

# Central Project 03: *Human Molecular Imaging Ageing and*

*SuperAgeing Cohort*

## Newsletter

November, 2022



Image from Northwestern University Feinberg School of Medicine

Contact us:

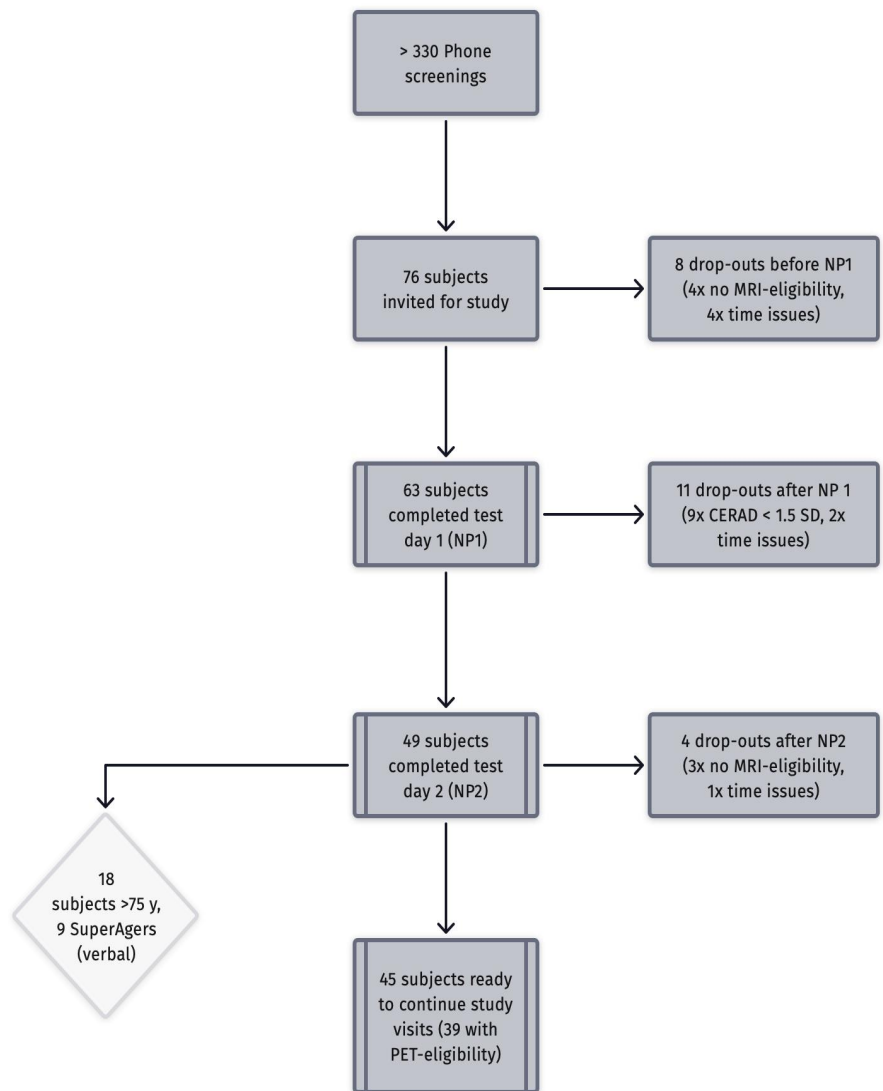
[anne.maass@dzne.de](mailto:anne.maass@dzne.de); [anne.hochkeppler@dzne.de](mailto:anne.hochkeppler@dzne.de); [svenja.schwarck@med.ovgu.de](mailto:svenja.schwarck@med.ovgu.de)

[eoin.molloy@med.ovgu.de](mailto:eoin.molloy@med.ovgu.de); [larissa.fischer@dzne.de](mailto:larissa.fischer@dzne.de); [beate.schumann-werner@med.ovgu.de](mailto:beate.schumann-werner@med.ovgu.de)

## Recruitment Updates

So far, more than 330 possible participants were screened by phone for study eligibility. Of these, 76 fulfilled the criteria and were invited for study participation. Until October 2022, 49 subjects completed the neuropsychological assessments on test day 1 and 2 (NP1/ NP2). Overall, there were 23 drop-outs (30.3%). The most common reasons were insufficient test results at the CERAD (11.8% of cohort) followed by cancellation by the subjects due to lack of time (9.2%) and no MRI-eligibility (9.2%). For a detailed overview of the cohort size, see figure on the right

**Subproject assignment:** As one of the next steps, we will continue the subproject assignment for the subprojects that are ready to receive participants. We are sending out a new wave of letters in cooperation with the city of Magdeburg. For very interested persons who are not eligible for Z03, we could suggest studies without MRI. **Please let us know**, if you are looking for participants who are not MRI-eligible.



