



## PROFILE OF THE PARTNER

JESSENIUS – diagnostické centrum a.s., Špitálska 6, 949 01 Nitra, Slovakia  
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JESSENIUS – diagnostické centrum a.s., based in Nitra, Slovakia, is a private diagnostic centre established in 2001. The centre combines comprehensive clinical imaging services with active research and academic involvement. With approximately 170 staff, including 40 physicians, JESSENIUS serves about 900 patients daily and provides continuous radiology services for the Faculty Hospital in Nitra. Its diagnostic portfolio includes MRI, CT, X-ray, ultrasound, mammography, densitometry, dental imaging, fluoroscopy, and image-guided interventions. The centre complies fully with GDPR and maintains research-ready imaging infrastructure integrated into routine medical workflows.

Although privately operated, JESSENIUS is actively involved in scientific and educational activities. The centre is accredited by the Slovak Medical University for undergraduate and postgraduate specializations in Radiology and serves as a Siemens Healthineers reference site in Slovakia. Longstanding collaborations with the Faculty Hospital Nitra, the Center for Movement Disorders at University Hospital Bratislava, and other clinical partners support consistent clinical performance and translational research.

JESSENIUS leads the NeuroConnectSK project, supported by a government aid scheme under the Office of the Deputy Prime Minister to advance the knowledge economy, sustainable development, research, innovation, and knowledge transfer in biotechnology (PK1/2025). The project aims to develop and clinically validate a personalized preoperative planning methodology for non-invasive neuromodulation using MR-guided focused ultrasound (MRgFUS) in patients with tremor-dominant Parkinson's disease and essential tremor. This approach relies on individual brain connectome analysis and imaging biomarkers. Structural connectomic databases of brain disorders systematically map white matter pathways and grey matter connectivity, enabling large-scale comparisons of network topology across disease states. By integrating individual-level connectomes with clinical phenotypes, the project identifies disorder-specific patterns of disconnection and network disruption. These findings support precision neurology by enabling biomarker discovery, patient stratification, and prediction of treatment response. Project deliverables include a harmonized population connectome database of approximately 8,000 subjects, identification of connectomic biomarkers, and a pilot clinical validation.

NeuroConnectSK aligns with national and European priorities in health, neurodegenerative disease research, and personalized medicine. It is the first Slovak initiative to integrate connectome medicine with non-invasive neurosurgery. The project demonstrates significant translational potential and socioeconomic impact, including the creation and maintenance of highly skilled research and clinical positions. JESSENIUS welcomes collaboration with radiology, clinical neurology, and neurosurgery units, advanced MR imaging groups, connectomics and data science teams, as well as partners in regulatory affairs and health economics to further advance NeuroConnectSK.

## CORE EXPERTS

*Assoc.prof. RNDr. Marek Chmelík, PhD.* - Biomedical physicists, lead scientist, ORCID-ID 0000-0002-9727-9014, h-index 37

*Assoc.prof. MUDr. Zuzana Košutzká, PhD.* – Lead neurologist in center for extrapyramidal disease, ORCID-ID 0000-0001-6390-0872, h-index 11

*Juskanič Dominik, MD, PhD., EDiNR* - Board-certified radiologist, Scientific Coordinator, ORCID-ID 0000-0001-7652-2284, h-index 6

*Peter Matejička, MD, PhD.* - Board-certified neurologist and researcher, ORCID-ID 0000-0001-5756-9415, h-index 3

*Dáša Vizslayová MD, PhD.* - Board-certified neurologist and researcher, ORCID-ID 0000-0001-5857-6182, h-index 4

*Mgr. Samuel Holly* - Biomedical physicists, statistician, ORCID-ID 0009-0002-6908-2596, h-index 3

*Pátrovič Lukáš, MD, MPH* - Chief radiologist, executive board member, ORCID-ID 0009-0003-8392-489X, h-index 4

*Ing. Jakub Žitný* - Senior IT, machine learning expert, ORCID-ID 0000-0002-2698-8155, h-index 1

## INSTITUTIONAL PARTNERS

Academic: University Hospital Bratislava - Center for Movement Disorders, Slovak Medical University - Faculty of Medicine, University of Presov - Faculty of Healthcare.

Industry: SIEMENS Healthineers, Cognexa, Contextflow

## RELEVANT INFRASTRUCTURE

We are the leading provider of radiology services in the Nitra region. Our main facility is located in the Faculty Hospital campus and in the city center (klinikaorbis.sk). Additionally, we operate six outpatient units throughout the city and Nitra region.

*Magnetic resonance:* **SIEMENS Magnetom Cima.X 3T** and SIEMENS Magnetom Skyra 3T - advanced multiparametric prostate (MRS, DCE), cardiac (strain analysis, myomapping) and brain imaging (fMRI, DTI, advanced edited MRS); SIEMENS Magnetom Avanto Fit 1.5T; FreeMax 0.5T

*Computed tomography:* **SIEMENS Naeotom Alpha Photon-Counting CT**, SIEMENS Somatom Definition Flash, dual-source 2x128 with Stellar upgrade, SIEMENS Somatom Definition Edge, SIEMENS Somatom Perspective

*Mammography:* SIEMENS Mamomat B.Brilliant with tomosynthesis

*Digital X-ray technology:* SIEMENS MULTIX Impact Digital X-Ray

*Densitometry:* HOLOGIC Discovery DXA system

*Ultrasound:* SIEMENS ACUSON Sequoia, PHILIPS iU22, TOSHIBA Aplio400

*PACS server:* TATRAMED Tomocon PACS3 system with T3C; HIS: STAPRO FONS Enterprise

## OTHER RESEARCH PROJECTS

- SMA-STN DTI with Generalized Q-sample Imaging in patients selected for Deep Brain Stimulation. DOI: 10.55095/CesRadiol2025/026
- Multi-material decomposition algorithm for fat quantification in the presence of iron deposits using Photon-counting CT. DOI: 10.1016/j.ejmp.2024.103210
- Non-invasive assessment of IDH status in central glioma tumors with 3T edited MEGA-PRESS 2HG MR spectroscopy. DOI: 10.1007/s10334-021-00989-y

## TOPICS from Horizon Europe - Work Programme 2026-2027 Health:

HORIZON-HLTH-2027-01-STAYHLTH-01: Addressing disabilities through the life course to support independent living and inclusion.

HORIZON-HLTH-2027-02-DISEASE-14two-stage: Clinical trials for advancing innovative interventions for neurodegenerative diseases.

HORIZON-HLTH-2027-02-TOOL-01-two-stage: Development of predictive biomarkers of disease progression and treatment response by using AI methodologies for chronic non-communicable diseases