



GORDON RESEARCH CONFERENCES *frontiers of science*

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## 2001 GORDON RESEARCH CONFERENCE

on Archaea: Ecology, Metabolism

### FINAL PROGRESS REPORT

DOE

DE-FG02-01ER15160

The Gordon Research Conference (GRC) on Archaea: Ecology, Metabolism was held at Proctor Academy, Andover, New Hampshire, August 5-10, 2001. The conference was well attended with 135 participants (list enclosed). The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both US and foreign scientists, senior researchers, young investigators, and students.

In designing the formal speakers program, emphasis was placed on current unpublished research and discussion of the future target areas in this field. There was a conscious effort to stimulate lively discussion about the key issues in the field today. Time for formal presentations was limited in the interest of group discussions. In order that more scientists could communicate their most recent results, poster presentation time was scheduled. In addition to these formal interactions, "free time" was scheduled to allow informal discussions. Such discussions are fostering new collaborations and joint efforts in the field (program enclosed).

I want to personally thank you for your support of this Conference. As you know, in the interest of promoting the presentation of unpublished and frontier-breaking research, Gordon Research Conferences does not permit publication of meeting proceedings. If you wish any further details, please feel free to contact me. Thank you.

Charles Daniels  
Conference Chair

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# ***Archaea: Ecology, Metabolism and Molecular Biology***

Proctor Academy  
Andover, NH  
August 5-10, 2001

Charles J. Daniels, Chair  
Patrick Forterre, Vice-Chair

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## **Support:**

- Gordon Research Conferences
  - Department of Energy
  - National Science Foundation
  - Ohio State University
  - New England BioLabs, Inc.
  - Entigen Corporation
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Sunday, August 5

## **EVENING      Session I: Ecology and Genetic Elements**

Chair: **S. Zinder**

- 7:30 PM      **K. Stetter**  
Novel cultivated hyperthermophiles including an archaeal symbiont
- 8:00          **A. Reysenbach**  
An emerging view of archaeal diversity at deep-sea vents: Where is *Thermococcus*?
- 8:30          **P. Blum**  
Archaeal mercury resistance
- 9:00          **K. Stedman**  
Sulfolobus viral biodiversity
- 9:30          Chair Summary and Discussion
- 9:45 PM      Reception

Monday, August 6

## **MORNING      Session I: Genomics and Evolution**

Chair: **H.P. Klenk**

- 9:00 AM      **W.F. Doolittle**  
Archaeal and bacterial thermophiles - the hotbed of gene exchange
- 9:30          **H. Philippe**  
Where are Archaea in the universal tree of life?
- 10:00        **G. Olsen**  
The persistence of an essence: Archaea as defined by their genomes
- 10:30        Coffee
- 10:45        **R. Garrett**  
Sulfolobus solfataricus: From the genome to cell biology
- 11:15        **G. Gottschalk**  
The genome of *Methanosarcina mazei*, the largest assembly of genetic information in an archaeon

- 11:45 **S. DasSarma/S. Kennedy**  
The Halobacterium genome
- 12:15 Chair Summary and Discussion
- 4:30-6:00 PM **Poster Session I: Ecology, Genomes and Gene Regulation**
- EVENING Session II: Replication and Recombination**  
Chair: **R. Bernander**
- 7:30 PM **H. Myllykallio**  
DNA precursor synthesis and replication initiation in hyperthermophilic Archaea
- 8:00 **Z. Kelman**  
Autophosphorylation of the archaeal Cdc6 homologues is regulated by DNA
- 8:30 **M.F. White**  
Archaeal DNA recombination and repair proteins
- 9:00 **Y. Ishino**  
Molecular analyses of proteins involved in the archaeal DNA replication: construction of an in vitro DNA replication system
- 9:30 Chair Summary and Discussion

**Tuesday, August 7**

- MORNING Session I: Chromatin and Transcription**  
Chair: **E. Conway de Macario**
- 9:00 AM **K. Sandman**  
Archaeal DNA packaging by archaeal nucleosomes
- 9:30 **D. Musgrave**  
The dynamic archaeal nucleoid: novel responses to environmental stress
- 10:00 **S. Bell**  
Mechanisms of transcription
- 10:30 Coffee
- 10:45 **C. Hebbeln**  
Mechanism and regulation of Pyrococcus transcription
- 11:15 **J. van der Oost**  
Towards understanding the Lrp/AsnC family of transcription regulators in Bacteria and Archaea
- 11:45 **F. Pfeifer**  
Regulation of transcription in halophilic Archaea
- 12:15 Chair Summary and Discussion

4:30-6:00 PM. **Poster Session I cont. Ecology, Genomes and Gene Regulation**

- EVENING Session II: Gene Regulation**  
Chair: **A. Klein**
- 7:30 PM **M. Adams**  
Genome-Based Analyses of Pyrococcus furiosus: Insights into hydrogen and sulfur metabolism
- 8:00 **J. Soppa**  
Regulation of expression of energy transducing pathways in haloarchaea.
- 8:30 **R. Shand**  
Halocin genes provide a genetic approach for understanding stationary phase gene regulation in the haloarchaea.
- 9:00 **B. Siebers**  
Regulation of carbohydrate metabolism in the hyperthermophilic Crenarchaeon, Thermoproteus tenax
- 9:30 Chair Summary and Discussion

**Wednesday, August 8**

- MORNING Session I: Post-Transcription Processing**  
Chair: **P. Dennis**
- 9:00 AM **D. Söll**

