

**10.00 T20: Glucooligosaccharide oxidases: Determinants of activity and use in
carbohydrate modification**

Emma R. Master

University of Toronto, Canada

10.20 T21: Engineering of pyranose oxidoreductases for bio-fuelcell applications

Clemens Peterbauer,

University of Natural Resources and Life Sciences Vienna, Austria

10.40 Coffee break and poster viewing

Structure-function relationships of carbohydrate-acting enzymes II

Chair: Kristiina Hilden

- 11.20 T22: The role of carbon starvation in the induction of enzymes that degrade plant-derived carbohydrates in *Aspergillus niger***
Jolanda van Munster
University of Nottingham, UK
- 11.40 T23: Esterases of *Myceliophthora thermophila* C1 help in the degradation and modification of lignocellulosic material**
Laura Leonov
Dyadic Nederland BV, The Netherlands
- 12.00 T24: Processive action of *Rasamsonia emersonii* cellobiohydrolase Cel7A**
Anu Koivula
VTT, Finland
- 12.20 T25: Hydrolysis of arabinoxylo-oligosaccharides and wheat flour arabinoxylo- α -L-arabinofuranosidases**
Vincent McKie
Megazymes, Ireland
- 12.30 Flash presentations (5 min each)**
Chair: Kristiina Kruus
- P60: Variations in the substrate specificity of cellobiose dehydrogenase**
Daniel Kracher
University of Natural Resources and Life Sciences, Vienna, Austria
- P71: Structural and functional insights on the glycoside hydrolases involved in the metabolism of xylooligo- and arabinooligosaccharides in lactic acid bacteria**
Javier A. Linares-Pastén
Lund University, Sweden
- P93: Diversity of xylan deacetylases of family CE16: action on acetylated aldotetraouronic acid and glucuronoxylan**
Vladimir Puchart
Slovak Academy of Sciences, Slovakia
- P94: Conformational studies on trivalent acetylated mannobiose clusters**
Jani Rahkila
Åbo Akademi University, Finland
- P130: Expression a hyperthermostable *Thermotoga maritima* xylanase 10B in *Pichia pastoris* GS115 and its tolerance to ionic liquids**
Hairong Xiong
College of Life Science, China
- P132: Reconstruction of genome-scale metabolic model of *Brevibacillus thermoruber* 423 for design of improved EPS production strategies**
Songul Yasar Yildiz
Marmara University, Turkey
- 13.00 Lunch**

Synthesis, structure and function of carbohydrates and glycoconjugates

Chair: Vincent Bulone

- 14.20** **Key-note lecture**
T26: Exploring plant cell wall xylan biosynthesis, structure and function
Paul Dupree
University of Cambridge, UK
- 15.00** **T27: Understanding the effect of overexpression of fungal acetyl xylan esterase (AXE1) in hybrid aspen**
Prashant Mohan-Anupama Pawar
Swedish University of Agricultural Sciences, Sweden
- 15.20** **T28: Bioinspired model assemblies of plant cell walls as sensors for unravelling interaction features of CAZymes**
Gabriel Paës
INRA and University of Reims Champagne-Ardenne, France
- 15.40** **Poster session and coffee**
- Materials from renewable carbohydrates***
Chair: Maija Tenkanen
- 16.40** **T29: Discovery of original α -transglucosylases from *Leuconostoc citreum* NRRL B-1299 and NRRL B-742 for the synthesis of tailor-made α -glucans**
Marion Claverie
Université de Toulouse, France
- 17.00** **T30: Marine-derived bacterial polysaccharides are valuable sources of glycosaminoglycans**
Lou Lebellenger
Centre Atlantique, rue de l'Île d'Yeu, France
- 17.20** **T31: Spider silk mimicking assembly of nanocellulose**
Sanni Voutilainen
Aalto University, Finland
- 17.40** **End of the day**
- 19.30** **Conference dinner, Restaurant Pörssi (downtown Helsinki)**

Wednesday 13.5.2015

Carbohydrate and enzyme engineering II

Chair: Magali Remaud-Simeon

- 9.00** **Key-note lecture**
T32: Multiple CBMs enhance starch degradation by members of the human gut microbiota
Nicole Koropatkin
University of Michigan, USA

- 9.40 T33: Functionality of granule-bound starch synthase from the waxy barley cultivar CDC Alamo**
Kim H. Hebelstrup
Aarhus University, Denmark
- 10.00 T34: Glucan phosphatases utilize different mechanisms to bind starch and glycogen**
Matthew S. Gentry
University of Kentucky, USA
- 10.20 T35: Secondary structure reshuffling modulates the enzymatic activity of a GT-B glycosyltransferase at the membrane interface**
Natalia Comino
Universidad del País Vasco / Euskal Herriko Unibertsitatea, Spain
- 10.40 T36: Degrading sulfated sugars from the sea: novel insights into the evolution, dimerization plasticity and catalytic mechanism of the GH117s**
Elizabeth Ficko-Blean
Sorbonne Universités, France
- 11.00 Coffee break**
- Carbohydrates in nutrition***
Chair: Marco Moracci
- 11.40 T37: Functional metagenomics reveals novel pathways of mannoside metabolism by human gut bacteria**
Gabrielle Potocki-Veronese
Université de Toulouse, France
- 12.00 T38: Structural basis for arabinoxylo-oligosaccharide capture by probiotic bifidobacteria**
Maher Abou Hachem
Technical University of Denmark, Denmark
- 12.20 T39: The modular intramolecular trans-sialidase from *Ruminococcus gnavus* ATCC 29149 suggests a novel mechanism of mucosal adaptation in the human gut microbiota**
Louise E Tailford
Institute of Food Research, UK
- 12.40 T40: Galactomannan degradation by *Bifidobacterium***
Evelina Kulcinskaja
Lund University, Sweden
- Chair: Lubbert Dijkhuizen*
- 13.00 Closing lecture**
T41: Glycan utilization by human gut Bacteroides
Harry Gilbert
University of Newcastle upon Tyne, UK
- 13.40 Poster awards, closing and invitation to CBM12**
- 14.00 *End of CBM11***
- Lunch**