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**GORDON RESEARCH CONFERENCES** *frontiers of science*  
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**Nancy Ryan Gray, Ph.D.**  
Director

**2009 GORDON RESEARCH CONFERENCE**  
**on**  
**Archaea: Ecology, Metabolism and Molecular Biology**  
**FINAL PROGRESS REPORT**  
**DEPARTMENT OF ENERGY**  
DE-SC0001708

The Gordon Research Conference (GRC) on **Archaea: Ecology, Metabolism and Molecular Biology** was held at Waterville Valley Resort, Waterville, NH from 07/28/2009 thru 08/02/2009. The Conference was well-attended with 141 participants (attendees list attached). The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both U.S. 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In designing the formal speakers program, emphasis was placed on current unpublished research and discussion of the future target areas in this field.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. Attached is a copy of the formal schedule and speaker program and the poster program. 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.

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 As you know, in the interest of promoting the presentation of unpublished and frontier-breaking research, Gordon Research Conferences does not permit publication of meeting proceedings.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.

Sincerely,

JULIE MAUPIN-FURLOW  
University Of  
Florida

## Registration List

| Name                          | Organization                                      | Participation     |
|-------------------------------|---------------------------------------------------|-------------------|
| <u>Julie Maupin-Furlow</u>    | UNIVERSITY OF FLORIDA                             | Chair             |
| <u>Bettina Siebers</u>        | UNIVERSITAET DUISBURG-ESSEN                       | Chair             |
| <u>Haruyuki Atomi</u>         | KYOTO UNIVERSITY                                  | Vice Chair        |
| <u>Kenneth M. Stedman</u>     | PORTLAND STATE UNIVERSITY                         | Vice Chair        |
| <u>Kelly A. Bidle</u>         | RIDER UNIVERSITY                                  | Discussion Leader |
| <u>Jerry Eichler</u>          | BEN GURION UNIVERSITY                             | Discussion Leader |
| <u>Biswarup Mukhopadhyay</u>  | VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIV.    | Discussion Leader |
| <u>Gary Olsen</u>             | UNIVERSITY OF ILLINOIS                            | Discussion Leader |
| <u>Francine Perler</u>        | NEW ENGLAND BIOLABS                               | Discussion Leader |
| <u>John N. Reeve</u>          | OHIO STATE UNIVERSITY                             | Discussion Leader |
| <u>Karl O. Stetter</u>        | UNIVERSITY OF REGENSBURG                          | Discussion Leader |
| <u>Rolf K. Thauer</u>         |                                                   | Discussion Leader |
| <u>William B. Whitman</u>     | UNIVERSITY OF GEORGIA                             | Discussion Leader |
| <u>Michael W. Adams</u>       | UNIVERSITY OF GEORGIA                             | Speaker           |
| <u>Sonja-Verena Albers</u>    | MAX PLANCK INSTITUTE FOR TERRESTRIAL MICROBIOLOGY | Speaker           |
| <u>Thorsten Allers</u>        | UNIVERSITY OF NOTTINGHAM                          | Speaker           |
| <u>Garo Antranikian</u>       | HAMBURG UNIVERSITY OF TECHNOLOGY                  | Speaker           |
| <u>Stephen D. Bell</u>        | SIR WILLIAM DUNN SCHOOL OF PATHOLOGY              | Speaker           |
| <u>Elisabetta Bini</u>        | RUTGERS UNIVERSITY                                | Speaker           |
| <u>Bernard A. Connolly</u>    | UNIVERSITY OF NEWCASTLE                           | Speaker           |
| <u>Shiladitya Dassarma</u>    | UNIVERSITY OF MARYLAND BIOTECHNOLOGY INSTITUTE    | Speaker           |
| <u>James Elkins</u>           | OAK RIDGE NATIONAL LABORATORY                     | Speaker           |
| <u>James G. Ferry</u>         | PENNSYLVANIA STATE UNIVERSITY                     | Speaker           |
| <u>David E. Graham</u>        | UNIVERSITY OF TEXAS AT AUSTIN                     | Speaker           |
| <u>Norbert Hampp</u>          | UNIVERSITY OF MARBURG                             | Speaker           |
| <u>Harold Huber</u>           | UNIVERSITY OF REGENSBURG                          | Speaker           |
| <u>Elizabeth A. Karr</u>      | UNIVERSITY OF OKLAHOMA                            | Speaker           |
| <u>Robert M. Kelly</u>        | NORTH CAROLINA STATE UNIVERSITY                   | Speaker           |
| <u>Zvi Kelman</u>             | UNIVERSITY OF MARYLAND BIOTECHNOLOGY INSTITUTE    | Speaker           |
| <u>Eugene Koonin</u>          | NIH                                               | Speaker           |
| <u>John A. Leigh</u>          | UNIVERSITY OF WASHINGTON                          | Speaker           |
| <u>Paola Londei</u>           | UNIVERSITY OF ROME                                | Speaker           |
| <u>William W. Metcalf</u>     | UNIVERSITY OF ILLINOIS                            | Speaker           |
| <u>Volker Mueller</u>         | UNIVERSITY FRANKFURT                              | Speaker           |
| <u>Aharon Oren</u>            | INSTITUTE OF LIFE SCIENCES                        | Speaker           |
| <u>Felicitas Pfeifer</u>      | TECHNICAL UNIVERSITY DARMSTADT                    | Speaker           |
| <u>Friedhelm Pfeiffer</u>     | MAX-PLANCK INSTITUTE OF BIOCHEMISTRY              | Speaker           |
| <u>Mechthild Pohlschroder</u> | UNIVERSITY OF PENNSYLVANIA                        | Speaker           |

