

Special Section: Brain Imaging Working Group Summaries for the European Joint Programme for Neurodegenerative Disease Research (JPND)

Brain imaging working group summaries for the European Joint Programme for Neurodegenerative Disease Research

Harmonization of procedures is key in all fields of biomedicine. In the clinic, the standardization of methods and techniques makes it possible to offer consistent and reliable care across health care delivery centers of a country and to deliver a similar level of quality health care to all patients irrespective of geographic location. In research, it allows for the collection of large national and supranational databases that can be effectively used to address a much larger set of scientific questions and with much greater efficiency and precision.

In the dementia field, magnetic resonance imaging and positron emission tomography are neuroimaging tools heavily used for diagnosis, but their acquisition, processing, and reporting are still significantly heterogeneous across geographic locations and medical specialties [1]. With the

aim of promoting imaging harmonization, the *EU Joint Programme—Neurodegenerative Disease Research*, a multi-national funding scheme, launched in 2016 to support 10 working groups organized to study and recommend approaches for harmonization and alignment in brain imaging methods for neurodegeneration [2], encompassing traditional and innovative magnetic resonance imaging techniques and technologies, as well as traditional and innovative positron emission tomography molecular tracers for Alzheimer's disease, Parkinson's disease, and neurodegenerative diseases in general. Some of the working groups capitalized on existing consortia. Table 1 lists the 10 project titles and coordinators.

The working groups organized one or more in-person workshops over a period of 12 months to identify gaps of

Table 1

Joint Programme—Neurodegenerative Diseases Research 2016 working groups “Harmonisation and Alignment in Brain Imaging Methods for Neurodegeneration”

Project title	Coordinators
ASAP SynTau: Alignment and Standardization of Neuroimaging Methods in Atypical Parkinsonism, specifically Synucleinopathies and Tauopathic	<ul style="list-style-type: none"> • Thilo van Eimeren, University of Cologne, Germany • Hartwig R. Siebner, University of Copenhagen, Denmark • Laura Hughes, Medical Research Council, Cambridge, UK
BioFIND: Biomagnetic Framework for Identifying Network Dysfunction in dementia	
EUFIND: European Ultrahigh-Field Imaging Network for Neurodegenerative Diseases	<ul style="list-style-type: none"> • Emrah Duzel and Oliver Speck, University of Magdeburg, Germany
FULL-HD: Full exploitation of High-Dimensionality in brain imaging	<ul style="list-style-type: none"> • Arfan Ikram, Erasmus MC, Rotterdam, Netherlands
HARNESS: Harmonising Brain Imaging Methods for Vascular Contributions to Neurodegeneration	<ul style="list-style-type: none"> • Eric Smith, University of Calgary, Canada • Joanna Wardlaw, University of Edinburgh, Scotland
HSG: Harmonized Hippocampal Subfield Segmentation Working Group	<ul style="list-style-type: none"> • Rosanna Olsen, Rotman Research Institute, Toronto, Canada • Gaël Chételat, University of Caen, France • Andreas H. Jacobs, University Muenster, Germany • Daniela Perani, IRCCS-San Raffaele, Italy
IMBI: Framework for Innovative Multi-tracer molecular Brain Imaging to enable multi-centre trials and image evaluation in early neurodegenerative diseases	
ND-PETMRI: Development of a Methodological Framework for Integrated PET/MR Imaging of Neurodegeneration	<ul style="list-style-type: none"> • Henryk Barthel, University Leipzig, Germany • Thomas Schwarzlmüller, University of Bergen, Norway
PETMETPAT: Harmonisation metabolic FDG brain pattern characteristics	<ul style="list-style-type: none"> • K.L. Leenders and Ronald Boellaard, University Medical Center Groningen, Netherlands • José Obeso, Hospitales de Madrid, Spain • Giovanni B. Frisoni, University of Geneva, Switzerland • Jorge Jovicich, University of Trento, Italy
SRA-NED: Harmonization of acquisition and processing of Brain Imaging Biomarkers for Neurodegenerative Diseases: A strategic Research Agenda for best-practice guidelines	

NOTE. Projects are presented in alphabetical order according to their acronym.

knowledge in their respective domains, and to draft research agendas. Importantly, the working groups were not tasked with providing answers to these gaps of knowledge, but with identifying and spelling them out as clearly and neatly as possible for them to be amenable to investigation in future research programs. In the *EU Joint Programme—Neurodegenerative Disease Research* initiative funding scheme, this is a common approach, and the guidance from these working groups will be considered in developing future calls for research grant programs, contingent on the availability of funds from the participating countries.

The conclusions of the working groups are summarized in the series of articles within this issue of *Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring*. While not claiming to be an exhaustive checklist, we believe that this collection of reports will provide a useful reference for funding agencies and scientists worldwide.

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References

- [1] Frisoni GB, Boccardi M, Barkhof F, Blennow K, Cappa S, Chiotis K, et al. Strategic roadmap for an early diagnosis of Alzheimer's disease based on biomarkers. *Lancet Neurol* 2017;16:661–76.
- [2] JPND. Neuroimaging Harmonization Working Groups. Available at: <http://www.neurodegenerationresearch.eu/initiatives/annual-calls-for-proposals/closed-calls/brain-imaging-working-groups-2016/brain-imaging-working-groups/>. Accessed August 31, 2016.