

ICAP 2006

International Conference on Arginine and Pyrimidines

on molecular biology, microbiology, genetics, biochemistry, physiology, structural biology, medical, pharmaceutical agricultural and veterinary applications of arginine and pyrimidines

The Arginine/Pyrimidine Conferences are biennial meetings that started as Arginine Workshops four decades ago, organized by a group of microbiologists led by Werner Maas (New York University). The most recent meetings have been held in Valencia, Spain (2000), Cairo, Egypt (2002) and Rauschholzhausen, Germany (2004).

The 2006 meeting will be held from the **17th - 20th August in Lund, Sweden**, hosted by the Department of Cell and Organism Biology, Lund University (see also www.jubilekinase.com/argpyr). Over the last few years this meeting has attracted each time around 50 - 100 researchers from around the world for presentation and discussion of new and unpublished first class research. As a highlight of the 2006 meeting William Lipscomb (Harvard University, US; Nobel laureate 1976) will give the plenary lecture about his work on aspartate transcarbamylase (ATCase). Other invited presentations are:

“Arginine Lecture” by Marjolaine Crabeel (Bruxelles, Belgium)

“Pyrimidine Lecture” by Zee-Fen Chang (Taipei, Taiwan)

“Mary Ellen Jones Honorary Lecture” by Vicente Rubio (Valencia, Spain)

The ICAP 2006 organizing and steering committee

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Birgit Andersen, Lund University,

Olof Björnberg, Lund University, accomodation

Elizabeth Carrey, University College London

Wolfgang Knecht, Astra Zeneca R&D, Mölndal

Monica Löffler, Phillips-University Marburg, Past Chairman

Christine Malm, Lund University, registration fee

Birgitte Munch-Petersen, Roskilde University

Jan Piskur, Copenhagen, home page

and several other members of the Department of Cell and Organism Biology, Lund.

ICAP 2006 is sponsored by

AstraZeneca, Mölndal

Center for Research on Pharmaceuticals, Lund University

Department of Cell and Organism Biology, Lund University

Jubile Kinase, Copenhagen

ZGene, Copenhagen

Lund

Lund is situated in the centre of the attractive and spacious Öresund region in southern Sweden, only 60 km from Copenhagen (the capital of Denmark) and 15 km from Malmö (third largest city in Sweden). Lund can easily be reached by plane to the Copenhagen (Denmark) or Malmö (Sweden) airports, or by international trains. From the Copenhagen Airport (or Copenhagen H, the main station) there are frequent trains to Malmö and some of them even continue directly to Lund. The journey takes less than 60 minutes. From Malmö Airport there are frequent buses to Lund (and it takes app. 45 minutes to reach Lund).

From the Lund C station there are regular local buses, nr. 6, 20 or 166 to the venue site, Biologihuset (the closest bus stop is called Kårhuset). Alternatively, one can reach Biologihuset on feet from the station or a majority of hotels (located in the Centre) in less than 25 minutes. If you come by car, there are parking possibilities just beside Biologihuset (but ask for the P-permission at the registration desk).

Lund, a charming University town, has a history more than one thousand years old, with the largest Romanesque cathedral in Scandinavia, and it has earned a reputation for being a place where people, ideas, visions and creativity meet. Ideon (www.ideon.se) is one of the oldest science parks in Europe, strongly connecting academic research with industry needs.

Lund University (www.lu.se) was founded in 1666, but Lund already before had a rich tradition of teaching and knowledge. The Lund Cathedral School for education of priests was started in 1085 and may well be considered as Scandinavia's first University. Lund University is currently the largest in Scandinavia and students from all over the world attend, adding a youthful pulse to the city life, culture and entertainment. Among other things, Lund University has one of the oldest Genetics Departments, which is world-famous because the exact number of human chromosomes was determined there

Venue

The venue is situated at the Department of Cell and Organism Biology, Biologihuset (just opposite Kårhuset), and the address is: Sölvegatan 35, SE-22362 Lund <http://www.biol.lu.se/cellorgbiol/index.html> or <http://www.biol.lu.se/cellorgbiol/engindex.html>

Time

ICAP2006 will start with the registration on Thursday, 17th August, from early afternoon (1 p.m.), and the first session is scheduled for 6 p.m. The ICAP2006 will close down on Sunday, 20th August at app. 1 p.m., but will continue at 2 p.m. with the ATCase meeting.

