Applied and Translational Neurogenomics of FTLD and Related Disorders

Group Leader: Prof. Dr. Rosa Rademakers

What is FTLD?

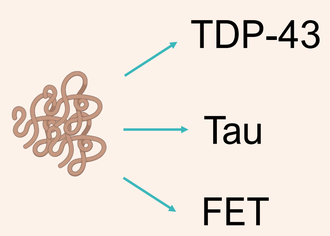
Frontotemporal Lobar Degeneration (FTLD) is the second most common young-onset dementia (onset <65 years old). FTLD patients present behavioral, language, memory, and movement dysfunctions.

FTLD is highly heterogeneous

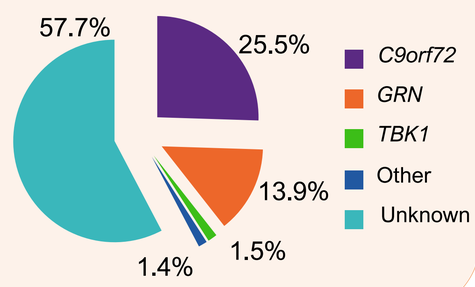
Clinical

ALS
FTD-MND
bvFTD
PPA
CBS
PSP

Pathological



Genetic

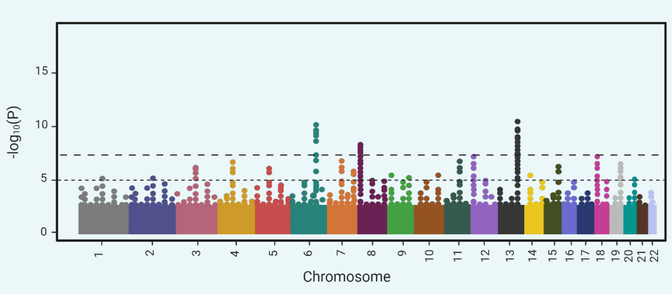


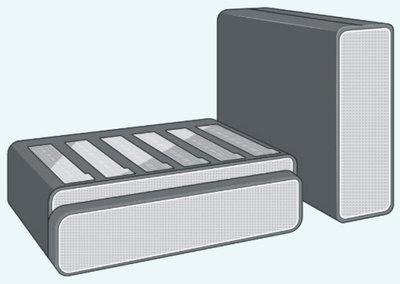
What is our research focus?

BIOINFORMATICS (75%)

Genetics & Epigenetics

Employing short and **long-read whole genome sequencing technologies,** we aim to unravel underlying **(epi)genetic risk** for FTLD, **causal genes** for genetically unexplained patients and **genetic modifiers** of disease mechanisms.



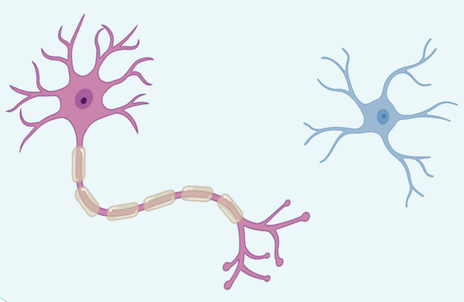


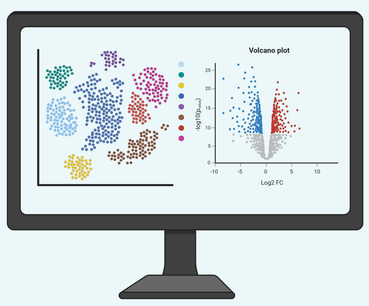
Transcriptomics & Proteomics

We use **single-nuclei transcriptomics** to map cell-type-specific gene expression changes in FTLD. Proteomic analyses are used to investigate protein-level alterations in FTLD. With these approaches, we aim to identify disrupted molecular pathways and key modulators of the disease mechanism.

No experience with bioinformatics or programming needed

Bring your curiosity and a drive to learn — that's all it takes!

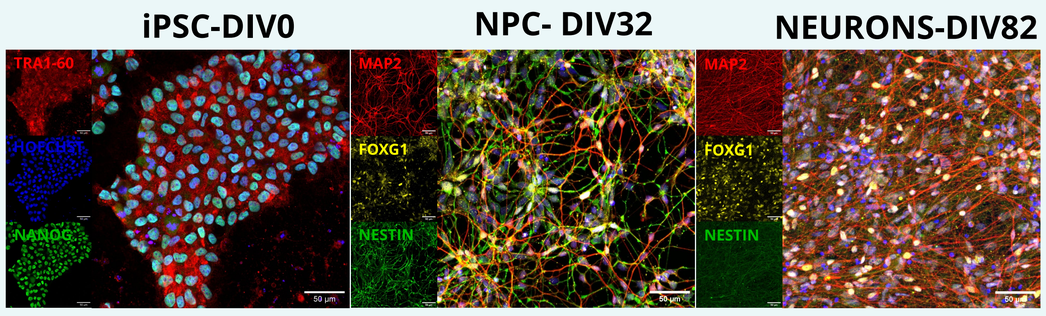




BENCHWORK (25%)

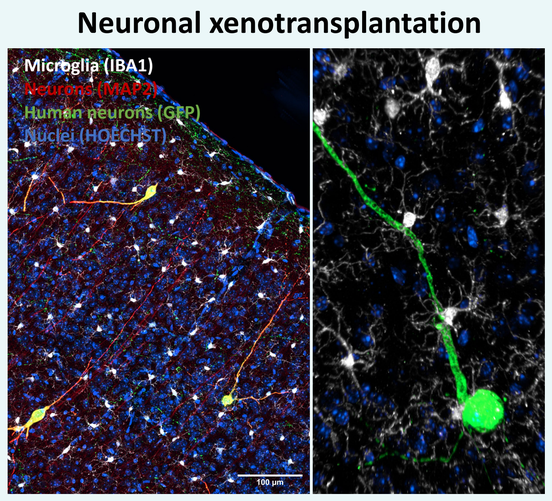
iPSC-derived cortical neuronal models

We use **iPSC-derived models** from **patients** and **healthy individuals** to understand disease mechanisms. We also use **genomic engineering** (CRISPR-Cas9, TALENs) to knockout and overexpress genes of interest (obtained from our genetics studies) and investigate them in a human model.



Functional assays

We **analyze the phenotypes** in our models using several functional assays, including proteomics and transcriptomics, organelle trafficking, neuron-microglia co-cultures, neuronal xenografts, and confocal imaging.



Any questions?: thesis_rr@uantwerpen.be

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