

The Search For Life In Extreme And Unusual Environments

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Life on earth is dominated by microorganisms both in terms of numbers/mass and biodiversity. Recent exploration of several “extreme” earth environments has revealed the presence of diverse, metabolically-active communities of previously unknown microorganisms. These habitats range from hot thermal vents on the seafloor to the ice-draped Antarctic landscape. Life has successfully radiated into these extreme environments and this has led to a renewed interest in specialized adaptations and physiological tolerances that establish the ultimate limits for life. There are both intellectual and practical justifications for undertaking ecological studies of extreme earth environments. First and foremost relates to the origin of life itself. Recent discoveries of ice and a probable liquid ocean on the Jovian satellite Europa and the detection of Jovian scale planets around at least a dozen nearby stars suggest that the astronomical setting for the origin and evolution of life may not be restricted to planet Earth. This presentation will survey selected extreme environments with a focus on the unique capabilities and survival strategies of the incredible and curious microbe.