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## Welcome to our new team members

### Larissa Fischer

Larissa Fischer is a Research Assistant in the Z03 project. She will receive her Master's degree in psychology with a focus on cognitive neuroscience at the end of 2022. She studied at Otto von Guericke University in Magdeburg and spent a semester abroad at the University of Cambridge. She is interested in learning and memory processes and how they change with age. Within Z03, her responsibilities are the coordination of blood, MRI and PET testing and analysis as well as the subproject assignment.



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## Beate Schumann-Werner

Beate Schumann-Werner is a speech-language pathologist. She completed her master's degree at RWTH Aachen University. After a research visit at the Upper Airway Dysfunction Lab at the University of Florida/ Gainesville, she started her PhD at RWTH Aachen University. In her doctoral study, she focused on neural correlates for dysphagia in Huntington's Disease. Since July 2022, Beate is supporting project Z03 as Research Assistant. Her clinical and research interests include diagnosis and treatment of swallowing and communication disorders associated with neurodegenerative diseases. Within Z03, her responsibilities are recruitment, cognitive testing and analysis, and coordination of the subproject assignment.



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## Blood Updates

Regarding blood analyses, A $\beta$  40/ 42, p-tau 181 and 231 as well as NFL and GFAP will be investigated. Regarding immunology, cytokine levels and PBMC will be looked at. ApoE, Klotho and Kibra will be investigated for genetic analyses. Furthermore, a full blood count and further parameters of various organs will be determined in the future.

## MRI Updates

In recent weeks, we have been finalising the 3T MRI protocol for the Z03 project. In order to include all sequences and to help with participant retention in the study, we have opted to split the MRI data acquisition into 2 separate scanning sessions.

Our first scan session is planned to take place at the Skyra and will include a relatively short (~30 minute) scan. In this session, participants will undergo a physical health assessment (as required for PET scanning) prior to the scan, to be carried out by our Nuclear Medicine physician; Berta Garcia-Garcia. This scan will include a DTI scan, QSM, FLAIR, an anatomical scan, and a FLASH sequence (using newest iNET sequences). The planned protocol is shown below:

### Skyra

Sequence	Resolution	Target
MEMPRAGE	0.8×0.8×0.8 mm	Whole brain structure
FLAIR	1×1×1 mm	White matter hyperintensities (vascular pathology)
FLASH	1.0×1.0×5.0 mm	Microbleeds (vascular pathology)

QSM	0.8×0.8×0.8 mm	Iron deposition, Venography, Tissue magnetization
DTI	2×2×2 mm	White matter structural connectivity

Following the Skyra, participants will then undergo a second MR scan at the DZNE, this time also including our tau PET protocol. This second scan must happen within one week of the health assessment (conducted at the Skyra visit). This PET-MR scan will include functional imaging and may also include a shorter ToF sequence (currently piloted). The protocol for the PET-MR scan is as follows:

### **PET-MR**

Sequence	Resolution	Target
PET Attenuation Correction	1.6×1.6×1.6 mm	
MPRAGE	1×1×1 mm	Whole brain structure
Field Map	2.5×2.5×2.5 mm	Distortion correction for fMRI
Resting State	2.4×2.4×2.4 mm	Functional connectivity
Turbo Spin Echo	0.5×0.5×2.0 mm	Hippocampal subfields/MTL
GRE3D_MTC (2x)	0.8×0.8×1.0 mm	Locus coeruleus integrity
ASL	3.3×3.3×3.3 mm	Perfusion (blood flow)

Scans on participants eligible for MRI but not PET, have started already. Feel free to contact us if you have any questions about the current sequences.