Geophysical Research Abstracts, Vol. 7, 10343, 2005 SRef-ID: 1607-7962/gra/EGU05-A-10343 © European Geosciences Union 2005



Interdisciplinary approach to life detection in ice cores

A. Tsapin

Jet Propulsion Laboratory/California In statute of technology, USA (Tsapin@jpl.nasa.gov/FAX 1-818-393-4445)

The extent to which organisms can survive extended periods of metabolic inactivity in cold environments is one of the key questions in the study of life in extreme environments, and specifically in ice. Detection of live organisms, which have survived for tens of thousands years or even longer, is a challenging task. During last several years I have been studied the preservation of biomarkers in water columns of subglacial lakes, in ice core above Lake Vostok, in permafrost samples, and in cores from glaciers in Greenland and Siberia. My approach is based on using different techniques (amino acid racemization, flow-cytometery, fluorescence induced by deep UV (224 and 248 nm), UV Resonance Raman spectroscopy, and direct culturing. I have shown that in ice cores dated back to several hundred thousands of years we can detect preserved biomarkers. We can also get some reasonable idea about the level of preservation of biota using data obtained with different methods.