PATROLS

Advanced Tools for NanoSafety Testing

# PATROLS: Physiologically Anchored Tools for Realistic nanOmaterial hazard aSsessment

## Vision & Strategy: PATROLS Stakeholder Workshop

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OECD Workshop "Advancing AOP Development for Nanomaterial Risk Assessment and Categorization", Paris, 11-12th Sept 2019

# Overview

- Current knowledge gaps:
  - Limitations of current existing *in vitro* and *in silico* hazard detection systems.
  - Long term effects of realistic ENM exposures for both human health & the environment.

Regulatory Toxicology and Pharmacology 91 (2017) 257–266

Contents lists available at ScienceDirect

Regulatory Toxicology and Pharmacology

journal homepage: www.elsevier.com/locate/yrtph

Commentary

Aligning nanotoxicology with the 3Rs: What is needed to realise the short, medium and long-term opportunities?

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- High priority to develop and adopt realistic and advanced *in vitro* tests with potential to substantially improve the relevance of *in vitro* approaches

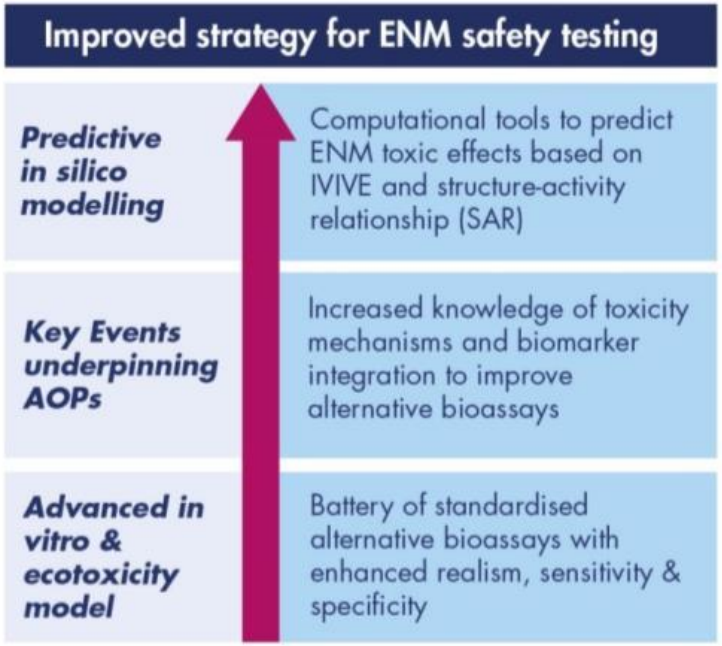
# PATROLS aim & vision

Establish and standardise a battery of innovative, next generation hazard assessment tools that more accurately predict adverse effects caused by long-term (chronic), low dose ENM exposure in human and environmental systems to support regulatory risk decision making.

