



## Request for Proposal

Request for Proposal due by November 17, 2010

Proposed Planet for Study:	Europa
Team Members:	

### Abstract: (100 words or less)

Our team proposes that Europa should be studied in the search for new life. The surface consists of ice, vapor, and liquid water. It also has an ocean that is between 50 and 100 miles deep. There are volcanoes in which life could also exist. Organisms can feed off of the chemical energy in the environment. There is also a possibility that sunlight could be a form of energy. Europa has many surface features. Therefore, it has a wide variety of conditions for life forms to exist in. It is very cold, but also contains heat. Europa's interior is hotter than its surface and that may be where it gets its heat from. Europa is a big planet that has many different aspects that make it a good environment to live in.

### Briefly describe the conditions on the planet that you propose to study.

The average temperature of Europa is  $-110^{\circ}\text{C}$ . The interior is hotter than the surface. There's frozen and liquid water. There's a thin layer of atmosphere. The core may be iron, but it's mostly made of rock. The magnitude of Europa is 5.29. There are shallow cracks, pits, ridges, valleys, blisters, and icy flows. It was discovered January 1610. Europa is Jupiter's 6<sup>th</sup> moon. Europa's orbit from Jupiter is 670,900km. The diameter of Europa is 3138km. The orbital period of Europa is 3.55 days. The surface gravity is  $1.32\text{m/s}^2$ . The equatorial radius is 1569km. The mean density is  $3.01\text{g}$ . Europa was discovered by Simon and Galileo Galilei. The escape velocity is 2.02km. Europa has an icy crust that has been severely fractured, as indicated by the dark linear, curved, and wedged-shaped bands seen here. These fractures have broken the crust into plates as large as 30 kilometers (18.5 miles) across. Bright plains in the polar areas (top and bottom) are shown in tones of blue to distinguish possibly coarse-grained ice (dark blue) from fine-grained ice (light blue). Jupiter's moon Europa displays features in some areas resembling ice flows seen in Earth's polar seas. These are the conditions in which we propose to study in Europa.

**State why this is a worthy location to search for life.**

There are chemical nutrients on which organisms can feed. There's frozen and liquid water. There is also an ocean for organisms to live in, and if they need to live in heat, there are also volcanoes. Sunlight could also be a source of energy. There is an induced magnetic field from interactions with Jupiter. Europa also has an oxygen atmosphere, produced by charged particles in Jupiter's magnetic field hitting the icy surface and knocking atoms of water molecules off the surface. Both Earth and Europa have a solid metallic core, and a geologically young surface. They both also contain the three forms of water (liquid, ice, and vapor), and have free oxygen in their atmospheres.

**Based on your research, describe a life form that you expect to find on your proposed planet.**

The life form that we expect to find on our planet is the Galatheid Crab. They can live in very low oxygen conditions, very deep water, and no sunlight conditions. They can feed off of chemical nutrients. The Galatheid Crab is white and almost transparent, although it can be light red. It has eight legs, and at least four appendages modified for the purpose of grasping. There are many different types of Galatheid Crabs. They can live in very cold water. They travel in packs, and breed fast and very often. Therefore, they need to live in a large underwater environment. This is why we believe that Europa would be a suitable place for life to exist.

