

Parkinson Disease and Movement Disorders



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Main Lines of Research

Cognitive Impairment and Behavioural Dysfunctions in Parkinson Disease (PD)

- ▶ Study of the neural correlates of cognitive performance, mild cognitive impairment, dementia and behavioral alterations (apathy, visual hallucinations and impulse control disorders) in PD using neurophysiological techniques (event-related brain potentials), structural, functional and molecular neuroimaging.
- ▶ Characterization of the neurodegenerative process underlying cognitive impairment in PD through the study of cortical atrophy patterns related to genetic and biomarker indicators.
- ▶ Development and validation of PD-specific tools for cognitive and functional assessment to detect subtle changes in cognitive performance and treatment response.
- ▶ Prospective follow-up study of cognition and mood in PD patients with deep-brain stimulation of the subthalamic nucleus.
- ▶ Identification of blood-based, cognitive and neurophysiological biomarkers of cognitive deterioration in PD.
- ▶ Identification of genetic and neurophysiological biomarkers of apathy and impulse control disorders in PD.
- ▶ Data science applied to large PD databases such as PPMI.
- ▶ Surgery and treatments of continuous infusion of intraduodenal levodopa.
- ▶ Study of the effects of continuous infusion of intraduodenal levodopa on cognition and mood.
- ▶ Follow-up and etiologic study of weight loss in patients treated with continuous infusion of intraduodenal levodopa.

Huntington Disease (HD)

- ▶ Clinical characterization of the natural course HD in large cohort and international studies (Enroll-HD).
- ▶ Study of the neural correlates of clinical progression, cognitive performance, mild

cognitive impairment, dementia and behavioral alterations in HD using neurophysiological techniques (event-related brain potentials), structural, functional and molecular neuroimaging.

- ▶ Identification of potential neuroimaging, blood-based, muscular tissue, CSF and clinical biomarkers of progression and phenotypic in premanifest and manifest HD.
- ▶ Study of the prevalence and neural substrates of behavioral alterations in premanifest and manifest HD.
- ▶ Development and validation of HD-specific tools for cognitive and functional assessment to detect subtle changes in cognitive performance and treatment response.
- ▶ Study of the effect of intermediate alleles and homozygosis on the clinical presentation of HD.
- ▶ Data science applied to large HD databases such as Enroll-HD and Registry.
- ▶ Identification of different cognitive phenotypes in HD.

Progressive Supranuclear Palsy (PSP)

- ▶ Development of a PSP-specific cognitive rating scale.
- ▶ Development of a standardized eye movement evaluation.
- ▶ Study of the neural correlates of clinical progression, cognitive performance and behavioral alterations in PSP using structural and functional neuroimaging.

Essential Tremor and Other Movement Disorders

- ▶ Molecular neuroimaging in essential tremor.
- ▶ Clinical, neurophysiological and neuroimaging assessment of patients with FXTAS (fragile X-associated tremor/ataxia syndrome).

Challenges

Cognitive and Behavioural Dysfunctions in Parkinson Disease

- ▶ Study and understanding of the neural substrates of cognitive impairment in Parkinson disease so as to improve diagnostic and therapeutic approaches.
- ▶ Development of specific tools to assess and track cognitive changes in Parkinson disease.
- ▶ Identification of the involvement of specific executive and reward-related brain systems in the etiology of apathy in PD

Huntington's Disease

- ▶ Study of the dynamics of mutant Htt protein aggregation and related neural and cognitive correlates along disease stages in Huntington's disease.
- ▶ Validation of new instruments to assess and track subtle cognitive changes in pre-manifested and early-stage Huntington's disease population.
- ▶ Identification of the structural and metabolic brain correlates of apathy in early and mild HD.

Essential Tremor and Other Movement Disorders

- ▶ Genetic studies and genotype-phenotype correlations in essential tremor.
- ▶ Development of new therapeutic interventions in essential tremor.
- ▶ Neurochemical and structural neuroimaging studies on the pathophysiological bases of essential tremor.

Translational Research - Animal Models of Parkinsonism

- ▶ Behavioural, physiological and pharmacological characterization of animal models of parkinsonism with combined dopaminergic and noradrenergic lesions.
- ▶ Physiopathology of motor, cognitive and behavioural complications linked to antiparkinsonian drugs in animal models of parkinsonism.

Collaborations

Collaborations with other IIB Sant Pau Groups

- ▶ Active collaboration with the Reserach groups of Neuroradiology and Nuclear Medicine (Huntington's disease).

External Collaborations

- ▶ Active collaboration with the Cognition and Brain Plasticity Group at the Bellvitge Health Science Campus at the University of Barcelona adscribed to the Department of Basic Psychology, Faculty of Psychology - University of Barcelona and the IDIBELL (Institut d'Investigació Biomèdica de Bellvitge).
- ▶ Centro de Investigación Biomédica en Red de Enfermedades neurodegenerativas (CIBERNED), Instituto de Salud Carlos III.

