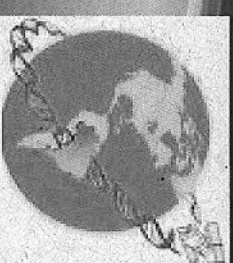
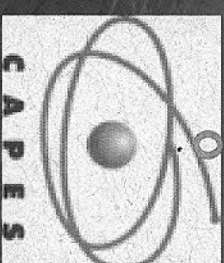


ExoLAB AstroBiology Laboratory

Douglas Galante, Ivan Lima, Claudia Lage and
Eduardo Janot-Pacheco



INESpaz



CAPES



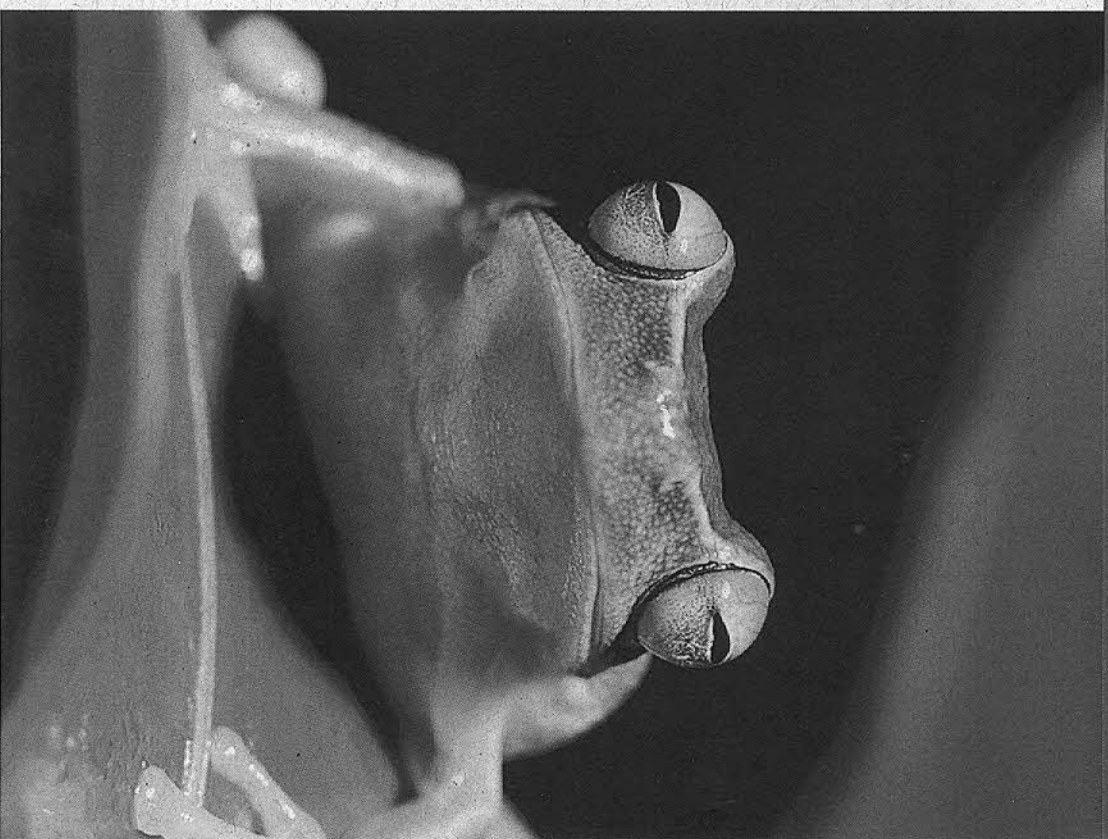
Astronomia Espacial