|                                             |                                                   |                  |
|---------------------------------------------|---------------------------------------------------|------------------|
| <b><u>David Prangishvili</u></b>            | INSTITUTE PASTEUR                                 | Speaker          |
| <b><u>Anna-Louise Reysenbach</u></b>        | PORTLAND STATE UNIVERSITY                         | Speaker          |
| <b><u>Christa Schleper</u></b>              | UNIVERSITY OF VIENNA                              | Speaker          |
| <b><u>Ruth A. Schmitz-Streit</u></b>        | UNIVERSITY OF KIEL                                | Speaker          |
| <b><u>Joerg Soppa</u></b>                   | GOETHE-UNIVERSITY                                 | Speaker          |
| <b><u>Michael Terns</u></b>                 | UNIVERSITY OF GEORGIA                             | Speaker          |
| <b><u>Michael Thomm</u></b>                 | UNIVERSITAT REGENSBURG                            | Speaker          |
| <b><u>John Van Der Oost</u></b>             | WAGENINGEN UNIVERSITY                             | Speaker          |
| <b><u>Robert H. White</u></b>               | VIRGINIA POLYTECHNIC INSTITUTE & STATE UNIVERSITY | Speaker          |
| <b><u>Malcolm F. White</u></b>              | ST ANDREWS UNIVERSITY                             | Speaker          |
| <b><u>Shigeyuki Yokoyama</u></b>            | RIKEN SYSTEMS AND STRUCTURAL BIOLOGY CENTER       | Speaker          |
| <b><u>Beate Averhoff</u></b>                | UNIVERSITY OF FRANKFURT                           | Poster Presenter |
| <b><u>Dominik Barthelme</u></b>             | UNIVERSITY OF FRANKFURT                           | Poster Presenter |
| <b><u>Mehmet Berkmen</u></b>                | NEW ENGLAND BIOLABS                               | Poster Presenter |
| <b><u>David L. Bernick</u></b>              | UNIVERSITY OF CALIFORNIA, SANTA CRUZ              | Poster Presenter |
| <b><u>Fabian Blombach</u></b>               | MICROBIOLOGY, WAGENINGEN UR                       | Poster Presenter |
| <b><u>Benjamin Bolduc</u></b>               | MONTANA STATE UNIVERSITY                          | Poster Presenter |
| <b><u>Elizaveta Bonch-Osmolovskaya</u></b>  | RUSSIAN ACADEMY OF SCIENCE                        | Poster Presenter |
| <b><u>Isaac Cann</u></b>                    | UNIVERSITY OF ILLINOIS                            | Poster Presenter |
| <b><u>Brochier Celine</u></b>               | UNIVERSITE DE PROVENCE                            | Poster Presenter |
| <b><u>Patricia P. Chan</u></b>              | UNIVERSITY OF CALIFORNIA SANTA CRUZ               | Poster Presenter |
| <b><u>Daniel Charlier</u></b>               | VRIJE UNIVERSITEIT BRUSSEL                        | Poster Presenter |
| <b><u>Charlotte R. Cooper</u></b>           | NORTH CAROLINA STATE UNIVERSITY                   | Poster Presenter |
| <b><u>Hanan M. Dahche</u></b>               | VIRGINIA TECH                                     | Poster Presenter |
| <b><u>Philippe Deschamps</u></b>            | UNIVERSITE PARIS XI / CNRS                        | Poster Presenter |
| <b><u>Claudia Ehlers</u></b>                | UNIVERSITY KIEL                                   | Poster Presenter |
| <b><u>Rosa María MARTINEZ. Espinosa</u></b> | UNIVERSITY OF ALICANTE                            | Poster Presenter |
| <b><u>Gilberto E. Flores</u></b>            | PORTLAND STATE UNIVERSITY                         | Poster Presenter |
| <b><u>Ryosuke Fujikane</u></b>              | UNIVERSITY PARIS-SUD 11                           | Poster Presenter |
| <b><u>Kosuke Fujishima</u></b>              | KEIO UNIVERSITY                                   | Poster Presenter |
| <b><u>Ncebakazi Galada</u></b>              | UNIVERSITY OF THE WESTERN CAPE                    | Poster Presenter |
| <b><u>Marsha Gaston</u></b>                 | THE OHIO STATE UNIVERSITY                         | Poster Presenter |
| <b><u>Abhrajyoti Ghosh</u></b>              | MAX-PLANCK-INSTITUTE FOR TERRESTRIAL MICROBIOLOGY | Poster Presenter |
| <b><u>Andrea Gorrell</u></b>                | UNIVERSITY OF NORTHERN BRITISH COLUMBIA           | Poster Presenter |
| <b><u>Gabriele Gucciardo</u></b>            | UNIVERSITY COLLEGE DUBLIN                         | Poster Presenter |
| <b><u>Robert P. Gunsalus</u></b>            | UCLA                                              | Poster Presenter |
| <b><u>Ilka Heinemann</u></b>                | YALE UNIVERSITY                                   | Poster Presenter |
| <b><u>Ruth S.. Heyer</u></b>                | UNIVERSITY OF ULM                                 | Poster Presenter |
| <b><u>Cedric FV. Hobel</u></b>              | MAX PLANCK INSTITUTE FOR DEVELOPMENTAL BIOLOGY    | Poster Presenter |
| <b><u>Michael J.. Hohn</u></b>              | YALE UNIVERSITY                                   | Poster Presenter |