Program

Lectures are either: 10 minutes (8 + 2), 15 minutes (12 + 3), 20 minutes (17 + 3), 30 minutes (25 + 5) or 45 minutes for plenary lectures (40 + 5). The session chairmen have the freedom to “re-tailor” their sessions, and will keep an eye on the timing of oral presentations. Please, give your Power Point presentations to the assistants well before your session starts.

All main meals, lunches and dinners, are provided by the organizers (see the details below), however, often drinks are not included and should be paid separately. Any diet requirements can be requested at the registration desk. Coffee and tea are served during longer breaks.

Thursday, 17th August

6.00 p.m. Introduction and welcome by the Organizing Committee
6.15 p.m. Welcome by the Faculty Dean, Torbjörn von Schantz
6.30 p.m. Plenary Lecture by W. Lipscomb (chaired by P. Reichard)

7.30 p.m. Reception at Biologihuset (drinks are sponsored by ZGene, buffet food is from Widerbergs, St. Petri Kyrkogatan 5, phone: 046 2112923 or 123235)

Friday, 18th August

8.30 – 10.15 Session: ARGININE AND PYRIMIDINES (chaired by E. Carrey)

8.30 - 9.15 Mary Ellen Jones Lecture by V. Rubio
9.15 - 9.45 H.G. Evans
9.45 - 10.15 G. Herve

10.15 - 10.45: Break

10.45 – 12.30 Session: DEOXYNUCLEOSIDE KINASES AND RELATED ENZYMES I
(chaired by K.F. Jensen)

H. Eklund (20'), C. Carnot (15'), M. Sandrini (15'), M. Welin (15'), A. Clausen (10'), Z. Gojkovic (20')

12.30 – Lunch (in Biologihuset, from Widerbergs)

2.00 – 3.30 Session: STRUCTURE-FUNCTION OF SALVAGE, DEAMINASE, SYNTHASE ENZYMES (chaired by M. Löffler)

K.S. Jensen (15'), P. Stenmark (15'), M. Thymark (15'), L. Wang (20'), M. Willemoes (15')

3.30 p.m. – 5.15 p.m. Session: POSTERS and Break
The authors should be present at their posters from 4.00 to 5.00 pm

5.15 – 7.00 Session: PYRIMIDINE *de novo* PATHWAY ENZYMES (chaired by H. Eklund)

D.R. Evans (20'), E. Masko (15'), M. Löffler (15'), J. Martinussen (15'), E.R. Kantrowitz (15'), A. Hortua-Triana (10'),

8.00 p.m.: dinner at Restaurang Stäket, Lund - 046-211 93 67
St. Södergatan 6, 22223 Lund; e-mail: staket@gmail.com; <http://www.staket.gastrogate.com/>,
drinks are not included

Saturday, 19th August

9.45 a.m.: Concert at Lund Cathedral

11.00 a.m.: Guided tour either at the Cathedral or at the Museum Kulturen (beside the Cathedral, <http://www.kulturen.com/>, please, register your preference)

12.00 p.m. – Lunch at Kulturen (Café beside the Museum Kulturen, Tegnersplatsen, phone: 046-146510)

2.00 – 4.00 Session: CATABOLISM (chaired by D. Evans)

R.D. Slocum (20') O. Bjornberg (15'), J. Rawls (15'), P. Reijntjens (10'), A. Kuilenburg (15'), B. Andersen (15'), G. Andersen (15')

4.00 – 4.30 Break

4.30 – 7.00 Session: ARGININE (chaired by W. Knecht)