Exobiologia

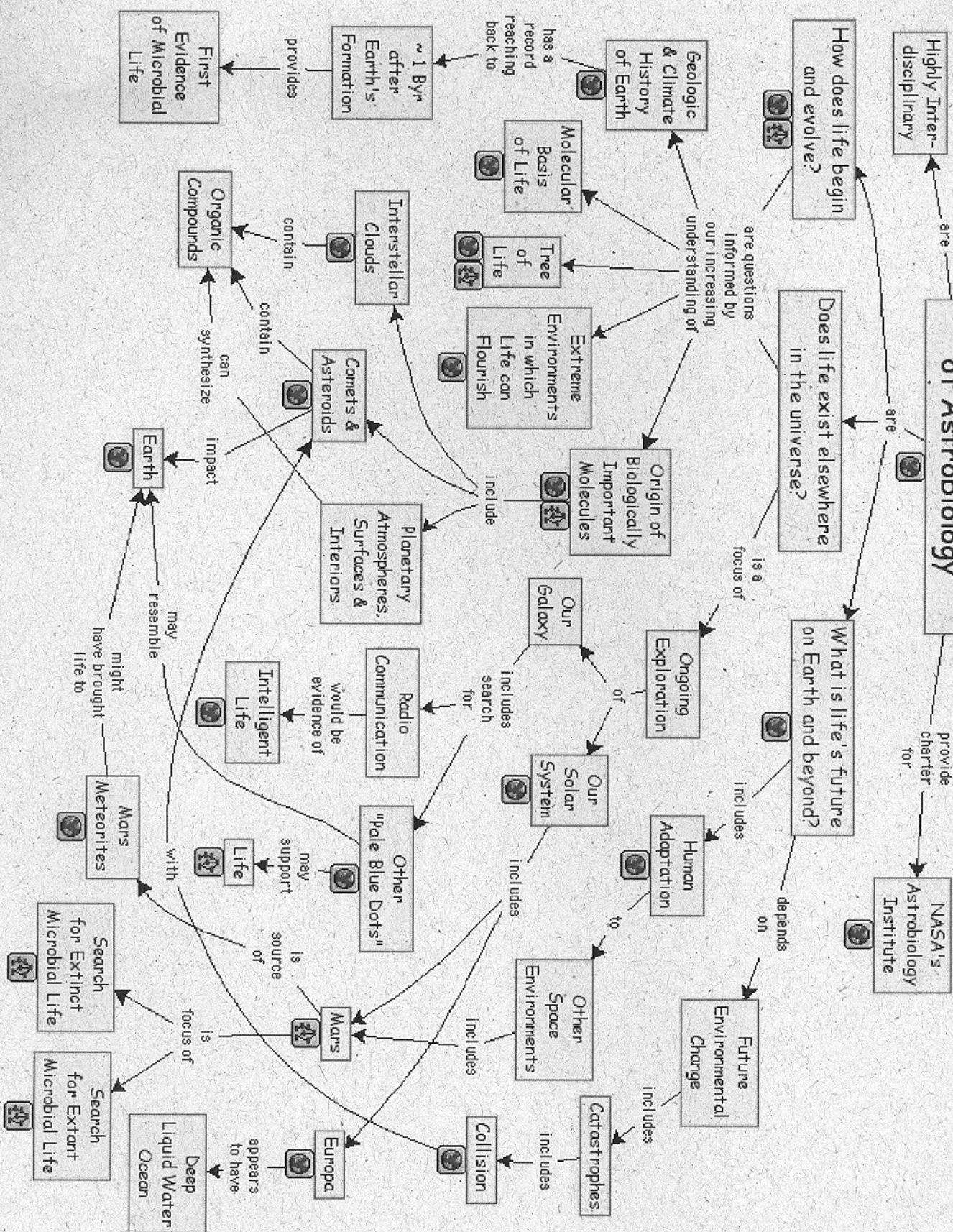
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Astrobiology

- How does life begin and evolve?
- Does life exist elsewhere in the Universe?
- What is life's future on Earth and beyond?