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|-----------------------------------------|-----------------------------------------------------|------------------|
| <b><u>James F. Holden</u></b>           | UNIVERSITY OF MASSACHUSETTS                         | Poster Presenter |
| <b><u>Yoshizumi Ishino</u></b>          | KYUSHU UNIV.                                        | Poster Presenter |
| <b><u>Chijioke J. Joshua</u></b>        | UC - BERKELEY                                       | Poster Presenter |
| <b><u>Akio Kanai</u></b>                | KEIO UNIVERSITY                                     | Poster Presenter |
| <b><u>Sung Gyun Kang</u></b>            | KOREA OCEAN RESEARCH AND DEVELOPMENT INSTITUTE      | Poster Presenter |
| <b><u>Yun JAE. Kim</u></b>              | KOREA OCEAN RESEARCH                                | Poster Presenter |
| <b><u>Theresa Kouril</u></b>            | UNIVERSITY OF DUISBURG-ESSEN                        | Poster Presenter |
| <b><u>Mei-Chin Lai</u></b>              | NATIONAL CHUNG HSING UNIVERSITY                     | Poster Presenter |
| <b><u>Martin Lawrence</u></b>           | MONTANA STATE UNIVERSITY                            | Poster Presenter |
| <b><u>Jung HYUN. Lee</u></b>            | KOREA OCEAN RESEARCH                                | Poster Presenter |
| <b><u>Daniel J. Lessner</u></b>         | UNIVERSITY OF ARKANSAS                              | Poster Presenter |
| <b><u>Kathryn J.. Leyva</u></b>         | MIDWESTERN UNIVERSITY                               | Poster Presenter |
| <b><u>Yuchen Liu</u></b>                | UNIVERSITY OF GEORGIA                               | Poster Presenter |
| <b><u>Purificacion Lopez-Garcia</u></b> | UNIVERSITE PARIS-SUD BATIMENT 360                   | Poster Presenter |
| <b><u>Kira S. Makarova</u></b>          | NATIONAL CENTER FOR BIOTECHNOLOGY INFORMATION, NIH  | Poster Presenter |
| <b><u>Dominic Mao</u></b>               | UNIVERSITY OF CINCINNATI                            | Poster Presenter |
| <b><u>Hugo Maruyama</u></b>             | KYOTO UNIVERSITY                                    | Poster Presenter |
| <b><u>Kohei Matsubara</u></b>           | UNIVERSITY OF DUISBURG-ESSEN                        | Poster Presenter |
| <b><u>Florian Mayer</u></b>             | GOETHE-UNIVERSITY FRANKFURT                         | Poster Presenter |
| <b><u>David Moreira</u></b>             | UNIVERSITE PARIS-SUD, BAT. 360                      | Poster Presenter |
| <b><u>Patrick M. O'Donoghue</u></b>     | YALE UNIVERSITY                                     | Poster Presenter |
| <b><u>Tanja M. Oberwinkler</u></b>      | MAX PLANCK INSTITUTE OF BIOCHEMISTRY                | Poster Presenter |
| <b><u>Ronald F. Peck</u></b>            | LAWRENCE UNIVERSITY                                 | Poster Presenter |
| <b><u>Laia Pedro-Roig</u></b>           | UNIVERSIDAD DE ALICANTE                             | Poster Presenter |
| <b><u>Eveline Peeters</u></b>           | VRIJE UNIVERSITEIT BRUSSEL                          | Poster Presenter |
| <b><u>Anna Perevalova</u></b>           | WINOGRADSKY INSTITUTE OF MICROBIOLOGY, RAS          | Poster Presenter |
| <b><u>John J. Perona</u></b>            | UNIVERSITY OF CALIFORNIA, SANTA BARBARA             | Poster Presenter |
| <b><u>Gabriela Phillips</u></b>         | UNIVERSITY OF FLORIDA                               | Poster Presenter |
| <b><u>Mircea Podar</u></b>              | OAK RIDGE NATIONAL LABORATORY                       | Poster Presenter |
| <b><u>Sohail A. Qureshi</u></b>         | AGA KHAN UNIVERSITY                                 | Poster Presenter |
| <b><u>Lennart Randau</u></b>            | YALE UNIVERSITY                                     | Poster Presenter |
| <b><u>Matthew J. Reichlen</u></b>       | PENN STATE UNIVERSITY                               | Poster Presenter |
| <b><u>Jason R. Rodriguez</u></b>        | VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY | Poster Presenter |
| <b><u>Elina Roine</u></b>               | UNIVERSITY OF HELSINKI                              | Poster Presenter |
| <b><u>Ron Ronimus</u></b>               | AGRESEARCH LTD.                                     | Poster Presenter |
| <b><u>Michael Rother</u></b>            | GOETHE-UNIVERSITÄT FRANKFURT                        | Poster Presenter |
| <b><u>Cynthia J. Sakofsky</u></b>       | UNIVERSITY OF CINCINNATI                            | Poster Presenter |
| <b><u>Rachel Y. Samson</u></b>          | OXFORD UNIVERSITY                                   | Poster Presenter |
| <b><u>Thomas J. Santangelo</u></b>      | THE OHIO STATE UNIVERSITY                           | Poster Presenter |
| <b><u>Catherine A. Sarisky</u></b>      | ROANOKE COLLEGE                                     | Poster Presenter |

