

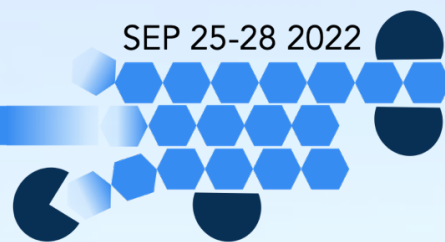
CBM14

SEP 25-28 2022



Carbohydrate Bioengineering Meeting

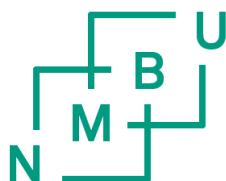
Oslo / NORWAY



Abstract Book

Glyco

novozymes®
Rethink Tomorrow



Norwegian University
of Life Sciences



www.nmbu.no/en/events/cbm14

CBM14

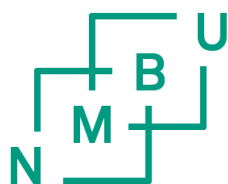
CARBOHYDRATE

BIOENGINEERING MEETING

Program & Abstracts

September 25th to 28th, 2022

Oslo, Norway



Norwegian University
of Life Sciences



TABLE OF CONTENTS

COMMITTEES.....	2
LOCAL ORGANIZING COMMITTEE	2
SCIENTIFIC COMMITTEE	3
THANKS TO OUR SPONSORS	4
PROGRAM.....	5
SUNDAY, SEP 25 TH , 2022.....	5
MONDAY, SEP 26 TH , 2022	6
TUESDAY, SEP 27 TH , 2022	8
WEDNESDAY, SEP 28 TH , 2022	10
POSTER PROGRAM.....	11
POSTER SESSION #1	11
POSTER SESSION #2.....	15
ABSTRACTS	19
ORAL ABSTRACTS	19
POSTER ABSTRACTS	62

COMMITTEES

Local Organizing Committee

Morten Sørli (chair) | Professor of Bioorganic Chemistry at the Faculty of Chemistry, Biotechnology and Food Science – *Norwegian University of Life Sciences (NMBU, NOR)*

Vincent Eijssink (vice-chair) | Professor of Biochemistry at the Faculty of Chemistry, Biotechnology and Food Science – *Norwegian University of Life Sciences (NMBU, NOR)*

Maja Mollatt | PhD student in Biotechnology at the Faculty of Chemistry, Biotechnology and Food Science – *Norwegian University of Life Sciences (NMBU, NOR)*

Rannei Skaali | PhD student in Chemistry at the Faculty of Chemistry, Biotechnology and Food Science – *Norwegian University of Life Sciences (NMBU, NOR)*

Thales de Freitas Costa | Head Engineer at the Faculty of Chemistry, Biotechnology and Food Science – *Norwegian University of Life Sciences (NMBU, NOR)*

Amanda Kristine Votvik | PhD student in Enzyme Engineering at the Faculty of Chemistry, Biotechnology and Food Science – *Norwegian University of Life Sciences (NMBU, NOR)*

Tonje Lindrup Robertsen | Senior Adviser at the Faculty of Chemistry, Biotechnology and Food Science – *Norwegian University of Life Sciences (NMBU, NOR)*

Anne Gravdahl | Senior Engineer at the Faculty of Chemistry, Biotechnology and Food Science – *Norwegian University of Life Sciences (NMBU, NOR)*

Scientific Committee

Birte Svensson | Technical University of Denmark, Copenhagen, DK

Carsten Andersen | Novozymes A/S, Copenhagen, DK

Vincent Bulone | The University of Adelaide, AU; Royal Institute of Technology, Stockholm, SE

Pedro M. Coutinho | Architecture et Fonction des Macromolécules Biologiques, Aix-Marseille University, FR

Gideon J. Davies | University of York, UK

Lubbert Dijkhuizen | University of Groningen, NL

Carlos Fontes | University of Lisbon, PT; NZYTech gene & enzymes, PT

Vladimir Kren | Center of Biocatalysis and Biotransformation, Institute of Microbiology CAS, Prague, CZ

Takashi Kuriki | Ezaki Glico Co. Ltd., Osaka, JP

Marco Moracci | University of Naples Federico II, IT

Bernd Nidetzky | Graz University of Technology, AT

Antoni Planas | Institut Quimic de Sarrià, Universitat Ramon Lull, Barcelona, ES

Magali Remaud-Siméon | Laboratoire d'Ingénierie des Systèmes Biologiques et des Procédés, University of Toulouse, FR