- ▶ International Movement Disorders Society (MDS). Task Force for Developing Rating Scales in Parkinson's Disease (Subcomitee for Cognitive Evaluation).
- ▶ MDS Task Force for Mild Cognitive Impairment in Parkinson's Disease.
- ▶ MDS Task Force for Evidence Based Medicine in Huntington's Disease.
- ▶ Spanish Coordinator of the European Huntington Disease Network and the ENROLL Study (Cure for Huntington's Disease International - CHDI).
- ▶ Coordination of the Cognitive Phenotype Working Group of the European Huntington's Disease Network (EHDN).

Active Grants

- ▶ Jaime Kulisevsky Bojarski. Huntington's Disease Network EHDN. Duration: 2010-2021. 149,240.00 €.
- ▶ Jaime Kulisevsky Bojarski. Grup de Trastorns del Moviment de l'Hospital de la Santa Creu i Sant Pau. 2014 SGR 1203. Agència de Gestió d'Ajuts Universitaris i de Recerca. Duration: 2014-2017. 21,000.00 €.
- ▶ Jaime Kulisevsky Bojarski. Prediction of apathy and impulse control disorders in Parkinson's disease based on Feedback related negativity. MARATO 20142410. Fundació La Marató de TV3. Duration: 2015-2018. 159,686.00 €.
- ▶ Javier Pagonabarraga Mora. Blood-based and neurophysiological markers of cognitive deterioration and dementia in Parkinson's disease. MARATO 20142910. Fundació La Marató de TV3. Duration: 2015-2018. 159,589.00 €.
- ▶ Javier Pagonabarraga Mora. Marcadores en sangre y neurofisiológicos de la progresión del deterioro cognitivo en la enfermedad de Parkinson. PI14/02058. Instituto de Salud Carlos III. Duration: 2015-2018. 54,500.00 €.

- ▶ Juan Marin Lahoz. Contratos Río Hortega 2015. CM15/00071. Instituto de Salud Carlos III. Duration: 2016-2018. 53,732.00 €.
- ▶ Jaime Kulisevsky Bojarski. Correlatos anatómico-funcionales de los trastornos del control de impulsos y apatía en la enfermedad de Parkinson. PI15/00962. Instituto de Salud Carlos III. Duration: 2016-2018. 61.500,00 €.
- ▶ Jesus Perez Perez. Contratos Juan Rodés 2016. JR16/00034. Instituto de Salud Carlos III. Duration: 2017-2020. 135,000.00 €.
- ▶ Jaime Kulisevsky Bojarski. Desarrollo, validación y estudio de la sensibilidad al cambio de una versión alternativa de la Parkinson's Disease - Cognitive Rating Scale. PI12/03005. Instituto de Salud Carlos III. Duration: 2013-2017. 23,500.00 €.
- ▶ Ignacio Aracil Bolaños. Búsqueda de biomarcadores prodrómicos en la demencia asociada a la enfermedad de Parkinson (EP) y enfermedad por cuerpos de Lewy (ECL) IR16-R5. Fundació Privada Hospital de la Santa Creu i Sant Pau. Duration: 2017-2018. 30,477.44 €.

Note: Total amount granted to PI. It does not include indirect costs.

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Grants
Awarded
in 2017

- ▶ Jesus Pérez Pérez. Estudio longitudinal de los correlatos clínicos y neuroradiológicos asociados a los niveles de huntingtina y otros biomarcadores en LCR y plasma en la enfermedad de Huntington. PI17/01885. Instituto de Salud Carlos III. Duration: 2018-2020. 97,000.00 €.
- ▶ Helena Bejr-Kasem Marco. Contractes de formació en recerca "Río Hortega" 2017., CM17/00209, Instituto de Salud Carlos III. Duration: 2018-2019. 53,732.00 €.

Note: Total amount granted to PI. It does not include indirect costs.

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Scientific Production

Antonini A., Poewe W., Chaudhuri K.R., Jech R., Pickut B., Pirtosek Z., Szasz J., Valldeoriola F., Winkler C., Bergmann L., et al., Levodopa-carbidopa intestinal gel in advanced Parkinson's: Final results of the GLORIA registry (2017) PARKINSONISM RELAT D, 45, 13-20.

IF: 4.426

Ayala A., Trivino-Juarez J.M., Forjaz M.J., Rodriguez-Blazquez C., Rojo-Abuin J.-M., Martinez-Martin P., Aguilar M., Quilez-Ferrer P., Alvarez Saucó M., Bayes A., et al., Parkinson's disease severity at 3 years can be predicted from non-motor symptoms at baseline (2017) FRONT NEUROL, 8 (OCT).

IF: 3.290

Bellosta Diago E., Perez Perez J., Santos La-saosa S., Viloria Alebesque A., Martinez Horta S., Kulisevsky J., Lopez del Val J., Circadian rhythm and autonomic dysfunction in pre-symptomatic and early Huntington's disease (2017) PARKINSONISM RELAT D, 44, 95-100.