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|-------------------------------------|-------------------------------------------------------|------------------|
| <b><u>Katharina Schlegel</u></b>    | GOETHE-UNIVERSITY FRANKFURT                           | Poster Presenter |
| <b><u>Marie-Claude Serre</u></b>    | CNRS, UNIVERSITE PARIS SUD                            | Poster Presenter |
| <b><u>Katherine E. Sherwood</u></b> | UNIVERSITY OF FLORIDA DEPT. MICRBIOL.<br>AND CELL SCI | Poster Presenter |
| <b><u>Anja Spang</u></b>            | UNIVERSITYOF VIENNA                                   | Poster Presenter |
| <b><u>Suharti Suharti</u></b>       | THE PENNSYLVANIA STATE UNIVERSITY                     | Poster Presenter |
| <b><u>Junsong Sun</u></b>           | UNIVERSITY OF GEORGIA                                 | Poster Presenter |
| <b><u>Dwi Susanti</u></b>           | VIRGINIA POLYTECHNIC INST. AND STATE<br>UNIVERSITY    | Poster Presenter |
| <b><u>Orsolya Szabo</u></b>         | KARL FRANZENS UNIVERSITY                              | Poster Presenter |
| <b><u>Sari Timonen</u></b>          | UNIVERSITY OF HELSINKI                                | Poster Presenter |
| <b><u>Kazuo Tori</u></b>            | NEW ENGLAND BIOLABS                                   | Poster Presenter |
| <b><u>Michael A. Trakselis</u></b>  | UNIVERSITY OF PITTSBURGH                              | Poster Presenter |
| <b><u>Manuela Tripepi</u></b>       | UNIVERSITY OF PENNSYLVANIA                            | Poster Presenter |
| <b><u>Venkata R. Vepachedu</u></b>  | PENNSYLVANIA STATE UNIVERSITY                         | Poster Presenter |
| <b><u>Aramis A. Villafane</u></b>   | RUTGERS UNIVERSITY                                    | Poster Presenter |
| <b><u>Mingyu Wang</u></b>           | PENNSYLVANIA STATE UNIVERSITY                         | Poster Presenter |
| <b><u>Mark Young</u></b>            | MONTANA STATE UNIVERISTY                              | Poster Presenter |
| <b><u>Sophie Yurist-Doutsch</u></b> | BEN GURION UNIVERSITY OF THE NEGEV                    | Poster Presenter |
| <b><u>Melanie Zaparty</u></b>       | UNIVERSITY OF DUISBURG-ESSEN,<br>DUISBURG             | Poster Presenter |
| <b><u>Bonnie L. Chaban</u></b>      | UNIVERSITY OF SASKATCHEWAN                            | Attendee         |
| <b><u>Joseph A. Krzycki</u></b>     | OHIO STATE UNIVERSITY                                 | Attendee         |
| <b><u>Moshe Mevarech</u></b>        | TEL-AVIV UNIVERSITY                                   | Attendee         |
| <b><u>Kevin R. Sowers</u></b>       | UNIVERSITY OF MARYLAND<br>BIOTECHNOLOGY INSTITUTE     | Attendee         |
| <b><u>Robert J. Stack</u></b>       | US DEPARTMENT OF ENERGY                               | Attendee         |