Steve G. Withers | University of British Columbia, Vancouver, CA

THANKS TO OUR SPONSORS



Glico

Ezaki Glico Co., Ltd is one of the leading food manufacturers, including confectionaries, ice cream products, processed foods, desserts, milk products, baby formula, food ingredients and new functional materials for cosmetic and health products which is based on carbohydrate bioengineering technology based in Osaka, Japan.

www.glico.com



Novozymes

At Novozymes, we are unique in our dedication to enzymes and microbes. For more than 70 years, our work with these biological problem solvers has made a big difference to our shared world.

www.novozymes.com/en/about-us

PROGRAM

Sunday, SEP 25th, 2022

TIME	DESCRIPTION	PAGE
14:00 16:00	Registration and welcome coffee	
16:00 16:10	Welcome	
16:10 17:10	Opening lecture: Stephen G. Withers "High throughput metagenomic screening yields enzymes for improved organ transplants, blood transfusion and glycoprotein analysis" Chair: Birte Svensson	20
17:10 17:40	Coffee break	
17:40 19:00	SESSION 1: Mechanisms, structure-function relationships, and dynamics of CAZymes Chair: Stephen G. Withers	
17:40 18:00	<i>Carme Rovira</i> "Uncovering novel catalytic mechanisms in glycosidases with the help of computer simulation"	21
18:00 18:20	<i>Shinya Fushinobu</i> "Structural basis of glycoside hydrolases for α - and β -D-arabinofuranosidic bonds of mycobacterial lipoarabinomannan"	22
18:20 18:40	<i>Mikel García-Alija</i> "Mechanism of antibody-specific deglycosylation and immune evasion by streptococcal IgG-specific endoglycosidases"	23
18:40 19:00	<i>Anthony Clarke</i> "Structure and ligand binding of peptidoglycan O-acetyltransferase B: a potential new antibacterial target"	25
19:00 20:00	Poster Pitch Talks Poster number 1-34	11
20:00	Welcome reception	

Monday, SEP 26th, 2022

TIME	DESCRIPTION	PAGE
08:30 10:10	SESSION 2: Carbohydrate structure & complex carbohydrate-based matrices Chair: Vladimir Kren	
08:30 09:10	Hermen S. Overkleef "Activity-based profiling of exo- and endoglycosidases in biomedicine and biotechnology"	26
09:10 09:30	<i>Mikkel Madsen</i> "Alginate β -lactoglobulin multivalent interaction – the foundation of complex coacervation"	27
09:30 09:50	<i>Joris Krull</i> "Enzymes digest sulfated glucuronomannan from marine diatoms"	28
09:50 10:10	<i>Jolanda van Munster</i> "Which changes do fungi bring about in the lignocellulose matrix? "	29
10:10 10:40	Coffee break	
10:40 12:20	SESSION 3: Omics and CAZyme discovery Chair: Birte Svensson	
10:40 11:20	Sabina Leanti La Rosa "Integrating multi-omics and enzymology to untangle systems for typical and atypical glycan deconstruction in gut microbiomes"	30
11:20 11:40	<i>Nicolas Terrapon</i> "The carbohydrate-active enzyme database: literature, functions and subfamilies"	31
11:40 12:00	<i>Birgitte Zeuner</i> "GH20 lacto-N-biosidases: Discovery and engineering"	32
12:00 12:20	<i>Lauren McKee</i> "A new family of multivalent Carbohydrate Binding Modules displaying three distinct β -glucan binding sites "	33
12:20 13:50	Lunch	
13:50 14:50	Poster Pitch Talks Poster number 35-70	15

14:50 15:30	SESSION 4: Polysaccharide metabolism & carbohydrate transport Chair: Marco Moracci	
14:50 15:10	<i>Ana S. Luis</i> "Unraveling the keystone enzymes in mucin degradation by human gut bacteria"	34
15:10 15:30	<i>Maher Abou-Hachem</i> "Sialidases and fucosidases of <i>Akkermansia muciniphila</i> are crucial for mucin utilisation and nutrient sharing in the human gut"	35
15:30 16:30	Poster Session #1 Poster number 1-34	
		11
16:30 17:00	Coffee break	
17:00 18:20	SESSION 5: Carbohydrate degrading communities Chair: Magali Remaud-Simeon	
17:00 17:40	<i>D. Wade Abbott</i> "Rapid functional adaptation of rumen microbiota to seaweed polysaccharide metabolism"	36
17:40 18:00	<i>Seyed Amirhossein Nasser</i> "Not all glycosidases follow Koshland mechanisms: A meta-genomic screen in search of unconventional glycosidases"	37
18:00 18:20	<i>Maria Dalgaard Mikkelsen</i> "Novel endo-fucoidanases and diversity of action"	38
20:00	Dinner	

