

## POSTER SESSION A

Sunday and Monday, September 19<sup>th</sup> and 20<sup>th</sup>

- A-1** **EXAMINING EXAMINING THE EFFECT OF GENETIC MODIFICATIONS IN PRIMARY METABOLISM ON POLYKETIDE PRODUCTION BY *SACCHAROPOLYSPORA ERYTHRAEA***  
Frank Baganz, University College London, United Kingdom  
Misti Ushio, Merck & Co Inc.,  
Colin Jaques, John Ward, UCL,  
Peter Leadlay, University of Cambridge
- A-2** **<sup>13</sup>C METABOLIC FLUX ANALYSIS OF *STREPTOMYCES TENEBRARIUS*, A *STREPTOMYCES* WITH ENTNER-DOUDOROFF PATHWAY**  
Irina Borodina, Technical University of Denmark, Denmark  
Charlotte Scholler, Alpharma,  
Anna Eliasson, Jens Nielsen, BioCentrum -DTU
- A-3** **EXTRACELLULAR PRODUCTION OF RECOMBINANT PROTEINS IN *ESCHERICHIA COLI***  
Jong Hyun Choi, Korea Advanced Institute of Science and Technology, Korea  
Sang Yup Lee, Korea Advanced Institute of Science and Technology
- A-4** **ENGINEERING *E. COLI* FOR XYLITOL PRODUCTION FROM A GLUCOSE-XYLOSE MIXTURE**  
Patrick C. Cirino, University of Florida, USA  
L. O. Ingram, University of Florida
- A-5** **RHODOBACTER'S RISE FROM COLORFUL POND DENIZEN TO PRODUCTION HOST**  
Mervyn L. de Souza, Cargill Inc, USA  
Sherry Kollmann, Fernando Sanchez-Riera, William Schroeder,  
Mary Jo Zidwick, Cargill Inc.
- A-6** **ENGINEERING A NEW PATHWAY FOR N-ACETYLGLUCOSAMINE PRODUCTION: COUPLING OF THE CATABOLIC ENZYME GLUCOSAMINE-6-P DEAMINASE WITH GLUCOSAMINE-6-P N-ACETYLTRANSFERASE**  
Ming-De Deng, Bio-Technical Resources, USA  
Al Grund, Sarah Wassink, Dave Severson, Candice Leanne, Linsheng Song, Jeff Running,  
Kathy Nielsen, Bonnie Walsh, Brian Huckins, Troy Lutze, Reinhardt Rosson,  
Bio-Technical Resources
- A-7** **METABOLITE PROFILING FOR ANALYSIS OF YEAST STRESS RESPONSE DURING VERY HIGH GRAVITY ETHANOL FERMENTATIONS**  
Rasmus Devantier, Novozymes A/S, Denmark  
Britta Scheithauer, Silas G. Villas-Bôas,  
Lisbeth Olsson, Technical University of Denmark
- A-8** **METABOLIC ENGINEERING OF *E. COLI* SUGAR-UTILIZATION REGULATORY SYSTEMS FOR THE CONSUMPTION OF SUGAR MIXTURES**  
Ramon Gonzalez, Iowa State University, USA  
Y. Dharmadi Y. Moon, J. V. Shanks, Iowa State University,  
K-Y. San, Rice University

- A-9 PRODUCTION OF 3-HYDROXYPROPIONIC ACID BY FERMENTATION**  
Steve Gort, Cargill, USA  
Jim Anderson, Brian Brazeau, Doug Cameron, Ravi Gokarn, Sherry Gwegorryn,  
Holly Jessen, Hans Liao, Olga Selifonova, Cargill, Inc.,  
Ranjini Chatterjee, Michelle Chen, Susan Louie, Ken Mitchell, Codexis
- A-10 ENGINEERING *DEINOCOCCUS RADIODURANS* PHOSPHATE METABOLISM FOR METAL  
PRECIPITATION IN RADIOACTIVE WASTE**  
Alexandra Holland and Mary Lidstrom, University of Washington, USA
- A-11 <sup>13</sup>C-LABELING BASED METABOLIC FLUX ANALYSIS OF *PENICILLIUM CHRYSOGENUM*  