Archaea, one of three major evolutionary lineages of life, are a fascinating and diverse group of microbes with deep roots overlapping those of eukaryotes. The focus of the "Archaea: Ecology Metabolism & Molecular Biology" GRC conference expands on a number of emerging topics highlighting new paradigms in archaeal metabolism, genome function and systems biology; information processing; evolution and the tree of life; the ecology and diversity of archaea and their viruses; and industrial applications. The strength of this conference lies in its ability to couple a field with a rich history in high quality research with new scientific findings in an atmosphere of stimulating exchange. This conference remains an excellent opportunity for younger scientists to interact with world experts in this field.

The Archaeal Gordon Research Conference brings more than 35 internationally renowned speakers who will review the current state of progress and knowledge in the field of the metabolism, molecular biology and ecology of archaea. Leading scientists will present recent unpublished developments in fundamental aspects as well as key advances in industrial applications of archaea. Topics of archaea to be addressed will include:

- systems biology and genome function
- ecology and diversity of archaea and their viruses
- enzyme structure and function
- transcription and gene regulation
- translation and post-transcriptional modification
- physiology and regulation of metabolism
- extremophiles and biotechnology applications
- replication, repair and recombination
- evolution and the tree of life

The GRC on Archaea also invites presentations in the form of posters, from which 3-4 student oral talks will be selected.

## SUNDAY

2:00 pm - 9:00 pm Arrival and Check-in (Office Closed 6:00 pm - 7:00 pm)

6:00 pm Dinner

7:30 pm - 7:40 pm Welcome / Introductory Comments by GRC Site Staff

7:40 pm - 8:30 pm

### KEYNOTE SPEAKER

Introduction to Keynote: **Julie Maupin-Furlow** (University of Florida, USA)

7:40 pm - 8:20 pm

**Dieter Oesterhelt / Friedhelm Pfeiffer** (Max Planck Institute of Biochemistry, Germany)

"Systems Biological Approaches for Halophiles"

8:20 pm - 8:30 pm

Discussion

8:30 pm - 9:30 pm

### SYSTEMS BIOLOGY & GENOME FUNCTION

Discussion Leader: **Bettina Siebers** (University of Duisburg-Essen, Germany)

8:30 pm - 8:50 pm

**Michael W.W. Adams** (The University of Georgia, USA)

"Defining the Metalloproteome of *Pyrococcus furiosus*: Letting Metals Take the Lead"

8:50 pm - 9:00 pm

Discussion

9:00 pm - 9:20 pm

**James G. Ferry** (The Pennsylvania State University, USA)

"Interpreting the Genome of *Methanosarcina acetivorans*"

