

AbSciCon
April 16-20, 2012
Atlanta, Georgia

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Astrobiology Science Conference 2012

Exploring Life: Past, Present, Near and Far

April 16-20, 2012

Atlanta, Georgia

Guide to Sessions and Events

Sponsored by:

National Aeronautics and Space Administration
Astrobiology Program

Hosted by:

Georgia Institute of Technology:
Ribo Evo, Center for Ribosomal Origins and Evolution



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Astrobiology Science Conference 2012
Exploring Life: Past and Present, Near and Far

GUIDE TO SESSIONS AND EVENTS

SUNDAY, APRIL 15

12:00 p.m. 2:30 p.m.

Conf Rm Four

AbSciCon Primer Sessions

Sessions will provide background information to increase accessibility of scientific presentations outside attendees' areas of expertise and to enhance interactions among experts in different fields.

12:00 – 12:30 p.m.

Origin of Life, Betül Arslan and Aaron Goldman

12:30 – 1:00 p.m.

Phylogenetics and Metagenomics, Billy Brazelton

1:00 – 1:30 p.m.

Life Detection, Lewis Dartnell

1:30 – 2:00 p.m.

Exoplanets, Tyler Robinson

2:00 – 2:30 p.m.

Organics and Astrochemistry, Geronimo Villanueva

2:30 – 5:00 p.m.

Conf Rm Four

Proposal Writing Workshop

Led by NASA Astrobiology Discipline Scientist, Dr. Michael H. New. Workshop will provide an overview of proposal opportunities and advice on writing a successful proposal.

4:00 – 5:00 p.m.

Registration Check-in (Pre-function area)

4:00 – 9:00 p.m.

Speaker Ready Room open (Conf Rm E)

5:00 – 7:00 p.m.

Welcome Reception

**Georgia Institute of Technology's
Parker H Petit Institute for Bioengineering
and Bioscience**

315 Ferst Dr. NW, Atlanta, GA 30332

Georgia Tech Campus

Hosted by Georgia Institute of Technology's Ribo
Evo, Center for Ribosomal Origins and Evolution.

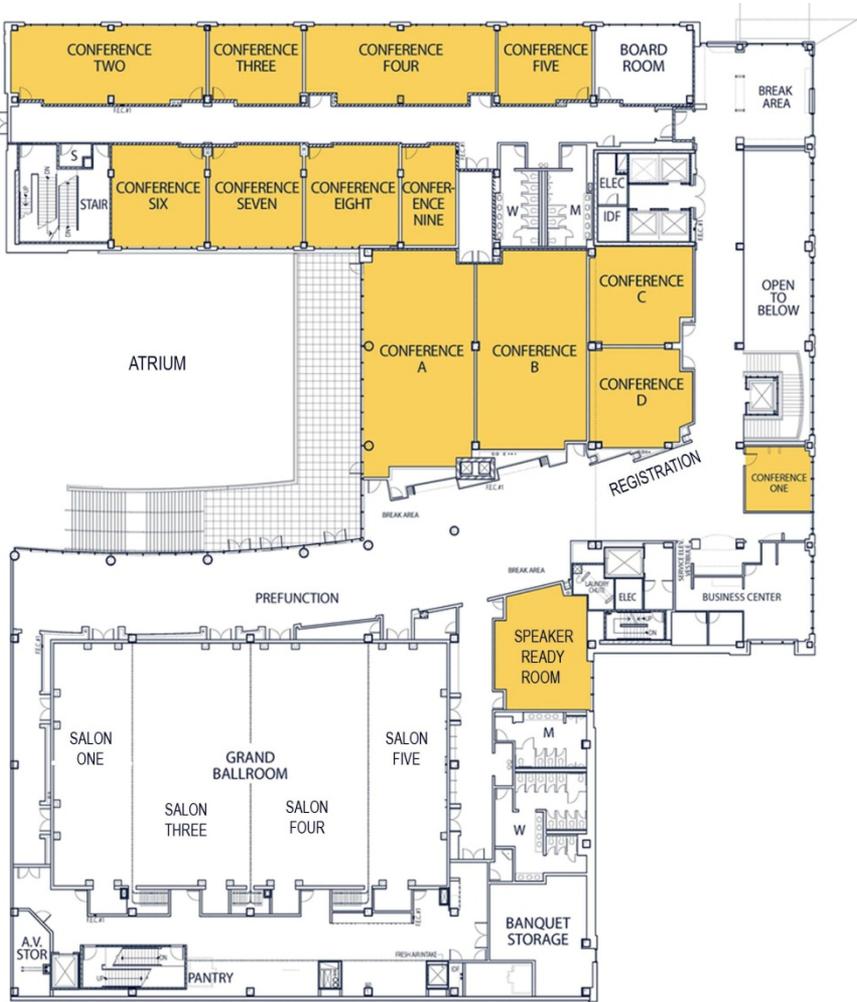
Catch up with colleagues over drinks and hors
d'oeuvres. Enjoy live bluegrass music by the