UNDER PENICILLIN PRODUCING AND NON-PRODUCING CONDITIONS**  
Roelco J. Kleijn, Delft University of Technology, The Netherlands  
W. A. van Winden, C. Ras, J. C. van Dam, W. M. van Gulik,  
J. J. Heijnen, Delft University of Technology
- A-12 METABOLIC ENGINEERING OF FLAVONOID BIOSYNTHESIS IN *ESCHERICHIA COLI***  
Mattheos Koffas, State University of New York at Buffalo, USA
- A-13 BIOCHEMICAL CHARACTERIZATION OF DIHYDROFLAVONOL 4-REDUCTASE FROM PLANT  
AND MICROBIAL SPECIES**  
Mattheos Koffas, State University of New York at Buffalo, USA  
Yajun Yan, Joseph E. Leonard, State University of New York at Buffalo,  
Simone Witte, Stefan Martens, Philipps-Universität Marburg
- A-14 PROTEOME PROFILING AND ITS USE IN CELLULAR ENGINEERING OF *ESCHERICHIA  
COLI*: ENHANCED RECOMBINANT PROTEIN PRODUCTION AS AN EXAMPLE**  
Sang Yup Lee, Korea Advanced Institute of Science and Technology, Korea
- A-15 ESSENTIAL ROLES AND APPLICATIONS OF SMALL HEAT SHOCK PROTEINS IN THE  
PRODUCTION OF RECOMBINANT PROTEINS IN *ESCHERICHIA COLI***  
Sang Yup Lee, Korea Advanced Institute of Science and Technology, Korea  
Mee-Jung Han, Si Jae Park,  
Tae Jung Park, Korea Advanced Institute of Science and Technology
- A-16 A METABOLIC ENGINEERING APPLICATION: PATHWAY DESIGN AND ENGINEERING FOR  
ENHANCING SUCCINATE PRODUCTIVITY IN BOTH AEROBIC AND ANAEROBIC  
FERMENTATION PROCESSES**  
Henry Lin, Rice University, USA  
Ailen M. Sanchez, George N. Bennett, Ka-Yiu San, Rice University
- A-17 REDIRECTION OF METABOLIC FLUX TO L-METHIONINE IN L-THREONINE  
HYPERPRODUCING *E. COLI***  
H. W. Um, CJ Corporation, Korea  
Y. U. Shin, K. M. Cho, Y. H. Park, CJ Corporation
- A-18 PATHWAY OPTIMIZATION IN MICROBIAL STRAIN DESIGN**  
Costas D. Maranas, The Pennsylvania State University, USA  
Priti Pharkya, Anthony P. Burgard, The Pennsylvania State University
- A-19 EVALUATING AND IMPROVING FOLATE BIOSYNTHESIS BY *LACTOBACILLUS PLANTARUM*  
WCFS1 USING AN INTEGRATED FUNCTIONAL-GENOMICS APPROACH**  
Astrid E. Mars, WCFS/Agrotechnology and Food Innovations, The Netherlands  
M. Faijes, WCFS/Agrotechnology and Food Innovations,  
A. Wegkamp, B. Teusink, J. Hugenholtz, E. J. Smid, WCFS/NIZO Food research

- A-20** **DEVELOPMENT AND UTILIZATION OF A GENETIC ENGINEERING SYSTEM TO UNDERSTAND AND IMPROVE SUCCINATE PRODUCTION IN *ACTINOBACILLUS SUCCINOGENES***  
James McKinlay, Michigan State University, USA  
Pil Kim, Claire Vieille, J. Gregory Zeikus, Michigan State University
- A-21** **RATIONAL DESIGN OF IMPROVED HYALURONIC ACID PRODUCTION**  
Richard L. McLaughlin, University of Queensland, Australia  
Lars K. Nielsen, University of Queensland
- A-22** **DETERMINATION OF METABOLIC RECOVERY DURING EXTRACTION AND MEASUREMENT USING MIRACLE (MASS ISOTOPOMER RATION OF <sup>13</sup>C EXTRACT)**  