9:20 pm - 9:30 pm

Discussion

## MONDAY

7:30 am - 8:30 am Breakfast

|                     |                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 am - 12:30 pm  | <b>ECOLOGY &amp; DIVERSITY OF ARCHAEA &amp; THEIR VIRUSES</b>                                                                                                                                         |
|                     | Discussion Leader: <b>Karl Stetter</b> (University of Regensburg, Germany)                                                                                                                            |
| 9:00 am - 9:20 am   | <b>Anna-Louise Reysenbach</b> (Portland State University, USA)<br>"New Insights into the Archaeal Diversity from Deep-sea Hydrothermal Vents"                                                         |
| 9:20 am - 9:30 am   | Discussion                                                                                                                                                                                            |
| 9:30 am - 9:50 am   | <b>Christa Schleper</b> (University of Vienna, Austria)<br>"Ecophysiology and Evolution of Ammonia-oxidizing Archaea"                                                                                 |
| 9:50 am - 10:00 am  | Discussion                                                                                                                                                                                            |
| 10:00 am            | Coffee Break / Group Photo                                                                                                                                                                            |
| 10:30 am - 10:50 am | <b>Aharon Oren</b> (The Hebrew University of Jerusalem, Israel)<br>"Halophilic Archaea in the Dead Sea - Environmental Genomics and Culture-dependent Studies in an Increasingly Extreme Environment" |
| 10:50 am - 11:00 am | Discussion                                                                                                                                                                                            |
| 11:00 am - 11:20 am | <b>David Prangishvili</b> (Institut Pasteur, France)<br>"Virus-host Interactions in Crenarchaeota"                                                                                                    |
| 11:20 am - 11:30 am | Discussion                                                                                                                                                                                            |
| 11:30 am - 11:50 am | <b>Ken Stedman</b> (Portland State University, USA)<br>"Biogeography and Host Range of the Fuselloviruses"                                                                                            |
| 11:50 am - 12:00 pm | Discussion                                                                                                                                                                                            |
| 12:00 pm - 12:20 pm | <b>James G. Elkins</b> (Oakridge National Laboratory, USA)<br>"A Closer Look at the Korarchaeota"                                                                                                     |
| 12:20 pm - 12:30 pm | Discussion                                                                                                                                                                                            |
| 12:30 pm            | Lunch                                                                                                                                                                                                 |
| 1:30 pm - 4:00 pm   | Free Time                                                                                                                                                                                             |
| 4:00 pm - 6:00 pm   | Poster Session                                                                                                                                                                                        |
| 6:00 pm             | Dinner                                                                                                                                                                                                |
| 7:30 pm - 9:30 pm   | <b>ENZYME STRUCTURE &amp; FUNCTION</b>                                                                                                                                                                |
|                     | Discussion Leader: <b>Biswarup Mukhopadhyay</b> (Virginia Tech, USA)                                                                                                                                  |
| 7:30 pm - 7:50 pm   | <b>Volker Müller</b> (Johann Wolfgang Goethe University Frankfurt, Germany)<br>"Unique Bioenergetics in Archaea: Structure and Function of ATP Synthases"                                             |
| 7:50 pm - 8:00 pm   | Discussion                                                                                                                                                                                            |
| 8:00 pm - 8:20 pm   | <b>Shigeyuki Yokoyama</b> (The University of Tokyo, Japan)<br>"Structural Biology of Aminoacyl tRNA Synthetases and tRNA Modification Enzymes from Archaea"                                           |
| 8:20 pm - 8:30 pm   | Discussion                                                                                                                                                                                            |
| 8:30 pm - 8:50 pm   | <b>Michael Terns</b> (The University of Georgia, USA)<br>"RNA-mediated Invader Defense by the CRISPR/Cas System in <i>Pyrococcus furiosus</i> "                                                       |
| 8:50 pm - 9:00 pm   | Discussion                                                                                                                                                                                            |
| 9:00 pm - 9:20 pm   | <b>Robert H. White</b> (Virginia Polytechnic Institute and State University, USA)<br>"New Routes for Coenzyme Biosynthesis and their Possible Connection to the Origin of Life"                       |
| 9:20 pm - 9:30 pm   | Discussion                                                                                                                                                                                            |
| <b>TUESDAY</b>      |                                                                                                                                                                                                       |
| 7:30 am - 8:30 am   | Breakfast                                                                                                                                                                                             |

9:00 am - 12:30 pm

## TRANSCRIPTION & GENE REGULATION

Discussion Leader: **Kelly Bidle** (Rider University, USA)

9:00 am - 9:20 am

**Felicita Pfeifer** (Technische Universität Darmstadt, Germany)  
"Anaerobiosis and the Regulation of Gas Vesicle Formation in Halophilic Archaea"

9:20 am - 9:30 am

Discussion

9:30 am - 9:50 am

**Shiladitya DasSarma** (University of Maryland Biotechnology Institute, USA)  
"Haloarchaeal Transcriptomics"

9:50 am - 10:00 am

Discussion

10:00 am

Coffee Break

10:30 am - 10:50 am

**Michael Thomm** (University of Regensburg, Germany)  
"Structure Function Relationships in TFB (TFIIB) and in the Archaeal RNA Polymerase"

10:50 am - 11:00 am

Discussion

11:00 am - 11:20 am

**Elizabeth A. Karr** (University of Oklahoma, USA)  
"Transcription Regulation in *Methanothermobacter thermautotrophicus*"

11:20 am - 11:30 am

Discussion

11:30 am - 11:50 am

**John Leigh** (University of Washington, USA)  
"Structure and Function of the Euryarchaeal Nitrogen Regulator NrpR"

11:50 am - 12:00 pm

Discussion

12:00 pm - 12:20 pm

**Elisabetta Bini** (Rutgers University, USA)  
"Physiological Response of *Sulfolobus* to Copper: the Ups and Downs of Transcriptional Regulation"

12:20 pm - 12:30 pm

Discussion

12:30 pm

Lunch

1:30 pm - 4:00 pm

Free Time

4:00 pm - 6:00 pm

Poster Session

6:00 pm

Dinner

7:30 pm - 9:30 pm

## TRANSLATION & POST-TRANSCRIPTIONAL MODIFICATION

Discussion Leader: **Jerry Eichler** (Ben Gurion University, Israel)

7:30 pm - 7:50 pm

**Jörg Soppa** (Johann Wolfgang Goethe University Frankfurt, Germany)  
"Initiation and Regulation of Translation in Halophilic Archaea"

