HEREDITARY

Use Case 5: Gut-Brain Linkage and Disease Relevance

This use case, alongside Use Case 4, explore the gut-brain axis to map its role in health and disease, aiming to identify microbiome-based biomarkers for neurological disorders.

Focus disease

Neurological, stress-related and neurodevelopmental disorders, such as: Parkinson's Disease, Depression, Attention Deficit Hyperactivity Disorder, Anxiety Disorders, and Autism.

Data modalities and providers

Genetic, text, microbiome, clinical, neuroimaging, and digital pathology samples from RUMC, UNIPD, UNITO, and public/open sources.

Scientific approach

Application of gut-brain axis phenotyping from case 4 to clinical disorders.

Characterization of gut microbiota using deep learning to detect bacterial patterns.

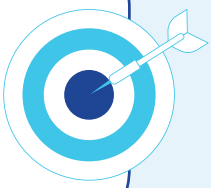
Evaluation of microbiota influence on stress-related and neurodevelopmental disorders.

Expected Outcomes

Identification of gut microbiome alterations associated with neurological, stress-related and neurodevelopmental disorders.

Discovery of microbiota-based markers for symptom clusters in mental health disorders.

Potential probiotic interventions for targeted patient subgroups.



Impacts

Creating new strategies for precision-medicine drug development.

New paradigms for integrating genomics and multimodal data.

Increase public trust about the safety and efficacy of data sharing.

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No GA 101137074. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

Funded by the European Union

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