Dappled Grays Band. Catch a Tech Trolley marked
"AbSciCon" from the Georgia Tech Hotel and

Conference Center or enjoy a short walk through the

Georgia Tech campus. Maps will be available at the
hotel front desk.

Georgia Tech Hotel and Conference Center Second Floor Meeting Rooms



Georgia Tech Hotel and Conference Center
800 Spring Street, NW
Atlanta, Georgia 30308

Instructions for Oral Presenters

The Speaker Ready Room (Conference Room E) is located on the 2nd floor next to the Grand Ballroom. All electronic presentations must be tested and submitted to an A/V Tech via USB flash drive or CD-ROM **the day before your oral presentation is scheduled**. Once your presentation has been checked for readability, conference A/V staff will transfer it to the meeting room computer via the conference network. Participants will not be allowed to load presentations onto the computers in the meeting rooms.

Speaker Ready Room Hours

Sun, April 15	4:00 p.m. – 9:00 p.m.
Mon, April 16	7:00 a.m. – 6:30 p.m.
Tues, April 17	7:00 a.m. – 6:30 p.m.
Wed, April 18	7:00 a.m. – 5:00 p.m.
Thur, April 19	7:00 a.m. – 6:30 p.m.
Fri, April 19	7:00 a.m. – 10:30 a.m.

Instructions for Poster Presenters

Posters can be installed beginning at 7:00 a.m. on the day of their scheduled session. Posters will remain on display throughout the day. Authors must remove their posters immediately after each poster session. Posters that are left on display after a scheduled poster session will be removed and recycled. Poster locator guides will be available to help authors find their poster location.

Instructions for Lightning Talk Sessions

Lightning Talk Sessions are composed of five-minute talks delivered in rapid succession. Lightning Talks can be prepared in advance or crafted on the fly. They may be serious, lighthearted, or both. You can enhance your talk with A/V, or not. The primary goal is to teach the audience something in five minutes or less. Anyone can participate, from students to senior lecturers. Poster authors are encouraged to give a Lightning Talk.

Look for the “Lightning Talks Sign Up” poster in the Prefunction Area. Sign up for the Tuesday afternoon session begins Monday morning. Sign up for the Thursday afternoon session begins Wednesday morning. **Electronic presentations for Lightning Talks must be submitted in the Speaker Ready Room by 1:30 p.m. on the day your talk is scheduled.**