Tuesday, SEP 27th, 2022

TIME	DESCRIPTION	PAGE
08:30 10:10	SESSION 6: Enzymes for carbohydrate synthesis and modification Chair: Antoni Planas	
08:30 09:10	Tom Desmet "Enzymatic production and evaluation of rare disaccharides"	39
09:10 09:30	Rajneesh Bains "Discovery and characterization of a novel 6-sulfoGlcNAcase"	40
09:30 09:50	Finn L. Aachmann "Characterisation of alginate modifying enzymes"	41
09:50 10:10	Marie Sofie Møller "α-glucan debranching enzymes for producing glucosylated bioproducts by transglycosylation"	42
10:10 10:40	Coffee break	
10:40 12:20	SESSION 7: Glycobiotechnologies Chair: Takashi Kuriki	
10:40 11:20	Jochen Zimmer "Insights into the mechanism of mixed linkage glucan biosynthesis by cellulose-synthase like enzymes"	43
11:20 11:40	Marco Moracci "Drugs approved for human treatment as pharmacological chaperones of Pompe disease"	44
11:40 12:00	Henrik Stålbrand "Biorefining and enzymatic valorization of hemicellulosic β-mannans from softwoods and other plants"	45
12:00 12:40	Krisztina Zajki-Zechmeister "In-situ AFM investigation on the role of enzyme proximity in cellulose hydrolysis"	46
12:20 13:50	Lunch	

13:50 15:30	SESSION 8: CAZyme engineering and computer-assisted design Chair: Pedro M. Coutinho	
13:50 14:10	<i>Jeppe Kari</i> "Virtual bioprospecting of cellulases: Relating sequence and kinetics"	47
14:10 14:30	<i>Ahmed Khamassi</i> "Co-evolution of hemicellulases from a xylan PUL to identify molecular determinants of enzyme synergy"	48
14:50 15:10	<i>Kristýna Slámová</i> "Engineering of β -N-acetylhexosaminidase from <i>Aspergillus oryzae</i> : new hypertransglycosylating variants "	49
15:10 15:30	<i>Jacob Wardman</i> "A genetically encoded high-throughput screening methodology for mucin-active enzymes"	50
15:30 16:30	Poster Session #2 Poster number 35-70	15
16:30 17:00	Coffee break	
17:00 18:40	SESSION 9: Carbohydrate esterases Chair: Vincent Eijsink	
17:00 17:20	<i>Antoni Planas</i> "Engineering loop dynamics to modulate substrate specificity in chitin deacetylases"	51
17:20 17:40	<i>Johan Larsbrink</i> "Glucuronoyl esterases cleaving covalent bonds between lignin and carbohydrates in the plant cell wall"	52
17:40 18:00	<i>Bjørge Westereng</i> "Acetyl esterases, central contributors in human digestion"	53
18:00 18:40	SESSION 2B: Carbohydrate structure & complex carbohydrate-based matrices (2) Chair: Shinya Fushinobu	
18:00 18:20	<i>Takashi Kuriki</i> "New functional materials based on Carbohydrate Bioengineering: Born in Ezaki Glico and grown in Glico Nutrition"	54
18:20 18:40	<i>Casper Wilkens</i> "Insight into a surprising polysaccharide lyase family 7 mechanism"	55
20:00	Dinner	

Wednesday, SEP 28th, 2022

TIME	DESCRIPTION	PAGE
09:00 10:20	SESSION 10: Auxiliary activities redox enzymes Chair: Vincent Eijsink	
09:00 09:40	Federico Sabbadin "Lytic pectin monooxygenases as key virulence factors in plant pathogenic oomycetes"	56
09:40 10:00	Hongbo Zhao "The diverse substrate specificity of CAZy AA3 subfamily 2 oxidoreductases"	57
10:00 10:20	Leila Lo Leggio "LPMOs interactions with inhibitors and activators"	58
10:20 10:50	Coffee break	
10:50 11:30	SESSION 1B: Mechanisms, structure-function relationships, and dynamics of CAZymes (2). Chair: Morten Sørli	
10:50 11:10	Alicia Moraleda-Montoya "Mechanism of cooperative N-glycan processing by the multi-modular endoglycosidase EndoE"	59
11:10 11:30	Cédric Montanier "Investigating the spatial geometry organisation within glycoside hydrolases over catalysis"	60
11:30 12:30	Closing lecture: Birte Svensson "Structural biology of how alginate is serving in our food" Chair: Morten Sørli	61
12:30 14:00	Lunch	