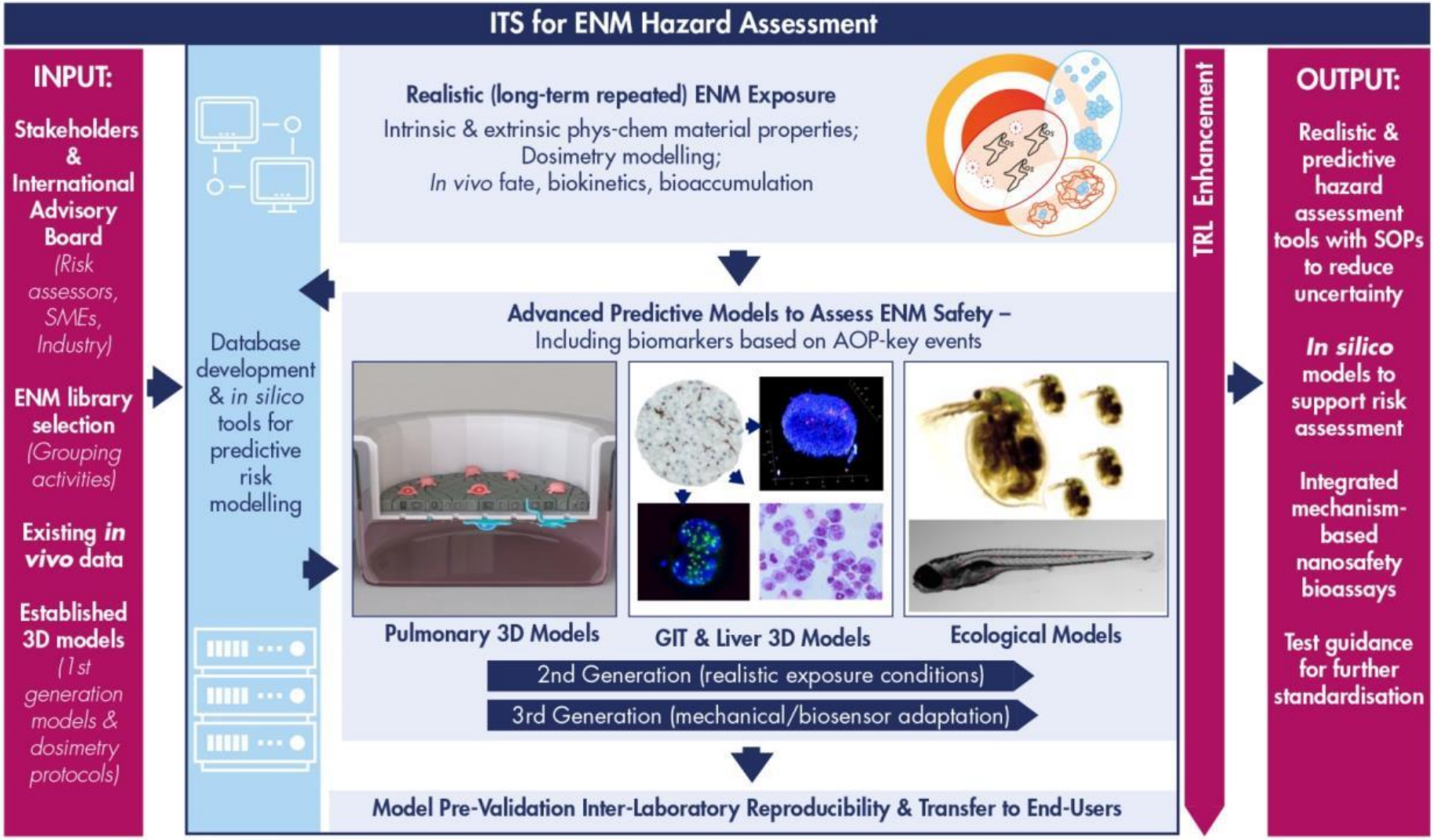
1st Jan 2018 – 30th June 2021 (42months)

24 partners, 13 countries

€12.7million



# PATROLS Concept



# Innovation in the research approach

1. Methods to characterise **extrinsic ENM properties in realistic complex biological matrices.**

2. ***In silico* tools** for dosimetry, exposure & mechanistic systems biology modelling e.g. *In vitro* partico-kinetics model.

3. **Advanced ecotoxicity tests** relevant to a range of species along the food chain e.g. PLATEFORM system; TG[EpRE:mCherry] zebrafish model.

