

Can microplastics in mothers' seafood diet impact the fetus?

Maternal seafood consumption and fetal exposure to microplastics

Damaris Benny Daniel
Damaris.Daniel@uib.no
Department of Clinical
Medicine, K1



Background and motivation

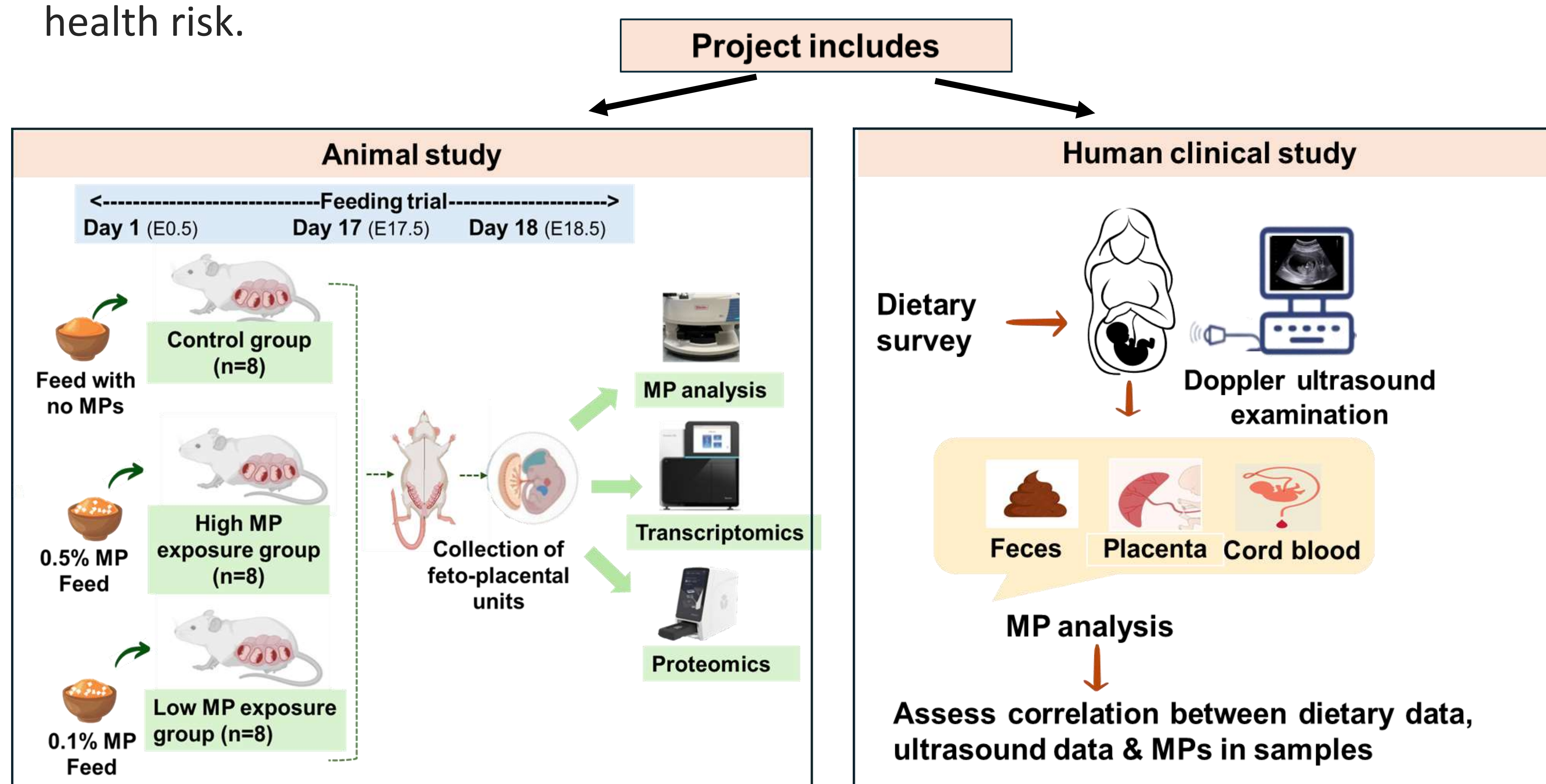
With an academic background in biology, I have long been passionate about the impact of human activities on marine ecosystems, leading me to pursue a Ph.D. in marine science focused on marine plastic debris and microplastics (MPs). The detection of MPs in the edible tissues of several seafood species in my PhD project motivated me to delve deeper into the complex and multifaceted issue of "MPs' health effects" and has driven my pursuit of the SEAS postdoctoral program".

Project description

Microplastics (MPs; **small plastic particles < 5mm**) are an emerging contaminant of global concern, present pervasively in the marine environment. Despite widespread reports of MP intake through seafood consumption, the human health risks of MPs from seafood are not fully understood. Hence, this project aims to investigate whether MP-contaminated seafood consumption during pregnancy exposes the fetus to MPs and/or cause any health risk.

Main questions

- What is the fate of ingested MPs in a mammalian system?
- Can MP transfer from maternal food to the fetal environment?
- What are potential health risks associated with MPs consumption during pregnancy?



Aims

- Completion of mice feeding trial
- Sample collection from euthanized mice
- RNA sequencing – fetal samples
- MP analysis of mice placenta
- Recruitment of pregnant women
- Completion of dietary survey
- Biological sample collection
- MP analysis of biological samples

Highlighted results (and/or activities)

- Secured Meltzar fond for a pilot study to develop protocol for MP analysis in human samples
- Selected for training in advanced MP analytical techniques in European Commission's Joint Research Centre - Nanobiotechnology Lab, Italy
- Presented the poster regarding the project in Nordic Nutrition conference, 2024.
- Initiated collaboration with Haukeland hospital for human sample collection
- Initiated collaboration with Institute of Marine Research, Bergen & Raman laboratory UiB for MPs characterization
- Started supervision of 2 master's student

Relevance to Marine sustainability

The ubiquitous presence of MPs poses a significant challenge to achieving several UN Sustainable Development Goals (SDGs), including SDG 14 (Life Below Water), SDG 15 (Life on Land). And SDG 3 (Good Health and Well-being). The project findings can increase public awareness about the pervasiveness of MPs and associated health risks, potentially influencing consumer behavior and political will to address the uncontrolled use and disposal of plastics.

Supervisory team

Supervisor: Prof. Jutta Dierkes, Dept. of Clinical Medicine, UiB

Co-supervisor: Prof. Odd André Karlsen, Dept. of Biological Sciences, UiB

Mentor: Tanja Kögel, PhD, Institute of Marine Research, Bergen

SCAN ME



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 101034309.



SEAS

