Moreno M., Powers M., McQueen V. M., Kuehl M. M., Ong H. C., Thomas D. J.

Microbial Diversity in Ozark Region Caves

We are trying isolate and identify photosynthetic, chemosynthetic and other microorganisms in cave environments using metagenetic and classical microbiological methods. Cave environments are potential analogs to extant and extinct extraterrestrial environments.

Virden B. T., Kral T. A.

Methanogen Use of Insoluble Carbonates and the Implications for Life on Mars

Methanogens were able to use insoluble carbonates as sole carbon sources. Methane production was reduced, however, compared to cultures where carbon dioxide served as carbon source.

Tarasashvili M. V., Aleksidze N. G.

Microbiological Remediation of Martian Soil for Future Terraformation of the Planet

Earth mineral mixtures have been mixed in proportions to prepare simulated martian soil. Experiments were conducted to detect microbes that could be suitable for future Terraformation of planet Mars. Growth of plant cover on Mars has been discussed.

Tryon R. K., Kral T. A.

Heat Tolerance of Methanogens

Any of the organisms on the Phobos-Grunt Mission that survive the trip to Phobos and back hopefully will also survive Earth re-entry temperatures. At least two methanogens can survive temperatures as high as 100°C for short periods of time.

Murphy C., Kral T. A.

The Effects of Desiccation on Methanogens Under Aerobic and Anaerobic Conditions

Survival of methanogens following desiccation depends on whether they are maintained under aerobic or anaerobic conditions. Cells maintained in a desiccated state in the presence of oxygen did not survive as well as those maintained anaerobically.


Growth of Deinococcus Radiodurans in Oils as Sole Source of Carbon

Growth of deinococcus radiodurans was analysed in (i) gasoline, diesel oil with (ii) or without (iii) additives, (iv) sergipano oil and (v) arabic light oil. High microbial abundance was confirmed for many of them.

Goodhart T., Kral T. A.

The Effects of Perchlorate on Methane Production of Methanogens

In May 2008, the Phoenix space craft analyzed the martian soil, detecting perchlorate, which is a highly oxidizing compound and potentially harmful to organic matter. This presentation discusses the effects that perchlorate has on methanogen growth.

Swingley W. D., Alsop E. B., Falenski H. D., Raymond J.

The 470 Megabase Metagenome of the Bison Pool (Yellowstone National Park) Alkaline Hot Spring Outflow Channel

We present the complete analysis of 470 megabases of metagenomic data sequenced from Bison Pool, an alkaline hot spring in Yellowstone National Park.

Pavlov A. K., Shelegedin V. N., Vdovina M. A., Pavlov A. A.

Subsurface Martian Soil as Favorite Place of Terrestrial Radioreistant Bacteria Origin

Here we propose that the radioreistance (tolerance to ionizing radiation) observed in several terre.strial bacteria has a martian origin. Our hypothesis implies multiple and frequent exchanges of biota between Mars and Earth.
Frantz C. M.  Overmann J.  Nealson K. H.
*Photosynthesis at Extremely Low Light Levels: Investigating the Impact of Light Quality* [#5253]
The effect of restricted light quality on photosynthesis at extremely low light levels was tested using the low-light photosynthesis record-holder Chlorobium phaeobacteroides BS1 in an attempt to shed light on the extreme limits of photosynthesis.

Mielke S. P.  Kiang N. Y.  Blankenship R. E.  Gunner M. R.  Mauzerall D.
*Photosynthetic Electron-Transfer in the Cyanobacterium, Acaryochloris Marina* [#5438]
Understanding the molecular mechanisms utilized by A. marina will address the long-wavelength limit of oxygenic photosynthesis, constraining the extraterrestrial environments in which important biosignatures might be found.

Pavlov A. K.  Shelegedin V. N.  Vdovina M. A.  Pavlov A. A.
*Laboratory Modeling of Subsurface Life in Martian-like Environments* [#5117]
Our laboratory modeling has demonstrated that terrestrial nonextremophile microorganisms can reproduce even under extremely low atmospheric pressure (0.01–0.1 mbar).

Xu J.  Sahai N.
*Extracellular Polymeric Substances as Armour Against Cytotoxic Minerals: Survival of Pseudomonas Aeruginosa Cells in Oxide Particle Suspensions* [#5043]
Our study explored the effects of extracellular polymeric substances (EPS) on the susceptibility to lysis of Pseudomonas aeruginosa in suspensions of oxide particles.