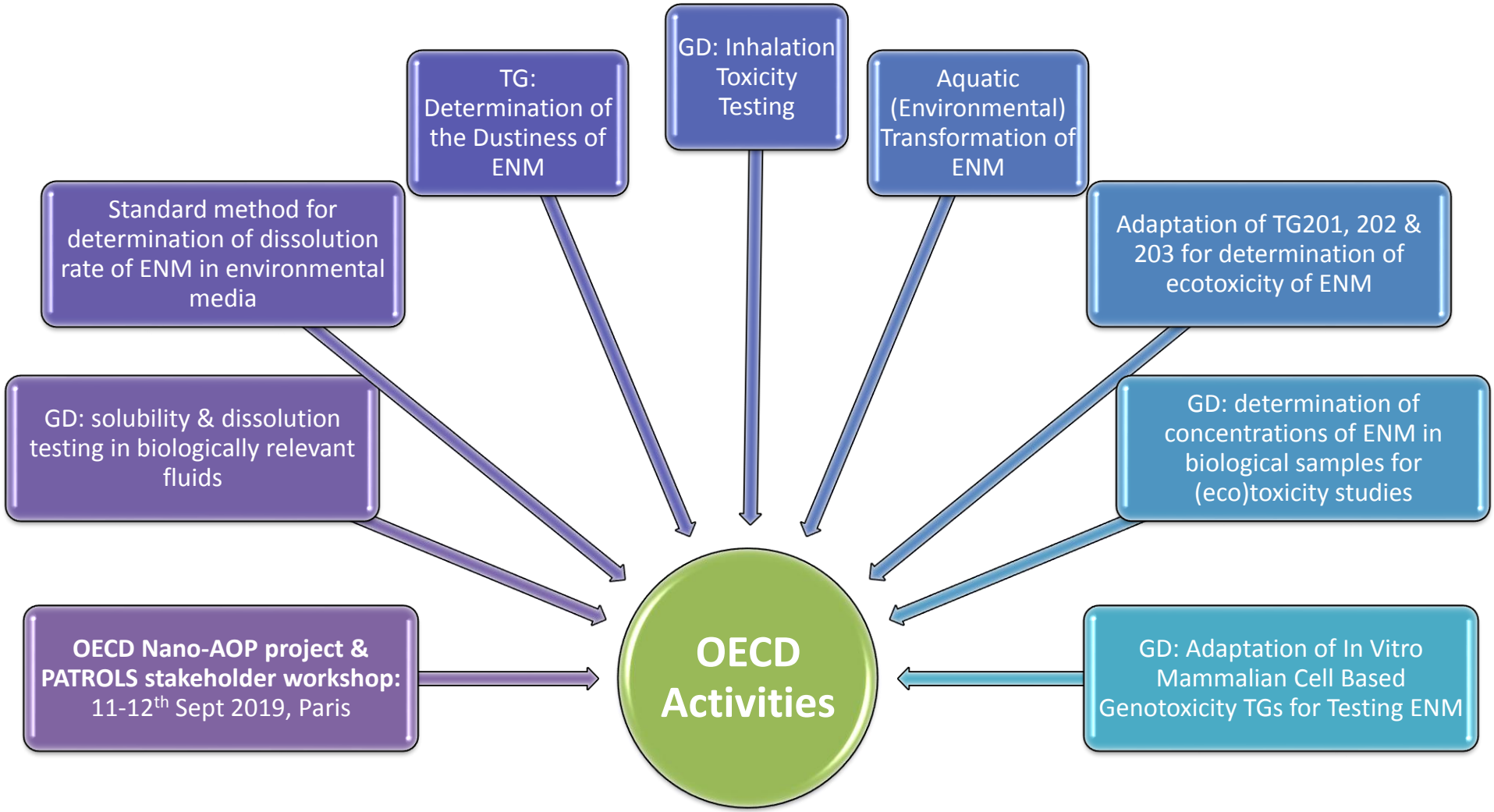
4. **Innovative, heterotypic *in vitro* models of the lung, GIT & liver** that more closely mimic human physiology.

5. **Improving predictive power** of *in vitro* & *in silico* approaches (regulatory acceptance)

   – Characterising extrinsic ENM properties
   – Database of existing high quality *in vivo* sub-chronic and chronic toxicity data

**SOPs are currently being generated: 11 completed, several in process**

# Contributing to change through OECD



# Workshop Agenda Outline

Aim: showcase and seek stakeholder / end-user feedback on tools being developed within PATROLS.

- Morning session:
  - Tools currently developed at mid-stage of PATROLS
  - **We want your feedback please:**
    1. What would encourage you to consider data generated / reduce uncertainty in use of these tests for hazard assessment?
    2. Which models/tools would you see value in taking forward/ accelerating into a risk assessment setting and why?
    3. Are the tools applicable across all or only certain sectors?

- Afternoon Session:
  - Open general discussion / break-out groups

# Thank you for your attention & questions!

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 760813.