

Partner Profile Horizon Europe

Section 1 - Contact details

Organisation Name (full name)	Siena Brain Investigation and Neuromodulation Lab (SIBINLAB) - University of Siena
Type of organisation	☒ University ☐ Public Research Centre ☐ Large Scale Enterprise ☐ Small and Medium Scale Enterprise ☐ Public Body ☐ International NGO ☐ National NGO
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Country	Italy
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Section 2 – Sector of interest

Work programme	Horizon Europe Work Programme 2027 – Cluster 1: Health
Topic according to the work programme	- Development of predictive biomarkers of disease progression and treatment response by using AI methodologies for chronic non-communicable diseases - Clinical trials for advancing innovative interventions for neurodegenerative diseases - Virtual Human Twins (VHTs) for integrated clinical decision support in prevention and diagnosis
Call (if applicable)	- <i>HORIZON-HLTH-2027-02-TOOL-01-two-stage</i> - <i>HORIZON-HLTH-2027-02-DISEASE-14-two-stage</i> - <i>HORIZON-HLTH-2027-03-TOOL-04</i>

Section 3 - Description of the expertise

Description of the expertise (max 2.000 characters)	SIBINLAB (Siena Brain Investigation and Neuromodulation Lab, University of Siena) is a clinical and translational neuroscience laboratory integrated within a university-hospital environment, offering access to diverse neurological, neurodegenerative and sensory patient populations, including multiple sclerosis, Parkinson's disease, hearing loss/cochlear implant users, Alzheimer's disease, primary progressive aphasia, vestibular migraine, visual snow syndrome and tinnitus. The laboratory combines non-invasive brain stimulation with multimodal neurophysiological and behavioural phenotyping. Neuromodulation capabilities include TMS/rTMS and transcranial electrical stimulation (tES: tDCS, tACS, tRNS). Research methods include EEG, TMS-EEG, cortical excitability and inhibition/facilitation protocols (MEP, SICI, ICF), autonomic measures (GSR/EDA, ECG), cognitive and neuropsychological testing, psychological assessment, behavioural paradigms, and fMRI analysis. This combination of clinical access and advanced methods enables SIBINLAB to support the full translational pipeline: patient recruitment and phenotyping, mechanistic studies, biomarker development, proof-of-concept interventions, randomized controlled trials and longitudinal follow-up. The team has extensive experience in neuromodulation, neuroplasticity, neurorehabilitation, virtual reality and multimodal neuroscience within national and EU-funded collaborations.
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Research Fields	Clinical Neuroscience Cognitive Neuroscience Neurophysiology Neurology Neuropsychology Neuromodulation Neurorehabilitation Sensory Neuroscience Neurodegeneration Brain Health
Keywords describing the expertise (if needed more than one)	TMS / rTMS tES (tDCS, tACS, tRNS) EEG TMS-EEG MEP SICI ICF fMRI GSR / EDA ECG Neuropsychology Cognitive Assessment Behavioural Testing Biomarkers Neuroplasticity Multiple Sclerosis Parkinson's Disease Alzheimer's Disease Primary Progressive Aphasia Hearing Loss Cochlear Implant Vestibular Migraine Visual Snow Syndrome Tinnitus Clinical Trials
Previous Projects / Related Research Experience	-Non-invasive brain stimulation in neurodegenerative disorders: ongoing TMS and tES studies in patients with Alzheimer's disease, integrating neuromodulation with neurophysiological, cognitive and behavioural outcome measures. -Neuromodulation in Parkinson's disease: ongoing tES studies investigating motor, postural and non-motor mechanisms, including modulation of vestibular cortical networks and their contribution to postural control. -Visual Snow Syndrome: translational research programme investigating TMS as a potential therapeutic intervention for Visual Snow Syndrome, combining clinical outcomes with EEG and brain-connectivity measures. -Multiple sclerosis and cognitive fatigue: ongoing research in patients with multiple sclerosis, including a project funded by the Italian Multiple Sclerosis Foundation (FISM) investigating cognitive fatigue through behavioural, cognitive and neurophysiological measures. -Vestibular disorders and cortical neuromodulation: tES studies investigating vestibular cortical function and the potential modulation of vestibular symptoms, postural control and sensory integration in patients with vestibular disorders. -Hearing loss and cochlear implants: randomized and feasibility studies using rTMS in patients with age-related sensorineural hearing loss and cochlear implants, demonstrating the group's ability to conduct neuromodulation trials in sensory and rehabilitation populations. -Cognitive fatigue, perception and brain-network modulation: experimental studies using tES, including tRNS and tACS, to investigate cognitive fatigue, perceptual processing, learning and brain-behaviour relationships, with multimodal assessment through EEG, autonomic, behavioural and cognitive measures. -Dementia and language disorders: research on non-invasive brain stimulation in neurodegenerative dementias and Primary Progressive Aphasia, including the integration of TMS/tES with cognitive and language rehabilitation approaches. -Multimodal clinical neuroscience: extensive experience in studies combining TMS/rTMS and tES with EEG, TMS-EEG, cortical excitability measures, fMRI, autonomic physiology, neuropsychological assessment and behavioural outcomes across neurological and sensory disorders. -European and international research collaborations: participation in EU-funded research, including the Horizon 2020 EXPERIENCE project, and collaborations with leading international neuroscience centres on neuromodulation, neuroimaging and precision brain stimulation.
Short Description of the Project idea	-SIBINLAB is seeking to join international consortia that require a strong clinical-neuroscience and neuromodulation partner. We can contribute access to well-characterized patient cohorts together with an integrated platform for intervention studies and multimodal outcome assessment. -Depending on the project, SIBINLAB can provide patient recruitment and clinical characterization; TMS/rTMS and tES interventions; EEG and TMS-EEG; cortical excitability measures (MEP, SICI, ICF); autonomic monitoring (GSR/EDA, ECG); cognitive, neuropsychological, psychological and behavioural outcomes; and multimodal integration with fMRI. -We are particularly interested in projects on brain health, neurodegeneration, sensory disorders, neuroplasticity, precision interventions, rehabilitation, digital therapeutics and treatment-response biomarkers. Our hospital-integrated setting is particularly suited to clinical validation, experimental medicine, feasibility studies and randomized trials.
Partnership interest (tick one)	☐ Consortium leader looking for partners ☒ Partner looking for consortium/consortium leader

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