



MIE BIOFORUM 2003

Biotechnology of Lignocellulose Degradation and Biomass Utilization YAMAHA RESORT NEMUNOSATO

Ise-Shima, Japan

November 10-14, 2003

Monday, November 10, 2003

13:00 Registration

18:00 Dinner

20:10 Welcome Address - Kunio Ohmiya (Mie University, Japan)

20:20 **Opening lecture**

Arnold L. Demain (Drew University, USA)

Over 35 years of interactions with Japanese scientists

20:50 Yasuo Igarashi (University of Tokyo, Japan)

The role of biotechnology for the utilization of biomass---Our attempts in Japan and Asian countries---







■Tuesday, November 11, 2003

7:30 Breakfast

8:30 Conference Photo

Structure and Function

9:00 **Session I**(Chairperson: Joshua Sakon)

Junji Sugiyama (Kyoto University, Japan)

Recognition of molecular directionality in crystalline polysaccharide hydrolysis by some exohydrolases

Richard A. J. Warren (University of British Columbia, Canada)

The proline-threonine-rich linkers in two glycoside hydrolases from Cellulomonas fimi

David B. Wilson (Cornell University, USA)

Microbial cellulose degradation

10:15 Coffee break

10:45 **Session II**(Chairperson: Richard A. J. Warren)

Leila Lo Leggio (University of Copenhagen, Denmark)

Structure and specificity of polysaccharidases belonging to clan GH-A

Joshua Sakon (University of Arkansas, USA)

Crystal structure of family 12 endocellulase from Acidothermus cellulolyticus

Takeshi Watanabe (Niigata University, Japan)

Mechanism of crystalline chitin hydrolysis by bacterial chitinases

12:00 Lunch

15:00 **Session III**(Chairperson: Peter L. Bergquist)

Gary W. Black (University of Northumbria, UK)

Structural insights into the catalytic mechanism of the polysaccharide lyases

James Flint (University of Newcastle upon Tyne, UK)

The role of carbohydrate binding module in targeted hydrolysis of plant cell wall polysaccharides

Kunio Ohmiya (Mie university, Japan)

New arrangement of dockerin-cohesin for artificial enzymes

16:15 Coffee break

New Aspect

16:45 **Session IV**(Chairperson: Gary W. Black)

Peter L. Bergquist (Macquarie University, Australia)

Production of recombinant hemicellulases from thermophilic microorganisms in fungal hosts

Tuula T. Teeri (Royal Institute of Technology, Sweden)

Enzymes involved in cellulose biosynthesis and modification in hybrid aspen

Takahisa Hayashi (Kyoto University, Japan)

Involvement of cellulase in cellulose biosynthesis

18:00 Dinner

20:00 **Short Talk**(Chairperson: Kunio Ohmiya)

Akihiko Kondo (Kobe University, Japan)

Direct and efficient production of ethanol from cellulosic materials with a yeast strain displaying cellulolytic enzymes

Bernard A. Prior (University of Stellenbosch, South Africa)

Purification and properties of a feruloyl esterase involved in lignocellulose degradation by *Aureobasidium pullulans*

Ni Nyoman Tri Puspaningsih (Airlangga University, Indonesia)

Isolation and characterization of β -xylosidase and α -l-arabinofuranosidase from *Bacillus thermoleovorans* it-08

Akio Takenaka (Tokyo Institute of Technology, Japan)

Evolutionary classification of family 8 glycoside hydrolases, based on the X-Ray structure of *Bacillus* sp. K17 chitosanase

Yong Woo Park (Wood Research Institute, Kyoto University, Japan)

The role of cellulase on cellulose biosynthesis in Acetobacter xylinium

Chantal Tardif (CNRS, France)

In vivo studies of the cellulolytic system produced by Clostridium cellulolyticum

Satoshi Kaneko (National Food Research Institute, Japan)

Structure-function relationship of family 10 xylanase from *Streptomyces olivaceoviridis* E-86

Motomitsu Kitaoka (National Food Research Institute, Japan)

Phosphorolytic enzymes in cellulose degradation

Xin-Liang Li (Fermentation Biotechnology Research, USA)

Cloning and sequencing of two highly homologous cellulase genes, *celH* and *celI* from the anaerobic fungus *Orpinomyces* strain PC-2

Tohru Suzuki (Gifu University, Japan)

The osmotic shock causes a translocation of the signal peptide-less cytoplasmic xylanase (XynX) of *Aeromonas caviae* ME-1to the periplasm via mechanosensitive channel

Nazimuddin Mohammed (Tokyo University of Agriculture and Technology, Japan)

Effects of direct-fed microbial on ruminal fermentation, digestibility and microbes in vitro and in vivo

Shohidullah Md. Miah (National Institute for Advanced Industrial Science and Technology, Japan)