7:50 pm - 8:00 pm

Discussion

8:00 pm - 8:20 pm

**Mecky Pohlschröder** (University of Pennsylvania)  
"Archaeal Protein Transport Pathways and their Substrates"

8:20 pm - 8:30 pm

Discussion

8:30 pm - 8:50 pm

**Sonja-Verena Albers** (University of Groningen, Netherlands)  
"Assembly and Function of Cell Surface Appendages in Sulfolobales"

8:50 pm - 9:00 pm

Discussion

9:00 pm - 9:20 pm

**Paola Londei** (Università di Roma Sapienza, Italy)  
"Regulation of Translation Initiation: the Archaea-Eukarya Connection"

9:20 pm - 9:30 pm

Discussion

## WEDNESDAY

7:30 am - 8:30 am

Breakfast

9:00 am - 12:30 pm

## PHYSIOLOGY & REGULATION OF METABOLISM

Discussion Leader: **William B. Whitman** (The University of Georgia, USA)

|                     |                                                                                                                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 am - 9:20 am   | <b>Harald Huber</b> (University of Regensburg, Germany)<br>"Friends-partners-enemies? Insights into the Physiology and Metabolism of <i>Ignicoccus hospitalis</i> and <i>Nanoarchaeum equitans</i> "   |
| 9:20 am - 9:30 am   | Discussion                                                                                                                                                                                             |
| 9:30 am - 9:50 am   | <b>William W. Metcalf</b> (University of Illinois, USA)<br>"Transcriptional Regulation of Genes Required for Methylophilic Methanogenesis in <i>Methanosarcina acetivorans</i> "                       |
| 9:50 am - 10:00 am  | Discussion                                                                                                                                                                                             |
| 10:00 am            | Coffee Break                                                                                                                                                                                           |
| 10:30 am - 10:50 am | <b>Ruth Schmitz-Streit</b> (Christian-Albrechts-Universität Kiel, Germany)<br>"Genome-wide Screen for Non-coding RNAs in <i>Methanosarcina mazei</i> Gö1: Role of ncRNAs in Nitrogen Stress Response?" |
| 10:50 am - 11:00 am | Discussion                                                                                                                                                                                             |
| 11:00 am - 11:20 am | <b>David E. Graham</b> (University of Texas at Austin, USA)<br>"Convergent Evolution in Methanogenic Coenzyme Biosynthesis"                                                                            |
| 11:20 am - 11:30 am | Discussion                                                                                                                                                                                             |
| 11:30 am - 11:50 am | <b>Haruyuki Atomi</b> (Kyoto University, Japan)<br>"Novel Enzymes of the Archaea Involved in Cofactor Biosynthesis"                                                                                    |
| 11:50 am - 12:00 pm | Discussion                                                                                                                                                                                             |
| 12:00 pm - 12:30 pm | <u>Business Meeting</u><br>(Nominations for the next Vice Chair; Fill out Conference Evaluation Forms; Discuss future Site & Scheduling preferences; Election of the next Vice Chair)                  |
| 12:30 pm            | Lunch                                                                                                                                                                                                  |
| 1:30 pm - 4:00 pm   | Free Time                                                                                                                                                                                              |
| 4:00 pm - 6:00 pm   | Poster Session                                                                                                                                                                                         |
| 6:00 pm             | Dinner                                                                                                                                                                                                 |
| 7:30 pm - 9:30 pm   | <b>EXTREMOPHILES &amp; BIOTECHNOLOGY APPLICATIONS</b><br>Discussion Leader: <b>Rolf Thauer</b> (Max Planck Institute for Terrestrial Microbiology, Marburg, Germany)                                   |
| 7:30 pm - 7:50 pm   | <b>John Van Der Oost</b> (Wageningen University, Netherlands)<br>"Hydrolytic Enzymes from Archaea - Structure, Function & Applications"                                                                |
| 7:50 pm - 8:00 pm   | Discussion                                                                                                                                                                                             |
| 8:00 pm - 8:20 pm   | <b>Garo Antranikian</b> (Hamburg University of Technology, Germany)<br>"Overcoming the Limitations of Enzymes; Biocatalysis under Unconventional Conditions"                                           |
| 8:20 pm - 8:30 pm   | Discussion                                                                                                                                                                                             |
| 8:30 pm - 8:50 pm   | <b>Robert M. Kelly</b> (North Carolina State University, USA)<br>"The Physiological Versatility of <i>Metallosphaera sedula</i> "                                                                      |
| 8:50 pm - 9:00 pm   | Discussion                                                                                                                                                                                             |
| 9:00 pm - 9:20 pm   | <b>Norbert Hampp</b> (University of Marburg, Germany)<br>"The Long Way of Bacteriorhodopsin into Technical Applications"                                                                               |
| 9:20 pm - 9:30 pm   | Discussion                                                                                                                                                                                             |