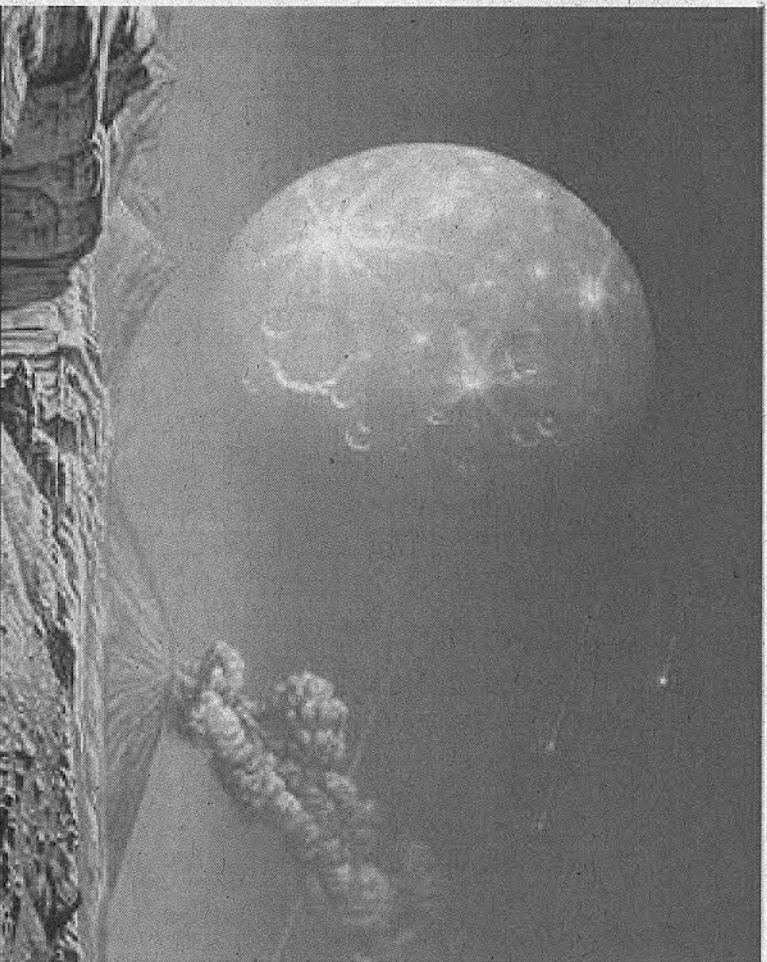
Fundamental Questions of Astrobiology



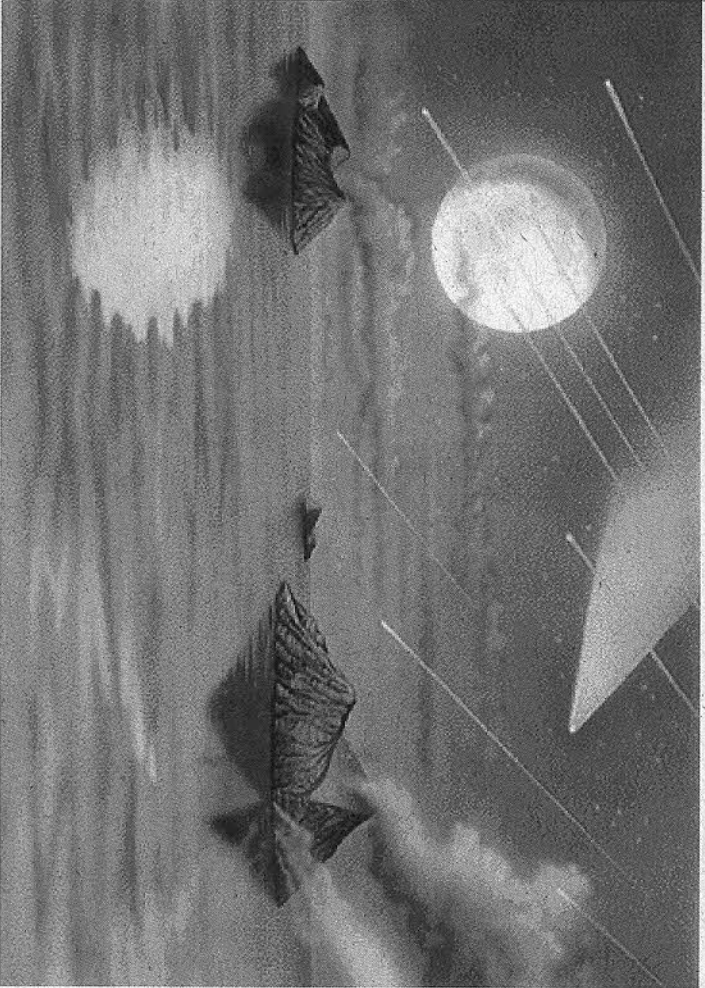
Understanding life (?)