Uly Nasution, Delft University of Technology, The Netherlands  
C. Ras, W. M. van Gulik, J. J. Heijnen, Delft University of Technology
- A-23** **GLUCOSE PRODUCTION FROM LACTOSE: THE NATURAL SWEETENING OF DAIRY PRODUCTS THROUGH FERMENTATION WITH *L. LACTIS***  
Ana Rute Neves, Instituto de Tecnologia Quimica e Biologica, Portugal  
Wietske Pool, Jan Kok, Helena Santos, Oscar Kuipers, University of Groningen
- A-24** **ENGINEERING *S. CEREVISIAE* TO PRODUCE L-GLYCEROL 3-PHOSPHATE**  
Elke Nevoigt, Technische Universität Berlin, Germany  
Huyen Nguyen Thi Thanh, Almut Dieterich, Ulf Stahl, Technische Universität Berlin
- A-25** **RETROBIOSYNTHESIS OF 2'-DEOXYRIBONUCLEOSIDE FROM GLUCOSE ACETOALDEHYDE AND NUCLEOSBASE**  
Jun Ogawa, Kyoto University, Japan  
Nobuyuki Horinouchi, Takako Kawano, Takafumi Sakai, Sakayu Shimizu, Kyoto University
- A-26** **METABOLOMICS AND TRANSCRIPTOMICS HARNESSSED FOR THE IMPROVEMENT OF PHENYLALANINE PRODUCTION**  
Karin M. Overkamp, TNO Nutrition and Food Research, The Netherlands  
Nicole van Luijk, Thomas Hankemeier, Mariët J. van der Werf, TNO Nutrition and Food Research
- A-27** **METABOLIC ENGINEERING OF *ESCHERICHIA COLI* FOR THE PRODUCTION OF POLYAMIDE**  
Jong Pil Park, Korea Advanced Institute of Science and Technology, Korea  
Mee-Jung Han, Tae Jung Park, Seok Jae Lee, Sang Yup Lee, Korea Advanced Institute of Science and Technology
- A-28** **PROTEASE DEFICIENT *BACILLUS THURINGIENSIS* STRAIN FOR INDUSTRIAL PRODUCTION OF RECOMBINANT PROTEINS**  
Tae Jung Park, Korea Advanced Institute of Science and Technology, Korea  
Seok Jae Lee, Jong Pil Park, Sang Yup Lee, Korea Advanced Institute of Science and Technology
- A-29** **ANALYSIS *IN SILICO* OF THE METABOLIC CAPABILITIES OF *PSEUDOMONAS AERUGINOSA* FOR THE PRODUCTION OF POLYHYDROXYALKANOATES USING A FLUX BALANCE ANALYSIS**  
O. Rojas-Rosas and Orfil G. Reynoso, University of Guadalajara, Mexico  
J. de- Santos-Ávila, H. Gómez-Hernández, J. Nungaray-Arellano, O. González-Reynoso, University of Guadalajara

- A-30 THE USE OF METABOLIC FLUX ANALYSIS FOR IMPROVING RECOMBINANT PROTEIN PRODUCTION IN *PICHIA PASTORIS***  
Mark Rowe, The University of Surrey, United Kingdom  
Claudio Avignone-Rossa, Michael E. Bushell, The University of Surrey,  
Angus Thompson, Avecia Limited,
- A-31 INTEGRATIVE APPROACHES FOR STUDYING PENTOSE METABOLISM IN *SACCHAROMYCES CEREVISIAE***  
Laura Ruohonen, VTT Biotechnology, Finland  
Laura Salusjärvi, Matej Oresic, Eija Rintala, Hannu Maaheimo,  
Helena Helena Simolin, Merja Penttilä, VTT Biotechnology
- A-32 METABOLIC ENGINEERING OF *ESCHERICHIA COLI*: CONSTRUCTION OF AN EFFICIENT BIOCATALYST FOR D-MANNITOL FORMATION IN A WHOLE-CELL BIOTRANSFORMATION**  
Hermann Sahm, Research Centre Jülich, Germany  
Bjoern Kaup, Stephanie Bringer-Meyer, Research Centre Jülich