MONDAY, APRIL 16

7:00 a.m. – 6:30 p.m.	Speaker Ready Room open (Conf Rm E)
7:00 a.m. – 6:30 p.m.	Registration (Pre-function area)
7:00 – 7:30 a.m.	Session Chairs Breakfast (Conf Rm C)
8:00 – 10:00 a.m.	Oral Sessions
Salon One	Understanding the Effects of Space Radiation on Living Organisms and Implications for Astrobiology
Salon Three	Early Evolution of Life I
Salon Four	How Quantum Chemical Theory and Computation Assists in the Explanation of Important, Difficult, and Unique Chemical Questions
Salon Five	Titan as a Prebiotic Chemical System
Conf Rm Four	Establishing Biogenicity: Systematic Use of Organic and Inorganic Evidence of Ancient Terrestrial and Extraterrestrial Life
Conf Rm Two	The Science of Mars Science Laboratory
10:00 – 10:15 a.m.	Break
10:15 a.m. – 12:15 p.m.	Oral Sessions
Salon One	The Role of UV Radiation in Prebiotic Chemistry I
Salon Three	Linking Microbial Ecosystem Biosignatures to the Geologic Record of Early Earth and Mars
Salon Four	Diversity in Astrobiology Research and Education
Salon Five	Prebiotic Chemistry and the Origins of Functional Biopolymers
Conf Rm Two	Thermodynamics, Disequilibrium, and Evolution
Conf Rm Four	From Genomes to Biomarkers
12:15 – 1:30 p.m.	Lunch
12:15 – 1:15 p.m.	Focus Group Meetings
Conf Rm Two	Thermodynamics, Disequilibrium, and Evolution Focus Group
Conf Rm Four	Early Earth Focus Group
Conf Rm Six	Mars Focus Group
1:00 p.m.	Meeting Mentor Program Meet Up
Conf C and D	
1:30 – 3:30 p.m.	Plenary Session: Mission to Mars: Curiosity Sets Out to Explore Gale Crater
Grand Ballroom	
3:30 – 3:45 p.m.	Break
3:45 – 5:45 p.m.	Oral Sessions
Grand Ballroom	How Can Astrobiology Help Save the World? A Discussion of Astrobiology and Humanity's Future
Conf Rm Four	The History of Earth Surface Oxygenation: Looking to the Modern as a Key to the Past
Conf Rm Two	Stability and Survival of Life in Simulated Extraterrestrial Environments

Monday, April 16

3:45 – 5:45 p.m. Poster Session I

- Conf Rm A Emerging Technologies and Strategies for Prospecting for the Signs of Life on Other Worlds Posters
Establishing Biogenicity: Systematic Use of Organic and Inorganic Evidence of Ancient Life Posters
Early Evolution of Life Posters
The Nature of the Last Universal Common Ancestor Posters
Oxygen and Evolution: Looking to the Past Posters
The Role of Horizontal Gene Transfer in Innovation Posters
Prebiotic Chemistry and the Origins of Functional Biopolymers Posters
From Genomes to Biomarkers Posters
Chemical Evolution and Transition to Living Matter Posters
The Role of UV Radiation in Prebiotic Chemistry Posters
Understanding the Effects of Space Radiation on Living Organisms and Implications for Astrobiology Posters
Diversity in Astrobiology Research and Education Posters
- Conf Rm B The Organic Continuum from the Interstellar Medium to the Early Earth Posters
The Extent of Chirality in Cosmochemistry and its Possible Role in the Origins of Life Posters
Astrobiology of Planetesimals and Biomarkers in Terrestrial and Extraterrestrial Environments Posters
How Quantum Chemical Theory and Computation Assists in the Explanation of Important, Difficult, and Unique Chemical Questions Posters
The Science of Mars Science Laboratory Posters
Astroecology Posters
Titan as a Prebiotic Chemical System Posters
Linking Microbial Ecosystem Biosignatures to the Geologic Record of Early Earth and Mars Posters
Drivers of Microbial Community Change through Space and Time Posters
Meta-omics of Microbial Mats: From Molecules to Macrostructure Posters

