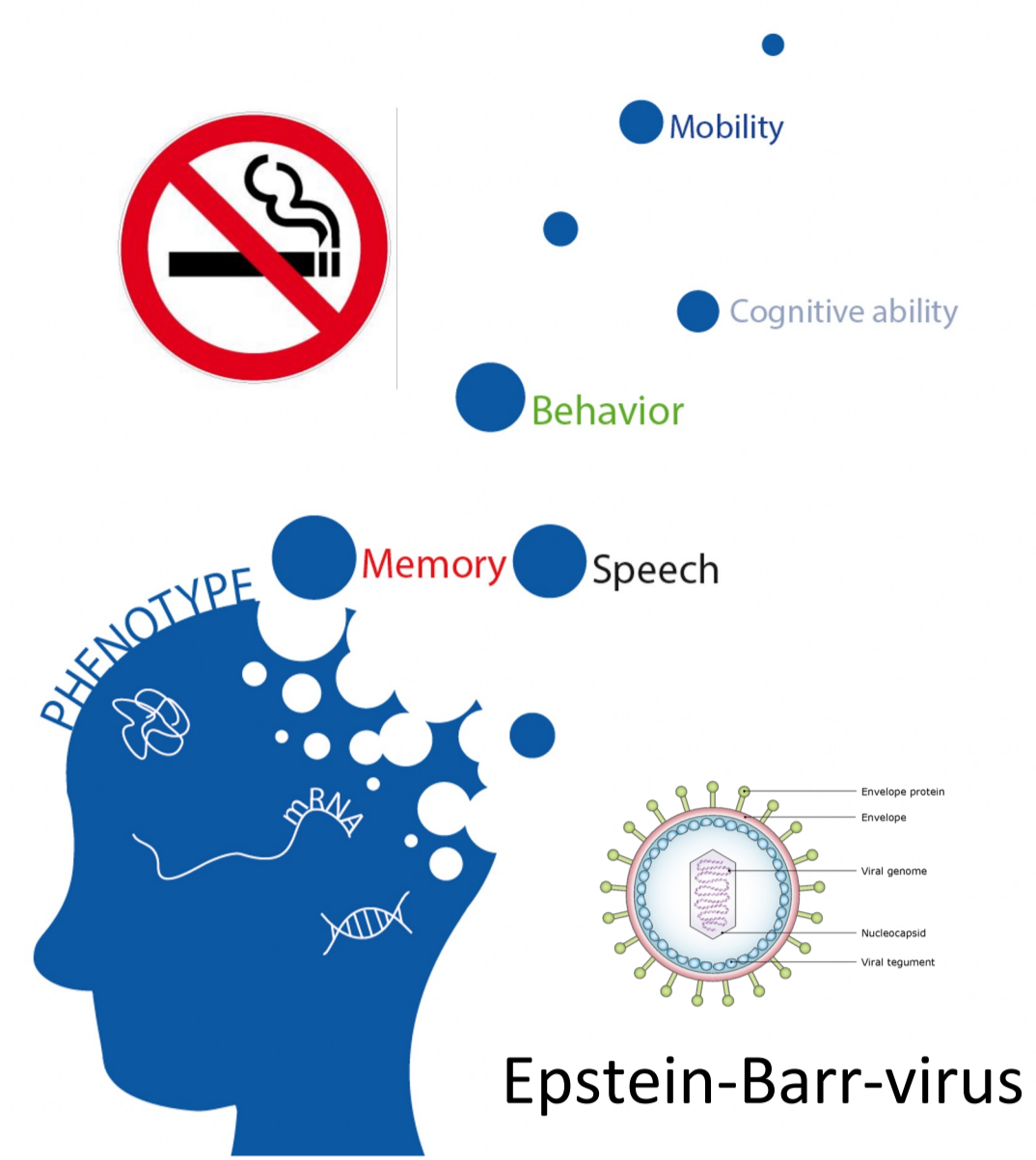


# Addressing Global and Environmental Aspects on

# Neuro health



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Brain diseases are on the rise, especially in children, possibly due to environmental changes, exposures, and lifestyle; challenge-based education offers innovative solutions

Many welfare diseases, like Parkinson's, multiple sclerosis, Alzheimer's, ADHD, and autism, affect the nervous system. Environmental risk factors may contribute to their development.

Students will explore neurological disorders, toxic exposures, urban design, and epidemiology.



Visit to Uppsala wastewater treatment plant

Teaching topics: challenge-based education, teamwork, and presentation skills.  
 Pedagogical challenge: designing a course incorporating all these areas for diverse students.

Students presented their projects through oral presentations to experts and in reports for local citizens, practicing communication skills by explaining complex problems to specialists and the public.

This five-week blended intensive program (BIP) uses challenge-based education to link these areas in a collaborative project. Students will identify local risk factors and propose solutions to mitigate them



PFAS that leaks into groundwater poses risks – The Swedish Supreme Court rules in favor of citizens (2023)

### Teachers (in selection)

Dr. Jelle Van Cauwenberg  
Ghent University

Assoc. Prof. Syed Moshfiqur Rahman  
Uppsala University

Prof. Hans Orru  
University of Tartu

Dr. Valentina Gallo  
University of Groningen

Dr. MD. Joachim Burman  
Uppsala University

Prof. MD. Daniela Ostatniková  
Comenius University  
(Photo © Linda Kiskova Bohusová)

Which of these two streets would you prefer to walk to a friend's house?

Older adults residing in a high walkable neighborhood walked more for transport (independent of neighborhood SES).

Courtesy of Dr. Jelle Van Cauwenberg

Local efforts - exercise can decrease risk of developing diseases

Jana Kilian, Briyanth Ravichandran, Alice Gabriellsson Samuelsson

**How traffic influences the brain development of children in Manchester**

Dear citizens of Manchester, we are a research group of medical and psychology students and we want to inform you in this report about how our environment can affect our health, with a specific focus on what environmental risk factors there are in your city, Manchester. To inform you best, we conducted some research and spoke to politicians about our results as well.

PFAS and ultra-processed food

- Newborns of pregnant women who weekly consumed three or more ultra-processed food
- Presented the higher level of PFAS
- Non-consumption of ultra-processed food investigate

Noise Pollution

- Physical Diseases
- Mental
- Irritability
- Depression
- Anxiety
- Behavioral and Cognitive Disorders
- ADHD
- Difficulties learning
- Less access to quality education

Proposed Solutions

- Sound Insulation on Factory
- Sound Barriers Around the Town
- Additional Filtering of Exhausts
- Installation of Deducing Machinery

Why Children?

- 21% of Manchester's population
- Susceptible critical periods left
- Physically closer to peak TRAP concentration
- Children benefit more compared to adults
- Our future → prevention

WHO's guidelines vs England's laws on air pollution

Local Steps for intervention