

A European Roadmap for Research in Astrobiology – The AstRoMap Roadmap

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Abstract

AstRoMap (Astrobiology Road Mapping activity—www.astromap-eu.org) is a collaborative project which will provide the European Planetary Science Community with a road map in astrobiology. The goals of the project have been: (i) to pose big questions related to astrobiology; and (ii) the identification of experiments, new technology and/or those space missions to be developed in future programs and which could answer those big questions. This collaborative infrastructure includes the organization of expert panels and international workshops in order to discuss about those big questions and the science objectives by the community to be addressed. The main deliverable will be a Roadmap document. The project is steered by a consortium of six European and national research institutes and associations:

- Centro de Astrobiología (INTA-CSIC), Spain
- European Science Foundation, France
- Association pour un Réseau Européen d'Exo/Astrobiology (EANA), France
- B-USOC, Belgium
- Deutsches Zentrum für Luft- und Raumfahrt (DLR), Germany
- National Institute for Astrophysics (INAF), Italy

1. Introduction

The roadmapping effort is based on a series of four expert workshops organised between October 2013 and November 2014, these events allowed brainstorming on current challenges and future research priorities for astrobiology, specifically considering the following topics (one per workshop):

- Origin of solar system
- Origin of organic compounds - steps to life
- Physico-chemical boundary conditions for habitability
- Biosignatures as facilitating life detection

The outcome of these topical workshop have been integrated into the AstRoMap Roadmap by a panel of European experts in the fields covered by astrobiology. This synthesis effort has been performed in the spring 2015 and involved two workshops and one community consultation. The Roadmap should be finalised by the end of June 2015.

The AstRoMap Roadmap will be a strategic document aimed at supporting the development of scientific programmes across Europe. In line with the project structure, the AstRoMap roadmap will be structured around five key topics:

- Origin and evolution of planetary systems
- Origin of organic compounds in space
- Rock-water-carbon interactions, organic synthesis, and steps to life
- Life and habitability on Earth and in Space
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- Biosignatures as facilitating life detection

The key topics will focus on a limited number of strategic scientific objectives to be addressed in the next 20 years by European astrobiologists, and suggest research activities for future development.

AstRoMap is supported by European Community's Seventh Framework Programme (FP7/2007-2013) under Grant Agreement n° 313102.