M. Crabeel (Arginine lecture, 45'), R. Cunin (15'), M. Caldara (15'), H. Morizono I (15'), H. Morizono II (15'), N. Devroede (15'), Planell (10')

8.00 p.m.: dinner at the Grand Hotel, Bantorget 1, phone: 046-2806200, reservations@grandlundia.se, drinks are not included

Sunday, 20th August

8.30 – 10.45 Session: NUCLEOTIDE/NUCLEOTIDE POOLS (chaired by B. Munch-Petersen)

Z.-F. Chang (Pyrimidine lecture, 45'), D.H. Kotsis (15'), G. Pontarin (15'), C. Rampazzo (15'), L.J. Rasmussen (15'), K. Wallden (15'), M.E. Wales (15')

10.45 – 11.15 Break

11.15 – 12.30 Session: DEOXYNUCLEOSIDE KINASES AND RELATED ENZYMES II (chaired by S. Eriksson)

R. Zrenner (20'), B. Borgstroem (15'), G. Van Zanten (15'), L.E. Welin (15')

12.30 – CLOSING REMARKS by E. Carrey and lunch in Biologihuset (from Mormors Bageri, Knut den stores torg, 046-150815)

2.00 p.m.: ATCase meeting (continues at the same place)

Contributions

are listed in the alphabetical order according to the presenting author, P stands for poster preference (9), otherwise: oral presentation (47). In total: 56 abstracts have been received:

B. Andersen: Beta-alanine synthase in yeast shares a common origin with exopeptidases

G. Andersen: *Saccharomyces kluyveri* *PYD4* gene encodes a beta-alanine aminotransferase, utilizing the end-product of pyrimidine reductive pathway

O. Bjoernberg: A novel pathway for degradation of uracil in yeast

B. Borgstroem: Subcellular localization of multiple forms of *Drosophila melanogaster* uridylate/cytidylate kinase

M. Caldara: A mathematical model of arginine biosynthesis in *E. coli*

C. Carnrot: Exploring the structure-function relationship in thymidine kinase from *Ureaplasma urealyticum* (Parvum)

Z.-F. Chang: Mitotic control of dTTP pool by anaphase promoting complex/cyclosome (Pyrimidine Lecture)

A. Clausen: A novel positive selection system for deoxycytidine kinase activity in *E. coli*

M. Crabeel: Arginine metabolism in *Saccharomyces cerevisiae*: a survey of the knowledge aquired in the last decades (Arginine Lecture)

R. Cunin: The arginine regulon of *Escherichia coli*, whole system transcriptome analysis discovers new genes and provides an integrated view of arginine regulation

C. Desler: Characterization of nucleotide pools in cells with dysfunctional mitochondria (P)

N. Devroede: Protein induced DNA deformation of the *carAB* control region of *Escherichia coli*

H. Eklund: Structural studies of thymidine kinase from *Bacillus anthracis* and *B.cereus*

D.R. Evans: Activation of the latent *Aquifex aeolicus* dihydroorotase by protein-protein interactions and elevated pressure

H.G. Evans: A eucaryotic-like protein kinase and its cognate phosphatase regulates carbamoyl phosphate synthetase in the ancient hyperthermophile, *Aquifex aeolicus*

Z. Gojkovic: A novel thymidine kinase in enhanced gap junction mediated suicide gene therapy

G. Herve: Pyrimidine and arginine metabolism in the symbiosis between the deep-sea tube worm *Riftia pachytila* and its bacterial endosymbiont

A. Hortua-Triana: Immunolocalization of two enzymes of the pyrimidine biosynthetic pathway in *Toxoplasma gondii*

K.S. Jensen: Kinetic and structural investigation of uridylylate kinase from *Sulfolobus solfataricus*

A. Kadziola: Regulation of *Sulfolobus solfataricus* uracil phosphoribosyltransferase (P)

E.R. Kantrowitz: Direct observation of the allosteric transition of *E. coli* aspartate transcarbamoylase by stopped-flow small-angle-X-ray scattering

D.H. Kotsis: Expression of CTP synthase isoenzymes in normal and neoplastic breast cells