$n = 1$





**How would life as we
know deal with non-
terrestrial
environments?**



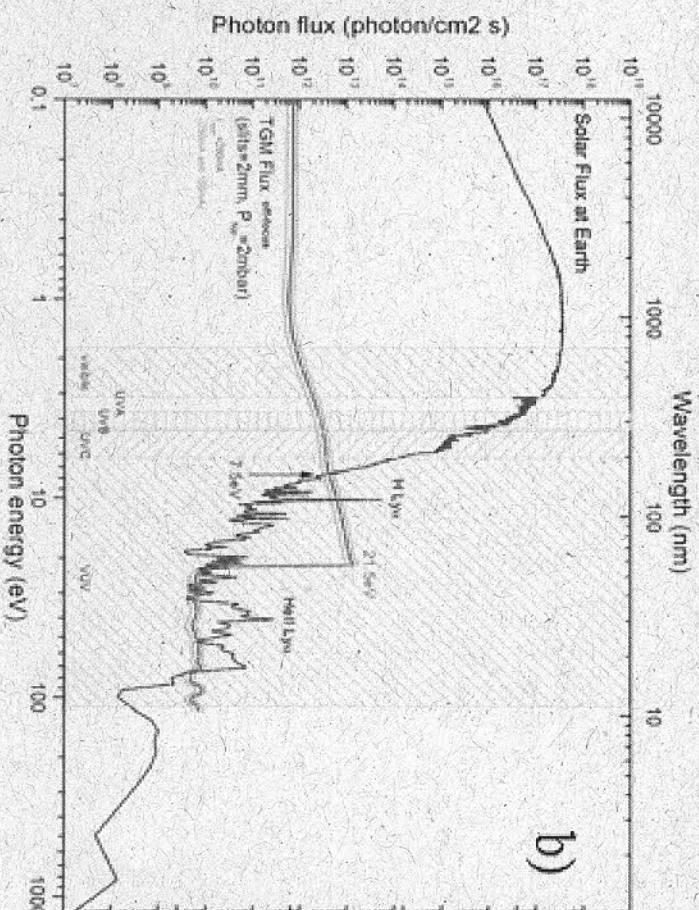
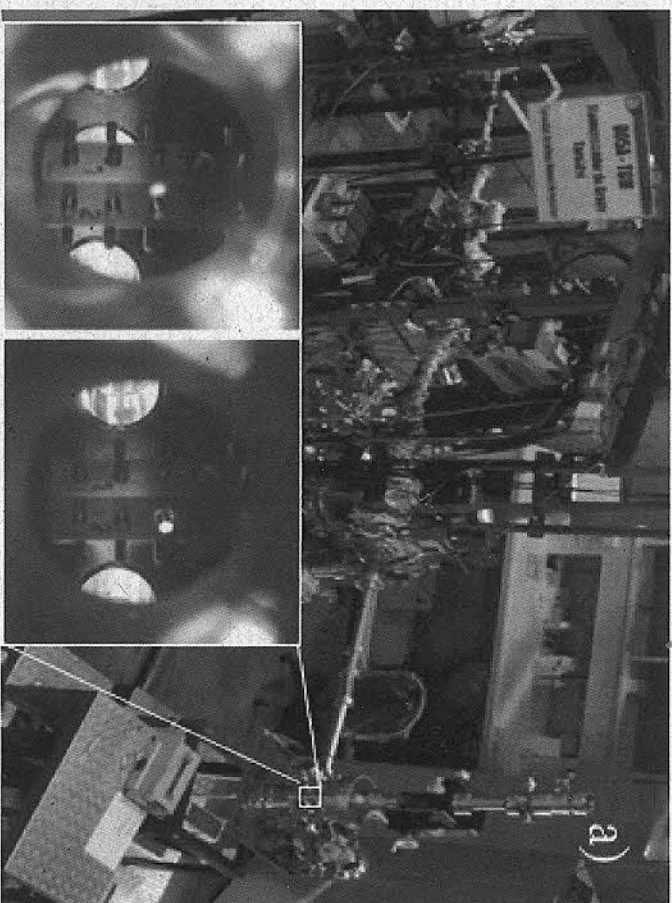
Extremophiles





