



**ALTERNATIVE**

### Target audiences

- Policymakers and regulators
  - Pharma companies and agricultural industry
  - National health services in Europe
  - Environmental and health-related NGOs and citizen initiatives in Europe
  - Scientific community in the areas of toxicology and biomaterials
- Expected impacts

### ALTERNATIVE project results are expected to have the following impacts:

- Improved understanding of the regulatory utility of complex in vitro 3D models versus simpler 2D models.
  - Scientific evidence to enable prevention and mitigation of co-exposure to pharmaceuticals and industrial chemicals in the environment and the technosphere.
  - Improvement of existing risk assessment approaches to reduce the most critical exposures, including setting limit values
- Assessment of new regulatory approaches such as Mixture.



**ALTERNATIVE**

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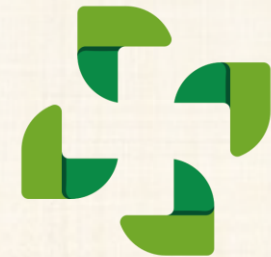
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**ALTERNATIVE**

environmentAL Toxicity chEmical  
mixtuRes through aN innovative  
platform based on aged cardiac tissue  
model



**ALTERNATIVE**

<https://alternative-project.eu/>

## CONSORTIUM



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Technical Manager: Federico Vozzi, CNR

Beneficiaries: 11 partners

Duration: 1 October 2021 – 30 September  
2024 (36 months)

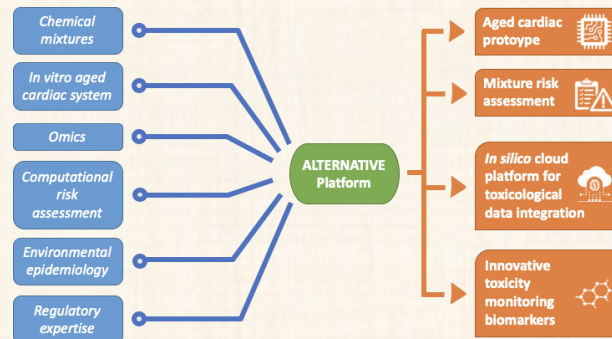
Type of Project: Horizon 2020 Research  
and Innovation Action (RIA)

## ALTERNATIVE

### Building the Innovative Platform to Assess the Cardiotoxicity of Chemicals and their bio- transformation products

ALTERNATIVE novel platform will enable regulators and industry to identify, quantify and prevent cardiotoxic co-exposures to industrial chemicals and pharmaceuticals in a cost-effective way.

The platform will consist of a three-dimensional tissue engineering in-vitro model mimicking the human cardiac tissue, coupled with a reliable, high-throughput monitoring system based on multi-omics analyses, and integrated into a Machine Learning (ML) risk assessment tool. In addition, ALTERNATIVE will modify the tissue model to reproduce the aged myocardial tissue and elucidate the adverse effects of chemicals on older people.



ALTERNATIVE

ALTERNATIVE's proof-of-concept validation will be performed on well-known mixtures of pollutants, affecting different environmental compartments, and selected via epidemiological, toxicological and modelling expertise.

ALTERNATIVE will also provide systematic reviews of high-quality epidemiological studies to support integrated in-vitro and in-silico data, giving a more robust basis for regulatory decisions.

ALTERNATIVE platform will be an innovative tool for complying with the current regulation associated with the assessment of chemical compounds. It will be a new instrument to evaluate unpredictable toxicity due to synergistic effects of different chemicals, additionally worsened by the human ageing process.