## THURSDAY

|                    |                                                                                                                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|
| 7:30 am - 8:30 am  | Breakfast                                                                                                             |
| 9:00 am - 10:30 am | <b>EVOLUTION AND THE TREE OF LIFE</b><br>Discussion Leader: <b>Joseph A. Krzycki</b> (The Ohio State University, USA) |

|                     |                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9:00 am - 9:20 am   | <b>Gary J. Olsen</b> (University of Illinois, USA)                                                                                                                                 |
| 9:20 am - 9:30 am   | Discussion                                                                                                                                                                         |
| 9:30 am - 9:50 am   | <b>Eugene V. Koonin</b> (National Institutes of Health, USA)<br>"Archaeo-eukaryotic Relationships"                                                                                 |
| 9:50 am - 10:00 am  | Discussion                                                                                                                                                                         |
| 10:00 am            | Coffee Break                                                                                                                                                                       |
| 10:30 am - 12:30 pm | <b>REPLICATION, REPAIR &amp; RECOMBINATION</b>                                                                                                                                     |
|                     | Discussion Leader: <b>Francine Perler</b> (New England Biolabs, USA)                                                                                                               |
| 10:30 am - 10:50 am | <b>Thorsten Allers</b> (The University of Nottingham, UK)<br>"RadB is a Mediator of RadA-catalyzed Homologous Recombination in <i>Haloferax volcanii</i> "                         |
| 10:50 am - 11:00 am | Discussion                                                                                                                                                                         |
| 11:00 am - 11:20 am | <b>Zvi Kelman</b> (University of Maryland Biotechnology Institute, USA)<br>"The MCM Helicase"                                                                                      |
| 11:20 am - 11:30 am | Discussion                                                                                                                                                                         |
| 11:30 am - 11:50 am | <b>Bernard A. Connolly</b> (University of Newcastle, UK)<br>"Recognition of the Pro-mutagenic Base Uracil by Archaeal Family-B DNA Polymerases; Structural and Functional Studies" |
| 11:50 am - 12:00 pm | Discussion                                                                                                                                                                         |
| 12:00 pm - 12:20 pm | <b>Malcolm F. White</b> (University of St. Andrews, Scotland)<br>"Crenarchaeal DNA Binding and Repair Proteins"                                                                    |
| 12:20 pm - 12:30 pm | Discussion                                                                                                                                                                         |
| 12:30 pm            | Lunch                                                                                                                                                                              |
| 1:30 pm - 4:00 pm   | Free Time                                                                                                                                                                          |
| 4:00 pm - 6:00 pm   | Poster Session                                                                                                                                                                     |
| 6:00 pm             | Dinner                                                                                                                                                                             |
| 7:30 pm - 8:30 pm   | <b>POST-DOCTORAL AND STUDENT LECTURE / POSTER AWARDS</b>                                                                                                                           |
|                     | Discussion Leader: <b>John Reeve</b> (Ohio State University, USA)                                                                                                                  |
| 7:30 pm - 7:40 pm   | <b>Katherine Sherwood</b> (University of Florida, USA)<br>"Glycerol as a Catabolite Repressor of Glucose Metabolism in <i>Haloferax volcanii</i> "                                 |
| 7:40 pm - 7:45 pm   | Discussion                                                                                                                                                                         |
| 7:45 pm - 7:55 pm   | <b>Tom Santangelo</b> (Ohio State University, USA)<br>"Post-Initiation Regulation of Archaeal Transcription"                                                                       |
| 7:55 pm - 8:00 pm   | Discussion                                                                                                                                                                         |
| 8:00 pm - 8:10 pm   | <b>Ruth Heyer</b> (University of Ulm, Germany)<br>"Small RNAs in Haloarchaea: Identification, Differential Expression and Biological Function"                                     |
| 8:10 pm - 8:15 pm   | Discussion                                                                                                                                                                         |
| 8:15 pm - 8:25 pm   | <b>Lennart Randau</b> (Yale University, USA)<br>"A Cytidine Deaminase Edits C to U in Archaeal Transfer RNA"                                                                       |
| 8:25 pm - 8:30 pm   | Discussion                                                                                                                                                                         |
| 8:30 pm - 9:30 pm   | <b>ALEXANDER M. CRUICKSHANK LECTURE</b>                                                                                                                                            |
|                     | Discussion Leader: <b>Malcolm F. White</b> (University of St. Andrews, Scotland)                                                                                                   |
| 8:30 pm - 9:20 pm   | <b>Stephen D. Bell</b> (University of Oxford, UK)<br>"DNA Replication and Cell Division in the Third Domain"                                                                       |

9:20 pm - 9:30 pm    Discussion

**FRIDAY**

7:30 am - 8:30 am    Breakfast

9:00 am                Depart