A.B.P van Kuilenburg: Dihydropyrimidinase deficiency in two siblings

W. N. Lipscomb: Plenary Lecture on ATCase

M. Loeffler: Expression of human dihydroorotate dehydrogenase in the Basidiomycete *Ustilago maydis*: a suitable model system for *in vivo* inhibitor screening

J. Martinussen: The orotate transporter *oroP* from *Lactococcus lactis* is required for orotate uptake and can be used both as a food-grade selection and counter-selection marker

E. Masko: Regulation of pyrimidine biosynthesis: the intracellular location of the phosphorylated forms of CAD

J. Massant: Arginine regulation in *Thermotoga neapolitana* (P)

N.E. Mikkelsen: Exploring the active site of the multifunctional *Drosophila* deoxynucleoside kinase complexed with several medically interesting nucleoside analogues as Gemzar, Zalcitabine, Floxuridine and BVDU (P)

A.L. Moeller: C-terminal structure and effect on stability of the deoxyribonucleoside kinase from *Drosophila melanogaster* (P)

H. Morizono: Discovery and characterization of a bifunctional ArgA-B in *Xanthomonas campestris*

H. Morizono: Structural and biochemical properties of two novel transcarbamylases in the arginine biosynthetic pathway

R. Planell: The arginine dihydrolase pathway in *Mycoplasma penetrans*

G. Pontarin: Origin of mitochondrial thymidine triphosphate in non proliferating cells

C. Rampazzo: Mitochondrial thymidine kinase: a new assay to measure enzyme activity in crude extracts and downregulation by RNAi in cultured cells

L. J. Rasmussen: Mitochondria as determinant of nucleotide metabolism and chromosomal stability

J. Rawls: Dihydropyrimidinase and CRMP proteins are products of a single gene in *Drosophila melanogaster*

P. Reijnt: Dihydropyrimidinase and collapsing response mediator protein come from the same gene, but perform different functions in *Drosophila melanogaster*

V. Rubio: Structure-based understanding of biological function in the context of arginine and pyrimidine metabolism (Mary Ellen Jones Lecture)

M.P.B. Sandrini: Antibactericidal activity of pyrimidine nucleoside analogs

T. Skovgaard: Characterization of wild-type and mutant TK1-type kinases from human and *C. elegans* (P)

R.D. Slocum: Functional characterization of dihydropyrimidine dehydrogenase and pyrimidine catabolism in *Arabidopsis*

P. Stenmark: Two Roads to Inosine Monophosphate (IMP)

M. Thunoe: Is the new deoxyribonucleoside kinase found in *D. melanogaster* due to *Wolbachia* infection in the flies (P)

M. Thymark: Characterization of a bifunctional dCTP deaminase-dUTPase from *Mycobacterium tuberculosis*

K. Wallden: Crystal structures of human 5'-nucleotidases

M.E. Wales: Dynamics of the regulation of pyrimidine metabolic flux in response to perturbations at different growth rates

L. Wang: A new family of flavin-dependent thymidylate synthase in pathogenic Mycoplasmas I

R. Wehelie: A new family of flavin-dependent thymidylate synthase in pathogenic Mycoplasmas II

L.E. Welin: Investigation of active site mutants of *Drosophila melanogaster* deoxyribonucleoside kinase – a kinetic and structural study (P)

L.E. Welin: Investigation of uridine monophosphate kinase from *Ureaplasma urealyticum*

M. Welin: Structural investigation of a mycoplasmic deoxyadenosine kinase

M. Willemoes: Regulation of dCTP deaminase from *Escherichia coli* by non-allosteric dTTP binding to an inactive form of the enzyme

E. Zameitat: Biochemical characterization of dihydroorotate dehydrogenase from the Basidiomycetous plant pathogen *Ustilago maydis* (P)

G. van Zanten: New deoxyribonucleoside kinase in *D. melanogaster*?

R. Zrenner: Pyrimidine nucleotide kinases and primary plant metabolism