- Genomics and the renaissance of aminoacyl-tRNA synthesis
- 9:30 **J. Krzycki**  
Reading stop codons in methyltransferase genes
- 10:00 **A. Ohmer**  
Archaeal RNP complexes containing methylation guide RNAs
- 10:30 Coffee
- 10:45 **B. Clouet d' Orval**  
Archaeal C/D box small RNAs guiding tRNA ribose methylation
- 11:15 **W. Baumeister**  
The protease complement of *Thermoplasma acidophilum*
- 11:45 **J. Maupin-Furrow**  
Archaeal proteasomes and proteasome-activating nucleotidases
- 12:15 Chair Summary and Discussion
- 4:30-6:00 PM **Poster Session II: Biochemistry and Metabolism**
- EVENING **Session II: Proteomics and Protein Structure**  
Chair: W. Whitman
- 7:30 PM **E. Koonin**  
Evolutionary implications of genome-wide comparisons of archaeal proteins
- 8:00 **A. Edwards**  
Structural proteomics of an archaeon
- 8:30 **M. Danson**  
Thermoactivity and thermostability of archaeal enzymes: what's the connection?
- 9:00 **R.K. Thauer**  
Structure and function of a metal free hydrogenase in methanogenic Archaea
- 9:30 Chair Summary and Discussion

Thursday, August 9

- MORNING **Session I: Metabolism and Physiology**  
Chair: R. Thauer
- 9:00 AM **D. Oesterheldt**  
From genomics to physiology: Halophilic Archaea
- 9:30 **J. Spudich**  
The expanding family of rhodopsins in Archaeal, Bacterial, and Eukaryotic microbes
- 10:00 **F.R. Tabita**  
Rubisco in Archaea
- 10:30 Coffee
- 10:45 **W. Metcalf**  
Genetic analysis of methanogenesis in *Methanosarcina acetivorans*
- 11:15 **G. Juez**  
The DnaK chaperone system in halophilic Archaea: Insights on its biological role and protein based phylogeny
- 11:45 **M. Mevarch**  
Cell-density dependent gene regulation in the halophilic archaeon *Haloferax volcanii*
- 12:15 Chair Summary and discussion
- 4:00 PM Business Meeting
- 4:30-6:00 PM **Poster Session II cont. Biochemistry and Metabolism**
- EVENING **Session II Featured Speaker**
- 8:00 PM **Wolfram Zillig**  
Archaeal viruses, witnesses of prebiotic evolution?



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Last Updated: 7/26/01 by [Jeff Mead](#)

# ARCHAEA: ECOLOGY, METABOLISM & MOLECULAR BIOLOGY

PROCTOR ACADEMY  
(05-Aug-01) - (10-Aug-01)

This was the final registration list for the 2001 Conference on  
ARCHAEA: ECOLOGY, METABOLISM & MOLECULAR BIOLOGY.

Name	Organization	Participation	Status
MICHAEL W ADAMS	UNIVERSITY OF GEORGIA	Speaker	Registered
SONJA-VERENA ALBERS	UNIVERSITY OF GRONINGEN	Poster Presenter	Registered
THORSTEN ALLERS	UNIVERSITY OF NOTTINGHAM	Poster Presenter	Registered
SONIA L BARDY	QUEEN'S UNIVERSITY	Poster Presenter	Registered
WOLFGANG P BAUMEISTER	MAX-PLANCK-INSTITUT FUER BIOCHEMIE	Speaker	Registered
STEPHEN D BELL	CAMBRIDGE UNIVERSITY	Speaker	Registered
ROLF BERNANDER	UPPSALA UNIVERSITY	Discussion Leader	Registered
BRIAN R BERQUIST	UNIVERSITY OF MASSACHUSETTS AMHERST	Poster Presenter	Registered
WANLI BI	APPLIED BIOSYSTEMS	Attendee	Registered
KELLY A BIDLE	RIDER UNIVERSITY	Poster Presenter	Registered
GILI BITAN	TEL-AVIV UNIVERSITY	Attendee	Registered
PAUL BLUM	UNIVERSITY OF NEBRASKA	Speaker	Registered
YAN BOUCHER	DALHOUSIE UNIVERSITY	Poster Presenter	Registered
FRANCOIS L BOUDSOCQ	NIH	Poster Presenter	Registered
ARJEN BRINKMAN	WAGENINGEN AGRICULTURAL UNIVERSITY	Poster Presenter	Registered
CYRIL BUHLER	UNIVERSITÉ PARIS SUD ORSAY	Poster Presenter	Registered
RAFFAELE CANNIO	IBPE	Poster Presenter	Registered
PETER T CHIVERS	MIT	Poster Presenter	Registered
BEATRICE CLOUET	LBME, CNRS	Speaker	Registered
D'ORVAL			
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ISABELL DAHLKE	UNIVERSITY OF KIEL	Poster Presenter	Registered
CHARLES J DANIELS	OHIO STATE UNIVERSITY	Chair	Registered
MICHAEL J DANSON	UNIVERSITY OF BATH	Speaker	Registered
SHILADITYA DAS SARMA	CENTER OF MARINE BIOTECHNOLOGY	Speaker	Registered
SIMON DE VRIES	TECHNICAL UNIVERSITY DELFT	Poster Presenter	Registered
PATRICK P DENNIS	NSF	Attendee	Registered
JOCELYNE DIRUGGIERO	UNIVERSITY OF MARYLAND	Poster Presenter	Registered
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ALED EDWARDS	UNIVERSITY OF TORONTO	Speaker	Registered
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MICHAEL W FINN	THE OHIO STATE UNIVERSITY	Poster Presenter	Registered
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WARREN GARDNER	INTEGRATED GENOMICS INC.	Poster Presenter	Registered
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SIMONIDA GENCIC	UNIFORMED SERVICES UNIVERSITY	Poster Presenter	Registered

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MUKHOPADHYAY			
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IMKE SCHROEDER	UCLA	Poster Presenter	Registered
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