- A-33 NEW INSIGHTS INTO OILSEED METABOLISM FROM ISOTOPOMER FLUX RATIO AND BIOCHEMICAL ANALYSIS**  
Joerg Schwender, Michigan State University, USA  
Sari Ruuska, CSIRO Plant Industry,  
Fernando Goffman, Mike Ruckles, Michigan State University
- A-34 AN INTEGRATED METABOLIC ENGINEERING STUDY OF HAIRY ROOTS FOR ALKALOID PRODUCTION**  
Jacqueline V. Shanks, Iowa State University, USA  
Ka-Yiu San, Erik Hughes, Christie Peebles, Rice University,  
Susan I. Gibson, Seung-Beom Hong, University of Minnesota,  
Ganesh Sriram, Guy Sander, Iowa State University
- A-35 NMR-BASED METABOLIC FLUX MAPS IN SOYBEAN EMBRYOS**  
Jacqueline V. Shanks, Iowa State University, USA  
Ganesh Sriram, Donald Bruce Fulton, Vidya V. Iyer, Joan Marie Peterson, Ruilian Zhou,  
Mark E. Westgate, Martin H. Spalding, Iowa State University
- A-36 EFFECT OF *PYK* GENE KNOCKOUT ON THE REGULATION MECHANISM IN *ESCHERICHIA COLI* BASED ON GENE EXPRESSIONS, ENZYME ACTIVITIES, INTRACELLULAR METABOLITE CONCENTRATIONS AND METABOLIC FLUX DISTRIBUTION BASED ON <sup>13</sup>C LABELING EXPERIMENT**  
Khandaker Al Zaid Siddiquee, Kyushu Institute of Technology, Japan  
Marcos J. Arauzo-Bravo, Kazuyuki Shimizu, Kyushu Institute of Technology
- A-37 RECOMBINANT *CLOSTRIDIUM ACETOBUTYLICUM* STRAINS WITH COMPLEX PHENOTYPE CHARACTERISTICS**  
Ryan Sillers, Northwestern University, USA  
Eleftherios T. Papoutsakis, Northwestern University
- A-38 STIMULATION, MONITORING AND ANALYSIS OF AROMATIC AMINO ACID PATHWAY DYNAMICS**  
R. Takors, Institute of Biotechnology, Forschungszentrum Jülich GmbH, Germany  
D. Degenring, M. Kunze, M. Oldiges, Forschungszentrum Jülich GmbH

- A-39 MEASUREMENT OF THE COMPLETE FLUX DISTRIBUTION FOR WILD-TYPE AND MUTANT STRAINS OF *METHYLOBACTERIUM EXTORQUENS* AM1**  
Stephen Van Dien, University of Washington, USA  
Christopher Marx, Mary Lidstrom, University of Washington
- A-40 EFFECT OF REDOX ENGINEERING ON OVERFLOW METABOLISM IN *ESCHERICHIA COLI***  
Goutham N. Vemuri, University of Georgia, USA  
Elliot Altman, Mark Eiteman, University of Georgia
- A-41 METABOLIC PATHWAY ANALYSIS FOR THE PRODUCTION OF SUCCINIC ACID BY *ACTINOBACILLUS SUCCINOGENES***  
Francisco G. Vital Lopez and Orfil G. Reynoso, University of Guadalajara, Mexico  
Carlos Pelayo Ortiz, Rosa I. Corona Gonzalez,  
Hector Gomez Hernandez, University of Guadalajara
- A-42 METABOLIC ENGINEERING OF FLAVONOID PRODUCTION IN *E. COLI***  
Kevin T. Watts and Claudia Schmidt-Dannert, University of Minnesota, USA
- A-43 TRANSCRIPTION PROFILING OF GLUCOSE REPRESSION MUTANTS OF *SACCHAROMYCES CEREVISIAE* GROWN IN CONTINUOUS CULTURES**  
Steen L. Westergaard, Technical University of Denmark, Denmark  
L. Olsson, J. Nielsen, Technical University of Denmark