5:45 – 7:00 p.m. Social Reception

Prefunction Area and Atrium

7:00 – 9:00 p.m. Fame Lab Astrobiology: The Finals

Grand Ballroom

TUESDAY, APRIL 17

7:00 a.m. – 6:30 p.m.	Speaker Ready Room open (Conf Rm E)
7:00 a.m. – 6:30 p.m.	Registration (Pre-function area)
7:00 – 7:30 a.m.	Session Chairs Breakfast (Conf Rm C)
8:00 – 10:00 a.m.	Oral Sessions
Salon One	Meta-omics of Microbial Mats: From Molecules to Macrostructure
Salon Three	Early Evolution of Life II
Salon Four	Drivers of Microbial Community Change through Space and Time
Salon Five	The Organic Continuum from the Interstellar Medium to the Early Earth
Conf Rm Four	Oxidation: Cellular Stress and Preservation of Organic Biosignatures in Oxidative Planetary Conditions
Conf Rm Two	Mineral-based Catalysis on the Prebiotic Earth
10:00 – 10:15 a.m.	Break
10:15 a.m. – 12:15 p.m.	Oral Sessions
Salon One	The Role of UV Radiation in Prebiotic Chemistry II
Salon Three	The Nature of the Last Universal Common Ancestor
Salon Four	Oxygen and Evolution: Looking to the Past
Salon Five	Chemical Evolution and the Transition to Living Matter
Conf Rm Four	The Role of Horizontal Gene Transfer in Innovation
Conf Rm Two	Virus Ecology and Evolution and Astrovirology
12:15 – 1:30 p.m.	Lunch
12:15 – 1:15 p.m.	Focus Group Meetings
Conf Rm Two	Virus Focus Group
Conf Rm Four	Evogenomics Focus Group
Conf Rm Six	Data Usage Focus Group
1:30 – 3:30 p.m.	Plenary Session: Great Debate: Expanding the Habitable Zone: The Hunt for ExoPlanets Now and Into the Future
Grand Ballroom	
3:30 – 3:45 p.m.	Break
3:45 – 5:45 p.m.	Oral Sessions
Grand Ballroom	Lightning Talks I
Conf Rm Four	Space, Slime, and the Search for Life: Astrobiology Education and Public Outreach
Conf Rm Two	Transmission into Space: Scientific, Social, Ethical, and Legal Considerations

Tuesday, April 17

3:45 – 5:45 p.m. Poster Session II

Conf Rm A

Environmental Physics and Life Posters
Extremomics: The Biology and Metabolism of Weird Life Posters
Microbes in Lithifying Systems Posters
Stability and Survival of Life in Simulated Extraterrestrial Environments Posters
Microbiology and Geochemistry of Deserts and Investigating Mars Analog Environments Posters
The New Mars: Habitability of a Neighbor Planet Posters
Icy Worlds: Niches for Biological, Pre-Biological, and Abiological Chemistry Posters
Asteroids, Comets, and Astrobiology Posters
So Many Worlds: Quantifying the Frequency of Habitable Planets Posters
Development of Quantitative Habitability Assessments for Earth, the Solar System, and Exoplanets Posters

Conf Rm B

How Can Astrobiology Help Save the World?
Astrobiology and Humanity's Future Posters
Developing and Deploying Digital Media in Education Posters
The Intersection of Astrobiology and Society Posters
Societal Impact of Discovering Extraterrestrial Life Posters
Virus Ecology and Evolution and Astrovirology Posters
Pattern and Prediction: Integrating Energetics, Geochemistry, and Genetics in the Investigation of Early Earth and Extraterrestrial Analog Environments Posters
Molecular Tools for Viability Assessment Posters
Plausible Geochemical Conditions on Prebiotic Earth Posters
From Non-Enzymatic Catalysis to Metabolism: Tracing Evolution of Catalysis and its Coupling with Replication at the Origins of Life Posters
The Origin of Biomolecules in Planetary Environments: From HCN to RNA Posters
Translation: By Life's Oldest Macromolecules Posters
The Origin and Early Evolution of Photosynthesis Posters

5:45 – 7:00 p.m. Social Reception

Prefunction Area and Atrium

7:00 – 9:00 p.m. An Evening with Author Dava Sobel

Grand Ballroom

WEDNESDAY, APRIL 18

7:00 a.m. – 6:30 p.m.

Speaker Ready Room open (Conf Rm E)

7:00 a.m. – 6:30 p.m.

Registration (Pre-function area)

7:00 – 7:30 a.m.

Session Chairs Breakfast (Conf Rm C)

8:00 – 10:00 a.m.

