

# POLYRISK

Understanding human exposure and health hazard of micro- and nanoplastic contaminants in our environment

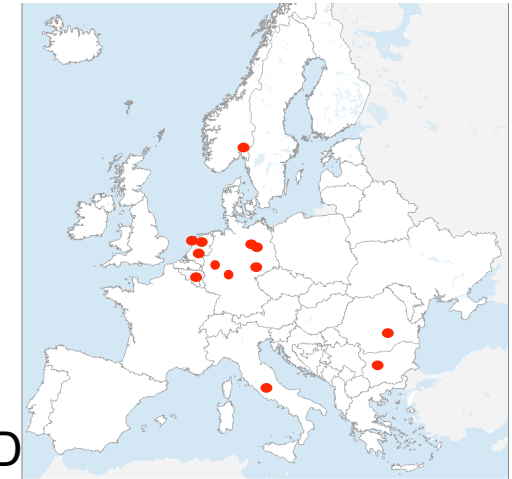


Dr. Raymond Pieters (Utrecht University) & Dr. Heather Leslie (VU Amsterdam)

# POLYRISK Objectives

1. Develop and apply innovative sampling, sample preparation and analytics to assess internal (human matrices) and external (abiotic) exposure to MNP.
2. Develop and apply a human-based in vitro toolbox for testing epithelial transfer and immunotoxicity of MNP
3. Assess exposure and biological effects of MNP in real-life scenarios
4. Establish a risk assessment strategy and execute HRA for MNP
5. To manage data for current use in developing MNP risk assessment strategy and for future *in silico* predictions
6. Exchange and communicate information and knowledge to our stakeholders

# POLYRISK Consortium



- 1 (coord.) Utrecht University (UU) NL
- 2 (co-lead) Vrije Universiteit Amsterdam (VUA) NL
- 3 Stichting VUmc (VUmc) NL
- 4 German Federal Institute for Risk Assessment (BfR) DE
- 5 Bundesanstalt für Materialforschung und -prüfung (BAM) DE
- 6 Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA) DE
- 7 Norwegian Institute of Public Health (NIPH) NO
- 8 University Medical Centre Utrecht (UMCU) NL
- 9 The Research Development National Institute for Textile and Leather (INCDTP) RO
- 10 Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) IT
- 11 Ideaconsult Ltd. (IDEA) BG
- 12 Health and Environment Alliance (HEAL) BE
- 13 Fraunhofer-Center für Silizium-Photovoltaik (CSP) DE
- 14 European Research Services (ERS) DE



Utrecht University



Amsterdam UMC  
University Medical Centers



baua:  
Bundesanstalt für Arbeitsschutz und Arbeitsmedizin



UMC Utrecht



Norwegian Institute of Public Health



# Human exposure in real world exposure scenarios

## Field Inhalation Scenarios (n=2)

- Indoor athletes on rubber granulate artificial turf
- Traffic-related outdoor air exposure in pedestrians

## Occupational exposure scenarios (n=2)

- Textile industry workers
- Synthetic rubber industry workers

## Ingestion scenario (n=1)

- Drinking water ingestion study

## General population background exposure study

- MNP exposure in whole blood of healthy volunteers



**Evidence for MNP uptake in humans sought via:**

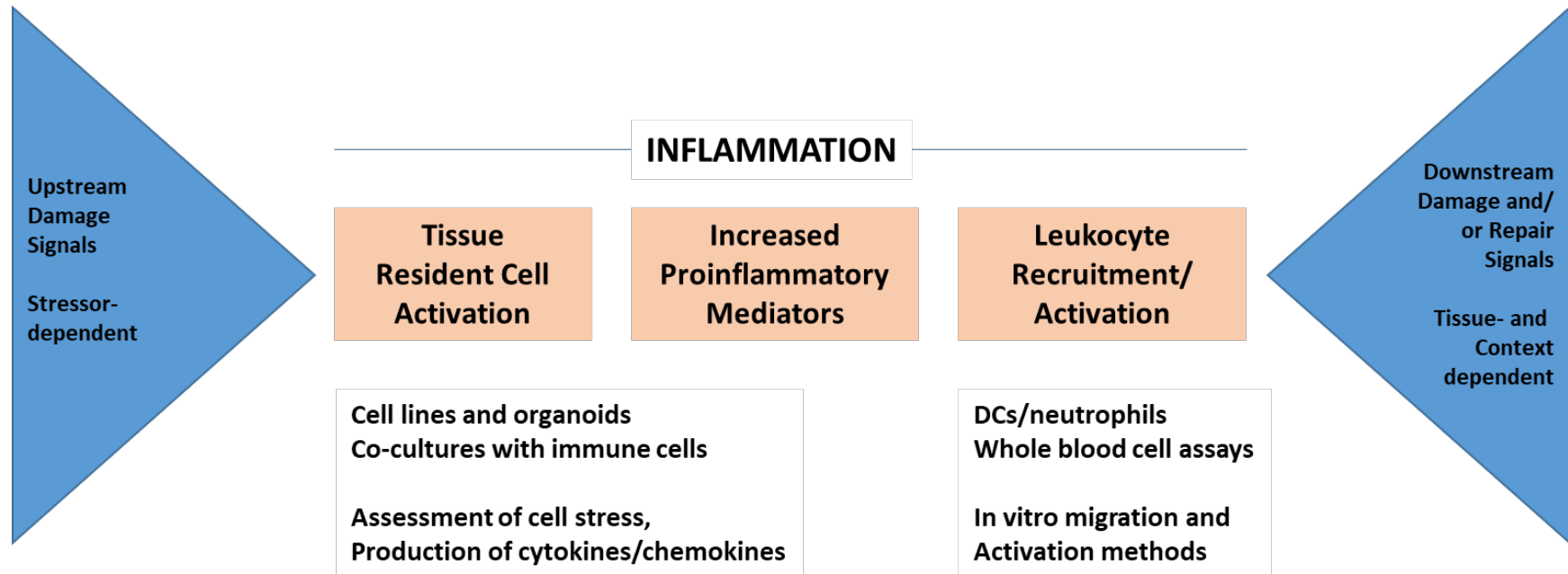
Chemical analysis in human matrices

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Immune system/inflammatory responses

# In vitro immunotoxicity assessment

FOCUS ON KEY EVENT CENTRAL TO MANY INFLAMMATORY DISEASE OUTCOMES



# Human risk assessment and database

- 1) well- established case-by-case approach for selected MNP in selected scenarios
- 2) grouping and read-across approaches (based on exposure and toxicity banding principles initially developed for fibres).
- 3) open database and open access publications

# Potential collaboration

Common database of human biomonitoring data

Reference materials

Selection of similar immunotoxicological biomarkers

Common risk assessment framework

(e.g. via stakeholder workshops planned for M15 and 46)

Common Integrated Approach to Testing and Assessment  
(IATA)

Public dissemination events



[r.h.h.pieters@uu.nl](mailto:r.h.h.pieters@uu.nl)

[heather.leslie@vu.nl](mailto:heather.leslie@vu.nl)