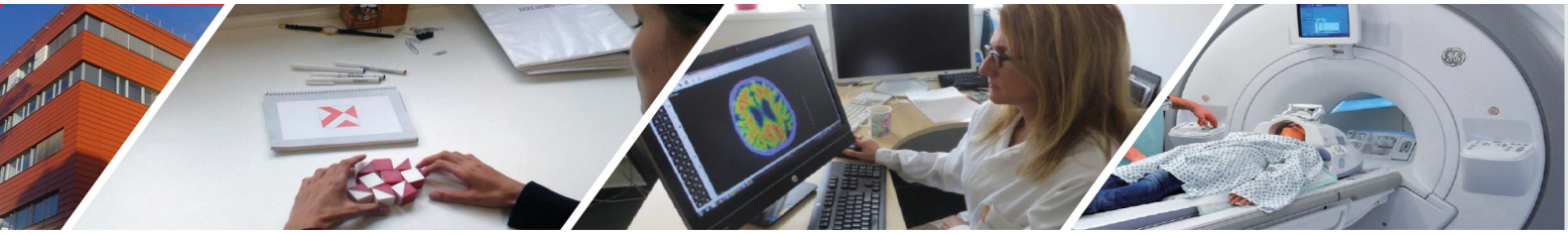
FNUSA ICRC

ST. ANNE'S UNIVERSITY HOSPITAL BRNO
INTERNATIONAL CLINICAL RESEARCH CENTER



RESEARCH GROUP

KEY WORDS

AD, MCI, Non-Alzheimer Dementia, Longitudinal Study, CBAS

RESEARCH FOCUS

The current research of Dementia Research Group is based on the Czech Brain Aging Study (CBAS) – a unique national, multicentric, longitudinal prospective cohort study. The aim of CBAS is to study the early functional, metabolic, structural and genetic biomarkers of Alzheimer´s Disease and other dementias in blood, CSF and magnetic resonance imaging with focus on synucleinopathies, tauopathies and TDP-43-pathies. These studies are complemented by animal studies with emphasis on translational aspect of the used methodology. CBAS also explores the effect of lifestyle factors on the brain maintenance using questionnairs and nonpharmacological interventions. CBAS team consists of two core synchronized sites – Cognitive Centers at ICRC St. Anne´s University Hospital Brno and at Motol University Hospital, Prague. Partners and collaborating institutions: University of South Florida, Tampa, FL, USA; Harvard University, Cambridge, MA, USA; Nanjing Drum Tower Hospital, Nanjing, China; EADC - European Alzheimer Disease Consortium; eDLB - European DLB consortium; Alzheon; University of Gothenburg, prof. Kaj Blennow
Offered services and expertise: Translational research, data analysis, longitudinal study, biomarkers of neurodegenerative disorders, neuropsychology, neuroimaging, cerebrospinal fluid analysis, blood biomarkers, clinical trials.

RESEARCH OBJECTIVES

Evaluation of neuropsychological and spatial navigation tests as an early markers of neurodegeneration.
Defining structural, metabolic and functional biomarkers on MRI and PET in humans.
Exploring epidemiological risk factors in primary and secondary prevention of dementia.

TECHNOLOGICAL EQUIPMENT

3T MRI– multimodal brain imaging, diffusion tensor imaging, functional magnetic resonance imaging (fMRI).

OFFERED SERVICES AND EXPERTISE

Translational research, data analysis, longitudinal study, biomarkers of neurodegenerative disorders, neuropsychology, neuroimaging, cerebrospinal fluid analysis, blood biomarkers, clinical trials.

TOP PUBLICATIONS

SHEARDOVA, K., VYHNÁLEK, M., NEDELSKÁ, Z., LACZÓ, J., ANDEL, R., MARCINIAK, R., CERMAN, J., LERCH, O., HORT, J. Czech Brain Aging Study (CBAS): prospective multicentre cohort study on risk and protective factors for dementia in the Czech Republic. 2019, BMJ Open, 9(12)

COUGHLAN, G., LACZÓ, J., HORT, J., MINIHANE, A.M., HORNERGER, M. Spatial navigation deficits - overlooked cognitive marker for preclinical Alzheimer disease?. *Nat Rev Neurol*. 2018;14(8):496-506.

NEDĚLSKÁ, Z., ANDEL, R., LACZÓ, J., VLČEK, K., HOŘÍNEK, D., LISÝ, J., SHEARDOVÁ, K., BUREŠ, J., HORT, J. Spatial navigation impairment is proportional to right hippocampal volume. *Proceedings of the National Academy of Sciences of the United States of America*. 2012, 109(7), 2590-2594.

LACZÓ, J., ANDEL, R., VYHNÁLEK, M., MATOŠKA, V., KAPLAN, V., NEDELSKÁ, Z., LERCH, O., GAŽOVÁ, I., MOFFAT, S., HORT, J. The effect of TOMM40 on spatial navigation in amnestic mild cognitive impairment. *Neurobiology of Aging*. 2015, 36(6), 2024-2033.

CHMÁTALOVÁ, Z., VYHNÁLEK, M., LACZÓ, J., HORT, J., SKOUMALOVÁ, A. Analysis of lipophilic fluorescent products in blood of Alzheimer´s disease patients. *Journal of Cellular and Molecular Medicine.* 2016, 20(7), 1367-1372.

OTHER SELECTED RESULTS

Database REDCap of Czech Brain Ageing Study with data describing the changes in the structure and metabolism of the brainover time in healthy elderly patients, in patients with MCI, and AD.

Bank of biological samples for genetic and biochemical analysis in the future for individuals who became ill with AD.

Cognitive data repository using specific neuropsychology protocols and tools for testing hippocampus-related memory impairment as an early specific sign of AD.

MRI database for the longitudinal study of brain atrophy in patients with cognitive impairment.

SHEARDOVA, K., VYHNÁLEK, M., NEDELSKÁ, Z., LACZÓ, J., ANDEL, R., MARCINIAK, R., CERMAN, J., LERCH, O., HORT, J. Czech Brain Aging Study (CBAS): prospective multicentre cohort study on risk and protective factors for dementia in the Czech Republic. 2019, BMJ Open, 9(12)

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FNUSA ICRC St. Anne's University Hospital Brno
International Clinical Research Center

Pekařská 53, 656 91 Brno | Czech Republic | ID: 00159816
Phone: (+420) 543 181 111 | E-mail: icrc@fnusa.cz | **www.fnusa-icrc.org**

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