- A-44 METABOLIC FLUX ANALYSIS OF *ACTINOBACILLUS SUCCINOGENES*: THE EFFECT OF DIFFERENT CARBON SOURCES**  
Jian Yi, MBI International, USA  
Michael V. Guettler, Susanne Kleff, MBI International
- A-45 BIOSYNTHESIS OF THERMALLY STABLE ENERGETIC COMPOUNDS VIA PATHWAY ENGINEERING**  
Huimin Zhao, University of Illinois, USA  
Wenjiao Zha, Zengyi Shao, University of Illinois,  
Chad A. Hansen, John W. Frost, Michigan State University
- A-46 PHYSIOLOGICAL EFFECTS OF INSERTING A CYTOSOLIC PATHWAY FOR SUCCINATE PRODUCTION IN *ASPERGILLUS NIGER***  
Willem de Jongh, Technical University of Denmark, Denmark  
Jens Nielsen, Technical University of Denmark
- A-47 MODULATING THE METABOLIC FLUX THROUGH THE BIOSYNTHESIS PATHWAYS OF BRANCHED-CHAIN AMINO ACIDS IN *CORYNEBACTERIUM GLUTAMICUM***  
Miroslav Pátek, Academy of Sciences of the Czech Republic, Czech Republic  
Veronika Elišáková, Jirí Holátko, Academy of Sciences of the Czech Republic
- A-48 RECONSTITUTION OF A L-LYSINE PRODUCING *CORYNEBACTERIUM GLUTAMICUM* MUTANT BY BEANS OF GENOME BREEDING**  
Satoshi Mitsuhashi, Kyowa Hakko Kogyo Co., Ltd.  
Junko Ohnishi, Mikio Hayashi, Kyowa Hakko Kogyo Co., Ltd.,  
Masato Ikeda, Shinshu University
- A-49 MINIATURIZED MULTIPLE REACTOR SYSTEM WITH MEMBRANE INLET MASS SPECTROMETRY FOR METABOLIC FLUX QUANTIFICATION BY ON-LINE CO<sub>2</sub> MASS ISOTOPOMER MEASUREMENTS**  
Tae Hoon Yang, Saarland University, Germany  
Christoph Wittmann, Elmar Heinzle, Saarland University

- A-50 METABOLIC NETWORKS FOR RATIONAL IMPROVEMENT OF ANTIBIOTIC PRODUCTION**  
Claudio Avignone-Rossa, University of Surrey, United Kingdom  
Michael E. Bushell, University of Surrey
- A-51 LARGE-SCALE MODELING OF THE NON-LINEAR ENZYMATIC REACTION KINETICS TO OPTIMIZE ENGINEERED PENTOSE FERMENTATION IN ZYMOMONAS MOBILIS**  
Dhinakar S. Kompala, University of Colorado – Boulder, USA  
Mehmet M. Altintas, University of Colorado – Boulder,  
Christine Eddy, Min Zhang,  
James D. McMillan, National Renewable Energy Laboratory
- A-52 ENGINEERING ANTIBIOTIC BIOSYNTHESIS IN *STREPTOMYCES COELICOLOR***  
Chiraphan Khannapho, University of Surrey, United Kingdom  
Michael E. Bushell, Claudio Avignone-Rossa, University of Surrey
- A-53 METABOLIC ENGINEERING OF *STREPTOMYCES CLAVULIGERUS* USING INTEGRATIVE FUNCTIONAL GENOMICS TECHNIQUES**  
C. J. M. Mercier, University of Surrey, United Kingdom  
Michael E. Bushell, Claudio Avignone-Rossa, University of Surrey
- A-54 METABOLIC FLUX ANALYSIS OF THE EFFECTS OF THERMAL INJURY AND INSULIN ON THE METABOLISM OF SKELETAL MUSCLE USING A PERFUSED RAT HINDQUARTER PREPARATION**  
Francois Berthiaume, MGH/HMS, USA  
Scott Banta, Tadaaki Yokoyama, Martin L. Yarmush, MGH/HMS
- A-55 UNIQUE PROPERTIES OF PANTOEA CITREA, A 2-KETO-L-GULONATE OVERPRODUCER**  
Fernando Valle, Genencor International, USA