

Plastic Brainstorm?



Micro- and nanoplastics as neurotoxicants

Cecilia Lutz & Pinja Ahlbom BIO316

Micro- and nanoplastics (MNP's) are found everywhere: in the **water** we drink, in the **food** we eat and in the **air** we breathe. They are capable of surpassing the body's defences and have been found in various **tissues**, such as blood, lung epithelium and even the **brain**. Here, we explore the potential **neurotoxic effects** of micro- and nanoplastics.

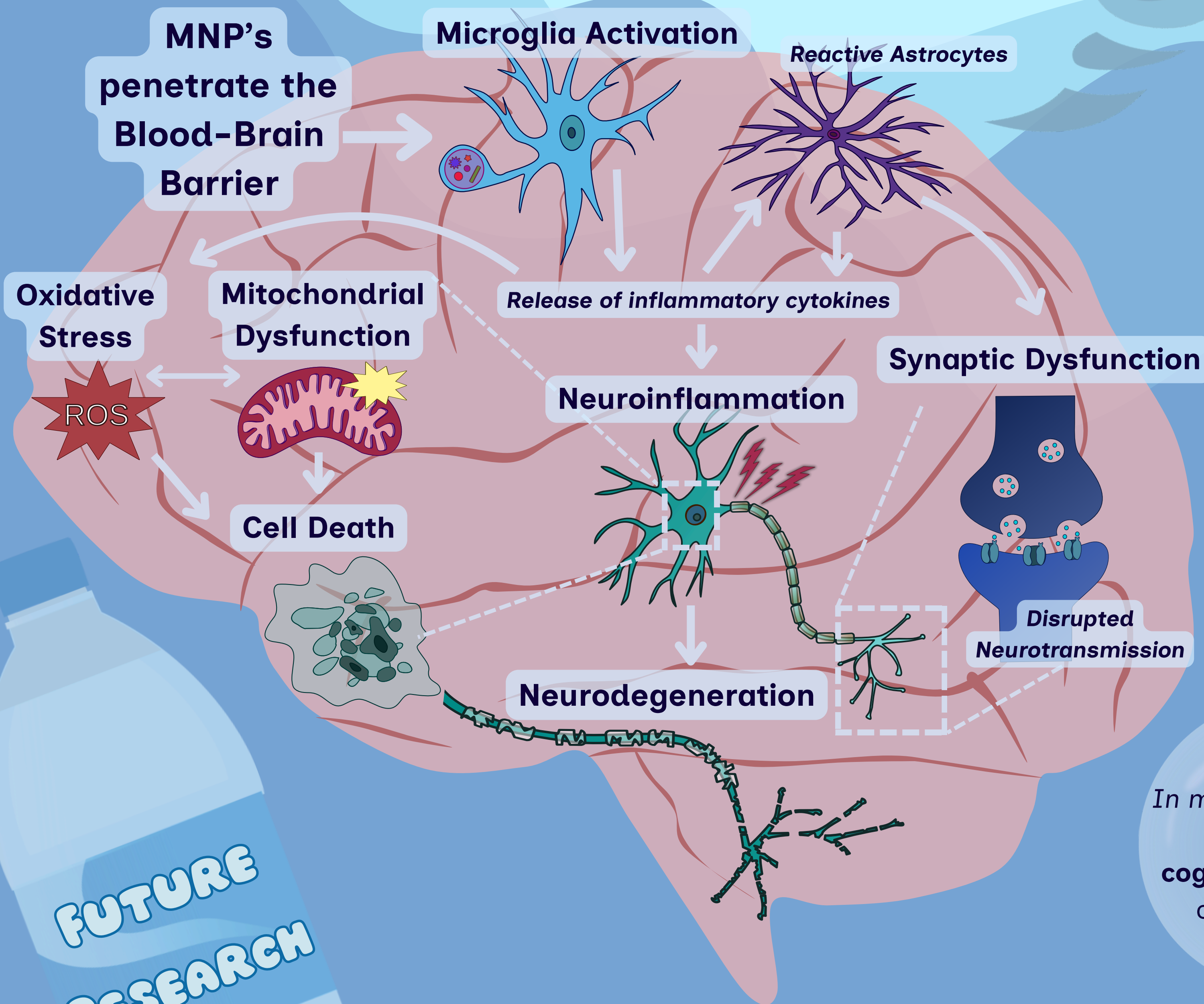
Microplastic
5 mm -
0,001 mm

Nanoplastic
<0,001 mm

The ability of a MNP to enter & accumulate in tissues and bypass biological barriers depends on...

- particle size
- exposure time
- concentration
- morphology
- chemical properties

Role of MNP's in accelerating neurodegenerative diseases - more MNP's found in patients with **dementia**



Disrupted neurotransmission → **motor, cognitive and mood-disturbances** resembling Parkinson's & Alzheimer's diseases

Consequences

In mice: **anxiety-like** behaviour & **cognitive deficits**, contributes to **Parkinson**

In zebrafish: **aggression** & **disturbed circadian rhythm**

FUTURE RESEARCH

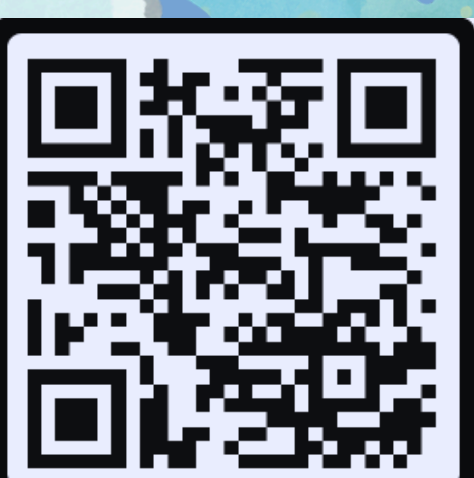
- What is needed:**
- Thoughtful, comparable design
 - Long term studies
 - Focus on particle size and shape
 - Systemic effects
 - Human based in vitro models

According to Nihart A. (2025), there is **~one teaspoon of MNP's in the human brain**. However, this finding could be an artefact, result of contamination.

What do you think?

Yes, there is a lot of plastic in our brains

No, there have been contaminations during the experiments



316.2

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