Oral Sessions

Salon One

The New Mars: Habitability of a Neighbor Planet

Salon Three

Extremomics: The Biology and Metabolism of
Weird Life

Salon Four

Developing and Deploying Digital Media in
Astrobiology Education

Salon Five

Plausible Geochemical Conditions on Prebiotic Earth

Conf Rm Four

Transition to the World of Genetically Encoded
Proteins

Conf Rm Two

Asteroids, Comets, and Astrobiology

10:00 – 10:15 a.m.

Break

10:15 a.m. – 12:15 p.m.

Oral Sessions

Salon One

Translation: By Life's Oldest Macromolecules

Salon Three

Icy Worlds: Niches for Biological, Pre-Biological,
and Abiological Chemistry

Salon Four

The Intersection of Astrobiology and Society

Salon Five

From Non-Enzymatic Catalysis to Metabolism:

Tracing Evolution of Catalysis/Coupling
with Replication at the Origins of Life

Conf Rm Four

Microbiology and Geochemistry of Deserts and
Investigating Mars Analog Environments

Conf Rm Two

Molecular Tools for Viability Assessment

12:15 – 1:30 p.m.

Lunch

12:15 – 1:15 p.m.

Focus Group Meetings

Conf Rm Two

Astrobiology and Society Focus Group

Conf Rm Four

Origin of Life Focus Group

Conf Rm Six

S.A.G.A.N. Meeting

1:30 – 3:30 p.m.

Plenary Session: Honoring Those We Have Lost:

Grand Ballroom

Science and Reflections



CONFERENCE SOCIAL EVENT

Wednesday, April 18 5:00 – 9:00 p.m.

GEORGIA AQUARIUM

225 Baker St. NW, Atlanta, GA 30313

AbSciCon participants and guests are invited to attend the conference social event at the Georgia Aquarium. Complimentary shuttle service is provided for your convenience. Parking, public transportation, and local taxi service are also available.

SCHEDULE OF EVENTS

- 4:30 – 7:30 p.m.** Motorcoach shuttles depart Georgia Tech Hotel for Georgia Aquarium. Shuttles depart every 30 minutes (on the hour and half hour) outside of the lobby.
- 5:00 – 7:00 p.m.** Exclusive after-hours admission to Aquarium exhibits.
- 6:30 – 8:30 p.m.** Buffet dinner served in the private Oceans Ballroom.
- 7:30 – 9:00 p.m.** Shuttles depart Georgia Aquarium for local hotels. Shuttles will return to the following hotels: Georgia Tech Hotel,, Renaissance Atlanta Midtown, and combined stop at Hotel Indigo/ Georgian Terrace.

Tickets for this event must be purchased separately online or at the Conference Registration desk. Deadline to purchase ticket is Tuesday, April 17.

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YOU MUST USE ALL CAPS.**

THURSDAY, APRIL 19

7:00 a.m. – 6:30 p.m.	Speaker Ready Room open (Conf Rm E)
7:00 a.m. – 6:30 p.m.	Registration (Pre-function area)
7:00 – 7:30 a.m.	Session Chairs Breakfast (Conf Rm C)
8:00 – 10:00 a.m.	Oral Sessions
Salon One	So Many Worlds: Quantifying the Frequency of Habitable Planets
Salon Three	The Origin of Biomolecules in Planetary Environments: From HCN to RNA (Session in Honor of James Ferris)
Salon Four	Societal Impact of Discovering Extraterrestrial Life
Salon Five	The Taxonomy of Comets: Origins of Organics and Water, and Delivery to Young Planets
Conf Rm Four	Microbes in Lithifying Systems
Conf Rm Two	Pattern and Prediction: Integrating Energetics, Geochemistry, and Genetics in the Investigation of Analog Environments
10:00 – 10:15 a.m.	Break
10:15 a.m. – 12:15 p.m.	Oral Sessions
Salon One	O ₂ and Evolution: Looking at Ancient Biochemistry
Salon Three	Exoplanet Habitability
Salon Four	Laboratory Astrochemistry
Salon Five	Serpentinization in Astrobiology: From Molecular to Cosmic Scales
Conf Rm Four	Life and Habitats Within and Under Ice: Glaciers and Ice Sheets, Lakes and Ice Shelves
Conf Rm Two	Biological Energy Transduction, Quenching, and Conformation as a Function of the Spectral Radiation Environment
12:15 – 1:30 p.m.	Lunch
12:15 – 1:15 p.m.	Focus Group Meetings
Conf Rm Two	Habitability and Astronomical Biosignatures Focus Group
Conf Rm Four	Icy Satellites Environments Focus Group
1:30 – 3:30 p.m.	Plenary Session: How Do We Explain Ourselves? Challenges in Communicating about Astrobiology
3:30 – 3:45 p.m.	Break

