



## **The present climate changes open wide frontiers to study ancient viruses**

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Although remote and inhospitable, the poles are Earth's most powerful natural laboratories. Locked in the ice are climate records and also ancient lifeforms records stretching back a million years. The trend of glaciers melting as effect of actual climate change will promote the release of ancient viruses from ice cap. The aquatic viruses represent the widest source of genetic diversity in the world, uncharacterized yet. Phycodnaviruses, that infect the eukaryote algae, are composed of ancient genes and they are considered a "peek" of genetic diversity. It knows only few things about replication of phycodnaviruses , but it seems that between viral replication and reproduction stage of the macroalgal host there is a specific relationship.

*Law-Racovitza* Station from Coast of East Antarctica (Larsemann Hills) offers opportunities for study of Antarctic marine ecosystems, as well as archaic aquatic ecosystems from this area (with 150 lakes and waterways as result of snow and ice melting during the austral summer). According to our Scientific Programme to *Law-Racovitza* Station, it will carry on annual studies about climate changes on virus-algal host relationship in these aquatic ecosystems.

In this work are present algal communities as potential hosts for phycodnaviruses and the influence of environmental factors on algal bloom in Black Sea ecosystems from temperate area, compared to aquatic ecosystems from East Antarctica.

From eukaryotic species of green algae identified, *Ulva rigida* from Black Sea seemed

to be the most suitable for our aim of detection of phycodnaviruses infection in macrophyte algae, especially similar specie *Ulva bulbosa* was collected and identified in one of the aquatic ecosystems from *Law-Racovitz*a Station area, Larsemann Hills, East Antarctica. Morphological details are show by microscopic images of viral lysis.

Because the classification and the detection of viral particles, investigating their behaviour in marine ecosystems and their infective impacts (on bacterial and phytoplankton blooms, vertebrates and human health) is of growing interest and should be further developed (Recommandation 3.24 of European Science Foundation Marine Board 2006).

Icebreaker *Aurora Borealis* FP7 Project, in which Romania is partner, will facilitate the first two important steps in study of extracellular viral particles [sterilization of a huge volume of water samples (200 L/ sample) and concentration of viral filtrates (100x - 1000x)]. The advantages of water samples processed on icebreaker will consist of accessible transport of the aquatic samples from ocean to destination country and safety of the aquatic samples conservation.