Improvement of biogas production from anaerobic digestion of sewage sludge by aerobic thermophilic bacterial sludge

Shintaro Iwashita (Mitsubishi Kagaku Institute of Life Sciences, Japan)

Gene organization of ruminant specific gene of p97 Bcnt: role of Retrotransposon in gene diversity

Mohamed Emad Abd El-Wahab Nasser (Alexandria University, Egypt)

Localization of cellulase activity in the centrifuged fractions of homogenate of rumen protozoan, *Entodinium caudatum*

Wednesday, November 12, 2003

7:30 Breakfast

Cellulosome

9:00 Session V(Chairperson: Edward A. Bayer)

Lars G. Ljungdahl (University of Georgia, USA)

Function and structures of domains in multi-modular glycoside hydrolases from the cellulosome of *Clostridium thermocellum*

Wolfgang H. Schwarz (Technische Universität München, Germany)

The Clostridium thermocellum cellulosome - the paradigm of a multienzyme complex

J. H. David Wu (University of Rochester, USA)

Transcriptional regulation of the Clostridium thermocellum cellulases

10:15 Coffee break

10:45 **Session VI**(Chairperson: J. H. David Wu)

Edward A. Bayer (The Weizmann Institute of Science, Israel)

Probing the cohesin-dockerin interaction by rational mutagenesis

Jean-Pierre Bélaich (Center National de la Recherche Scientifique, France)

From native to engineered cellulosomes

Roy H. Doi (University of California, Davis, USA)

Regulation of the synthesis of *Clostridium cellulovorans* cellulosomes and their subunits

12:00 Lunch

Rumen cellulase

15:00 **Session VII**(Chairperson: Kiyoshi Hayashi)

Harry Flint (Rowett Research Institute, UK)

Protein:protein interactions involved in the assembly of lignocellulolytic enzyme complexes in *Ruminococcus flavefaciens*

Jean-Pierre Jouany (INRA C.R, France)

Factors influencing microbial cellulolytic and xylanolytic activities in the rumen; benefits of adding exogenous enzymes to the diet

Mark Morrison (Ohio State University, USA)

Functional and comparative genomics of cellulolytic bacteria

16:15 Coffee break

16:45 **Session VIII** (Chairperson: Harry Flint)

Toshiaki Kudo(RIKEN, Japan)

Cellulose degradation and protozoa-prokaryote interaction in lower termite

Hirofumi Watanabe (National Institute of Agrobiological Sciences, Japan)

Animal cellulases, diversity and potential applications

Kiyoshi Hayashi (National Food Research Institute, Japan)

Splitting monomeric enzyme of family 3 β -glucosidase into two molecules while recovering the catalytic activity

18:00 Dinner

20:00 Poster session

● Thursday, November 13, 2003

7:30 Breakfast

Fungal System

9:00 **Session IX**(Chairperson: Yasushi Morikawa)

Yoshihiko Amano (Takahisa Kanda) (Shinshu University, Japan)

New insight on cellulose degradation by cellulase from fungi

Motoo Arai (Osaka Prefecture University, Japan)

Cellulase system of Aspergillus aculeatus

Kiyoshi Ito (National Research Institute of Brewing, Japan)

Cellulase and hemicellulase genes of white koji mold (Aspergillus kawachii)

10:15 Coffee break

10:45 **Session X**(Chairperson: Takahisa Kanda)

Yasushi Morikawa (Nagaoka University of Technology, Japan)

Induction mechanism of xylanase III gene in Trichoderma reesei

Merja E. Penttilä (VTT Biotechnology and Food Research, Finland)

Regulatory mechanisims involved in expression and secretion of enzymes by Trichoderma

Takashi Watanabe (Kyoto University, Japan)

Control of the generation of active oxygen species for selective lignin biodegradation by *Ceriporiopsis subvermispora*

12:00 Excursion

18:30 Banquet

20:00 Poster session



7:30 Breakfast

Application and Utilization

9:00 Session XI(Chairperson: Hideaki Yukawa)

Colin Mitchinson (Genencor International, Inc., USA)

Improved cellulases for the biorefinery

Feng Xu (Novozymes Biotech, USA)

Enhancing biomass conversion to fermentable sugars

Shigeki Sawayama (National Institute of Advanced Industrial Science and Technology, Japan)

An overview of anaerobic digestion in Japan

10:15 Coffee break

10:45 **Session XII**(Chairperson: Colin Mitchinson)

Yoshiyuki Ueno (Kajima Technical Research Institute, Japan)

Fundamental studies on hydrogen fermentation from cellulose

Takashi Saiki (Japan Alcohol Association, Japan)

A new NEDO R&D Project on biomass-ethanol conversion technologies

Hideaki Yukawa (RITE, Japan)

Today and feature: utilization of biomass

12:00 Closing Address- Roy H. Doi (University of California, Davis ,USA)

12:30 Lunch