Thursday, April 19

3:45 – 5:45 p.m.

Grand Ballroom
Conf Rm Four
Conf Rm Two

Oral Sessions

Lightning Talks II
The Origin and Early Evolution of Photosynthesis
Development of Quantitative Habitability
Assessments for Earth, the Solar System,
and Exoplanets

3:45 – 5:45 p.m. Poster Session III

Conf Rm A

Experimental Evolution Posters
Exoplanet Habitability Posters
Transmission into Space: Scientific, Social, Ethical, and Legal
Considerations Posters
Can a Cross-Disciplinary Approach to Communication Give
New Insights in Astrobiology? Posters
Integrate the Study of Intelligence With Astrobiology Posters
Dealing with Data Deluge and Silo-ed Storage: What Can We
Learn from Data Experts and our Colleagues? Posters
Space, Slime, and the Search for Life: Astrobiology Education
and Public Outreach Posters
Astrobiology in Historical Perspective Posters
How Do We Explain Ourselves? Challenges in
Communicating about Astrobiology Posters

Conf Rm B

Laboratory Astrochemistry Posters
New Frontiers in Stable Isotope Analysis Posters
Extraterrestrial Biomolecules in the New Age of Astronomical
Instrumentation Posters
Astrobiology and Robotics Technology Posters
Astrobiology in Orbit Posters
Biological Life Support System Posters
Can Terrestrial Microbes Grow on Mars? Posters
Mineralogy as Indicator of Mars Aqueous Processes Posters
Serpentinization in Astrobiology: From Molecular to Cosmic
Scales Posters
Life and Habitats Within and Under Ice: Glaciers and Ice
Sheets, Lakes and Ice Shelves Posters

5:45 – 7:00 p.m.

Club Room and Lobby

Mentor/ Mentee Social Hour

FRIDAY, APRIL 20

7:00 – 10:30 a.m.

Speaker Ready Room open (Conf Room E)

7:00 – 10:30 a.m.

Registration (Pre-function area)

7:00 – 7:30 a.m.

Session Chairs Breakfast (Conf Room D)

8:00 – 10:00 a.m.

Oral Sessions

Salon One

Experimental Evolution

Salon Three

Mineralogy as an Indicator of Aqueous Processes
on Mars

Salon Four

New Frontiers in Stable Isotope Analysis

Salon Five

Astrobiology in Orbit

Conf Rm Four

Astrobiology and Robotics Technology

Conf Rm Two

Can Cross-Disciplinary Communication Give New
Insights in Astrobiology?

Conf Rm A

Subsurface Ecosystems

Conf Rm B

Origin of Life: A New Film about Astrobiology

10:00 – 10:15 a.m.

Break

10:15 a.m. – 12:15 p.m

Oral Sessions

Salon One

Minimal and Ancestral Genomes

Salon Three

Extraterrestrial Biomolecules in the New Age of
Astronomical Instrumentation

Salon Four

Integrating the Study of Intelligence Within
Astrobiology

Salon Five

The Old World and the New: Early Earth as a Proxy
for an Extrasolar Planet

Conf Rm Four

Can Terrestrial Microbes Grow on Mars?

Conf Rm Two

Astrobiology in Historical Perspective

Conf Rm A

The Potential for Life and its Detection on Europa

Conf Rm B

The Extent of Chirality in Cosmochemistry and its
Possible Role in the Origins of Life

12:15 p.m.

Conference Adjourns

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