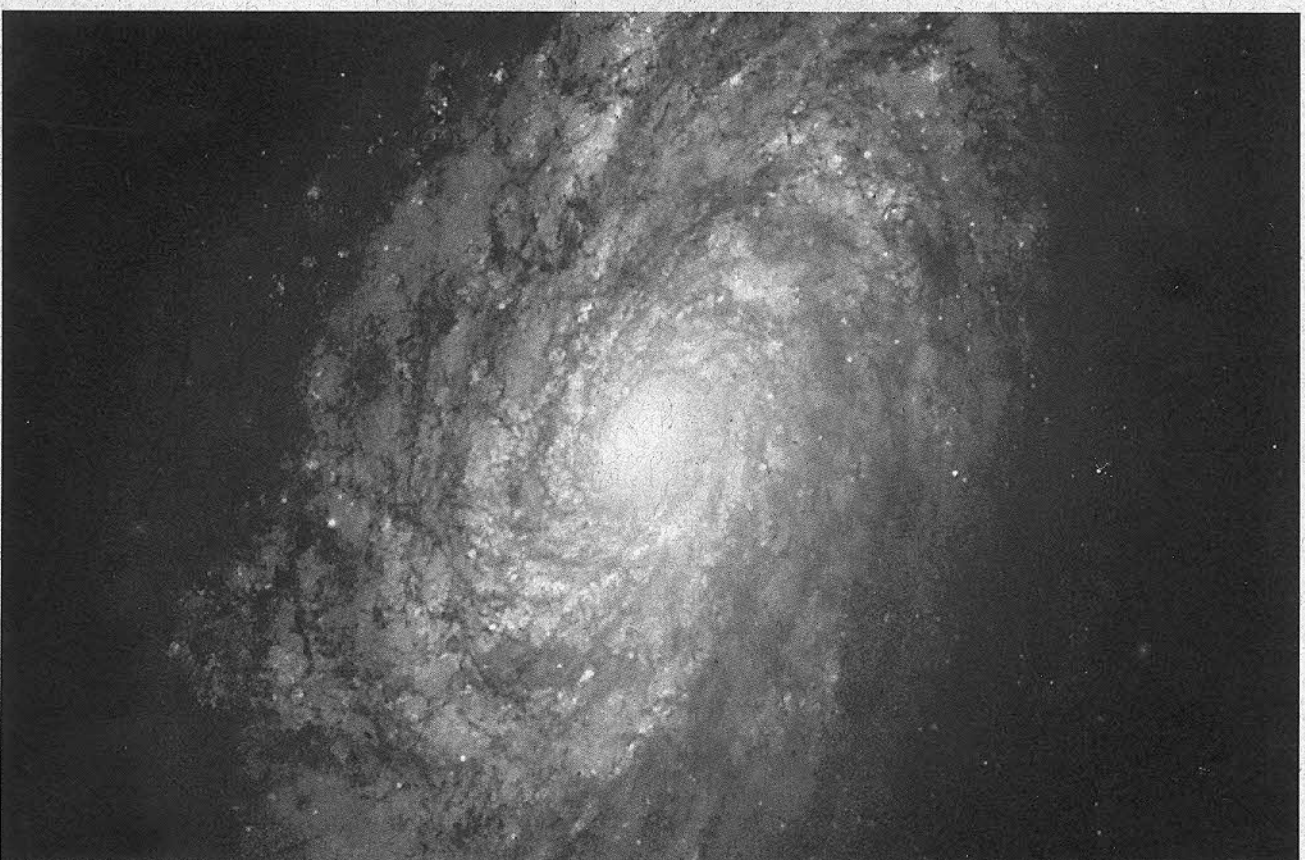
Space environment simulation at the Synchrotron-Light National Laboratory LNLS (Campinas)

Desiccated cells
+
Vacuum
+
Solar VUV radiation



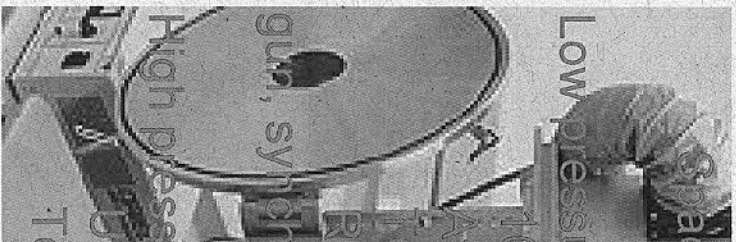
The Universe in a test tube

Laboratory experiments: a
new perspective



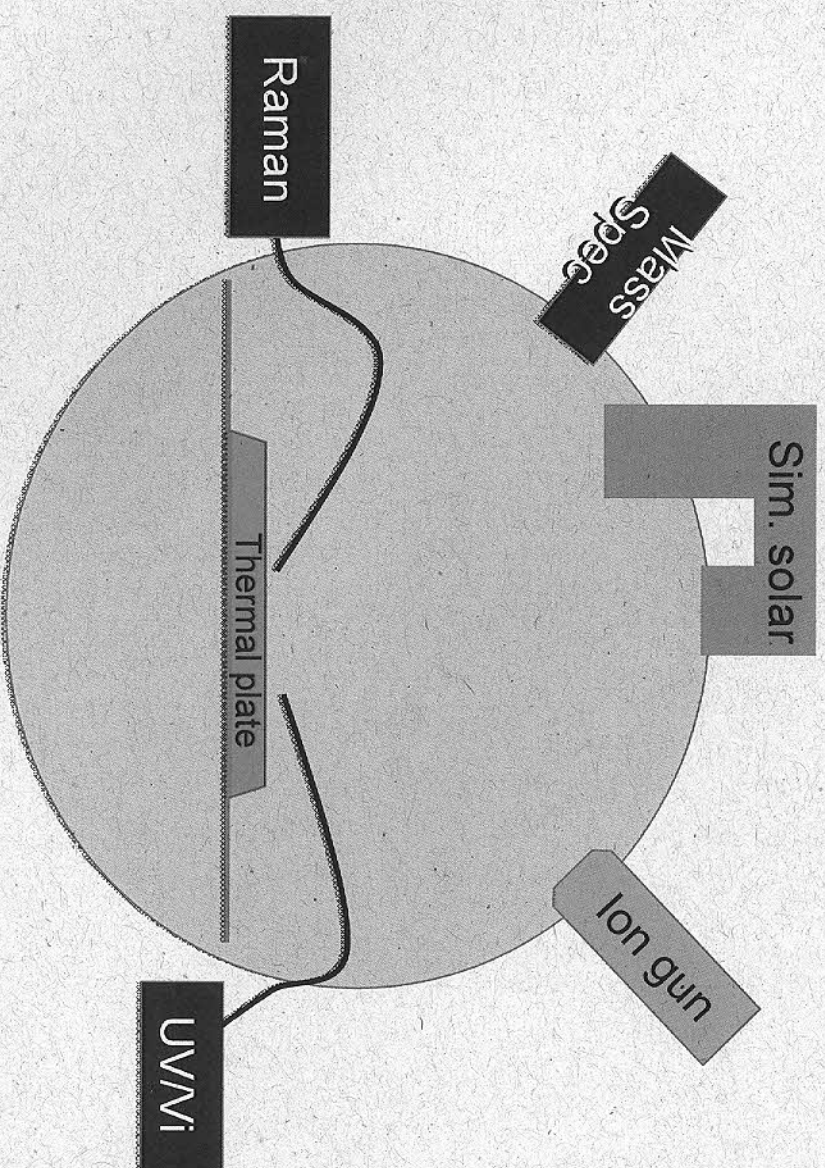
ExoLAB

AstroBiology Laboratory

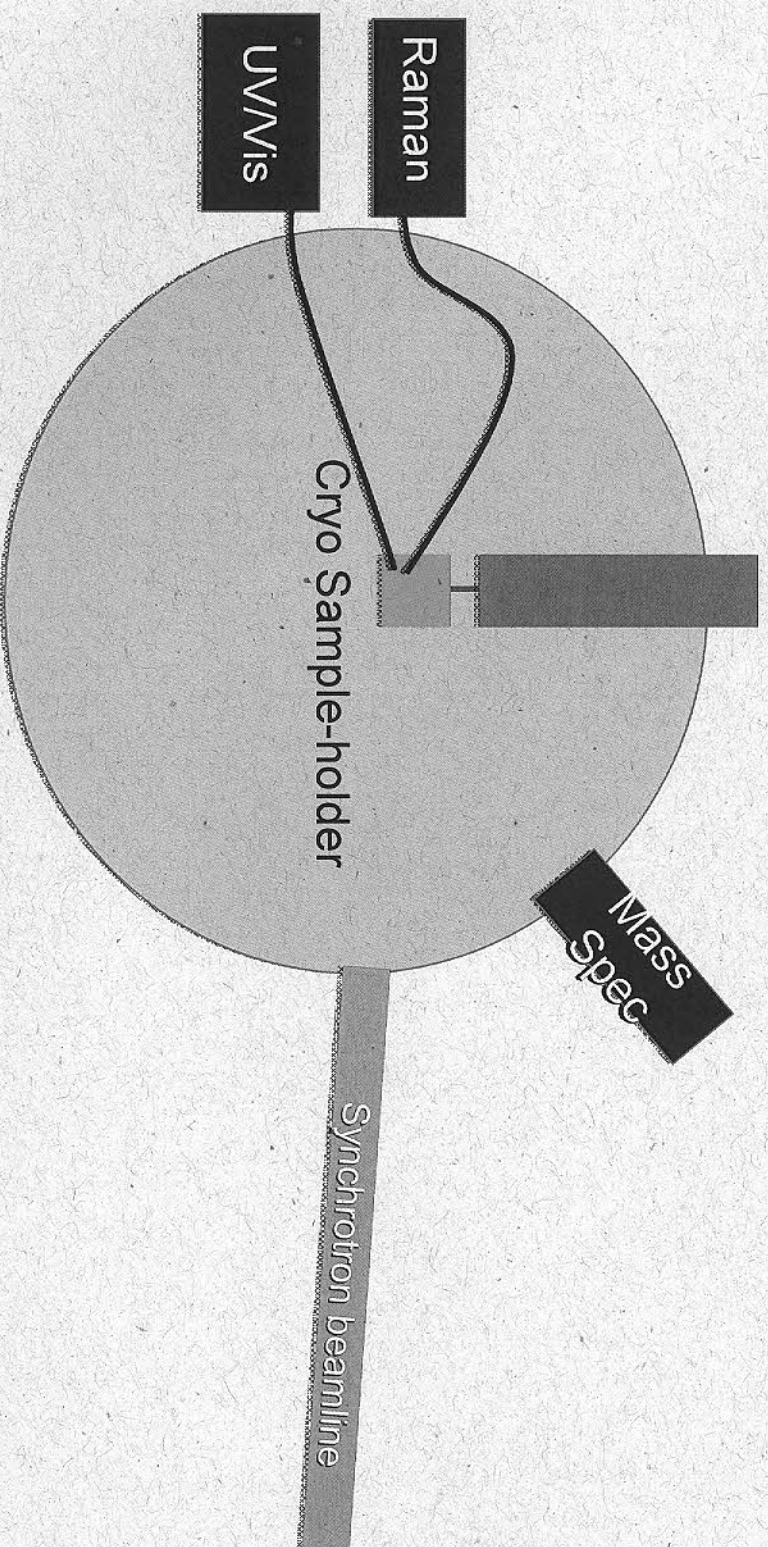


Detection
In situ Ran
In situ mas
Convention
biological I

Local configuration



Synchrotron configuration



Possible experiments

- Chemistry of cometary and planetary ices, pre-biotic chemistry;
- Planetary atmospheres;
- Origin of life;
- Resistance of microorganisms to extreme conditions;
- Biological molecular response to physical and chemical stress;
- Isolation and identification of new extremophilic organisms;
- Biotechnological applications;
- Material sciences applications;
- etc

Funding

- IAG: infrastructure
- CNPq: INEspaço (INCT) (~ R\$1M)
- CNPq: Informatics(~ R\$20k)
- CAPES: Pró-equipamentos (~ R\$50k)
- Fapesp / CNPq: Scholarships
- Privado (?)
- ...

Some facts

- 1st laboratory dedicated to Astrobiology studies in Brazil;
- 1st space simulation chamber for biology on southern hemisphere;
- State of the art research made at the OAM, attracting researchers, students and visitors;
- Access to environmental samples;
 - Atacama, Andes, Antarctica, etc.
- Biology of extremophiles;
- Multi-user, open access facilities;
- Complete support infrastructure;
 - Lodging, informatics, near USP, Unicamp and LNLS
- Public outreach and education project

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