IF: 4.426

Carmona-Iragui M., Balasa M., Benejam B., Alcolea D., Fernandez S., Videla L., Sala I., Sanchez-Saudinos M.B., Morenas-Rodriguez E., Ribosa-Nogue R., Illan-Gala I., Gonzalez-Ortiz S., Clarimon J., Schmitt F., Powell D.K., Bosch B., Llado A., Rafii M.S., Head E., Molinuevo J.L., Blesa R., Videla S., Lleo A., Sanchez-Valle R., Fortea J., Cerebral amyloid angiopathy in Down syndrome and sporadic and autosomal-dominant Alzheimer's disease (2017) ALZHEIMERS DEMENT, 13 (11), 1251-1260.

IF: 11.980

Colom-Cadena M., Grau-Rivera O., Planellas L., Cerquera C., Morenas E., Helgueta S., Munoz L., Kulisevsky J., Marti M.J., Tolosa E., Clarimon J., Lleo A., Gelpi E., Regional overlap of pathologies in lewy body disorders (2017) J NEUROPATH EXP NEUR, 76 (3), 216-224.

IF: 3.271

De Fabregues O., Gironell A., Rossello-Jimenez D., Movement disorders units and management of motor fluctuations in advanced parkinson's disease Unidades de trastornos del movimiento y tratamiento de las fluctuaciones motoras de la enfermedad de Parkinson avanzada (2017) REV NEUROLOGIA, 65 (9), 396-404.

IF: 0.384

Fernandez-Bobadilla R., Martinez-Horta S., Marin-Lahoz J., Horta-Barba A., Pagonabar-

raga J., Kulisevsky J., Development and validation of an alternative version of the Parkinson's Disease-Cognitive Rating Scale (PD-CRS) (2017) PARKINSONISM RELAT D, 43, 73-77.

IF: 4.426

Garcia-Sanz P., Orgaz L., Bueno-Gil G., Espadas I., Rodriguez-Traver E., Kulisevsky J., Gutierrez A., Davila J.C., Gonzalez-Polo R.A., Fuentes J.M., Mir P., Vicario C., Moratalla R., N370S-GBA1 mutation causes lysosomal cholesterol accumulation in Parkinson's disease (2017) MOVEMENT DISORD, 32 (10), 1409-1422.

IF: 7.596

Lopez-Mora D.A., Camacho V., Fernandez A., Fuentes F., Perez-Perez J., Carrio I., Value of 18F-FDG PET/CT in the diagnosis of chorea-acanthocytosis Valor de la 18F-FDG PET/CT en el diagnóstico de corea-acantocitosis (2017) REV ESP MED NUCL IMA.

IF: 0.981

Lopez-Mourelo O., Mur E., Madrigal I., Alvarez-Mora M.I., Gomez-Anson B., Pagonabarraga J., Rodriguez-Revenga L., Mila M., Social anxiety and autism spectrum traits among adult FMR1 premutation carriers (2017) CLIN GENET, 91 (1), 111-114.

IF: 3.374

Martinez-Castrillo J.C., Pena-Segura J.L., Sanz-Cartagena P., Alonso-Curco X., Arbelo-Gonzalez J.M., Arriola-Pereda G., Coll-Bosch M.D., Conejero-Casares J.A., Garcia-Ribes A., Jauma-Classen S., Pagonabarraga J., Vidal-Valls J., Garcia-Ruiz P.J., Myths and evidence on the use of botulinum toxin: Spasticity in adults and in children with cerebral palsy Mitos y evidencias en el empleo de la toxina botulínica: Espasticidad del adulto y del niño con parálisis cerebral (2017) REV NEUROLOGIA, 64 (10), 459-470.

IF: 0.384

Martinez-Horta S., Sampedro F., Pagonabarraga J., Fernandez-Bobadilla R., Marin-Lahoz J., Riba J., Kulisevsky J., Non-demented Parkinson's disease patients with apathy show decreased grey matter volume in key executive and reward-related nodes (2017) BRAIN IMAGING BEHAV, 11 (5), 1334-1342.

IF: 3.719

Morenas-Rodriguez E., Camps-Renom P., Perez-Cordon A., Horta-Barba A., Simon-Talero M., Cortes-Vicente E., Guisado-Alonso

D., Vilaplana E., Garcia-Sanchez C., Gironell A., Roig C., Delgado-Mederos R., Marti-Fabregas J., Visual hallucinations in patients with acute stroke: a prospective exploratory study (2017) EUR J NEUROL, 24 (5), 734-740.

IF: 3.543

Moss D.J.H., Tabrizi S.J., Mead S., Lo K., Pardini A.F., Holmans P., Jones L., Langbehn D., Coleman A., Santos R.D., et al., Identification of genetic variants associated with Huntington's disease progression: a genome-wide association study (2017) LANCET NEUROL, 16 (9), 701-711.

IF: 26.619

Pagonabarraga J., Kulisevsky J. Apathy in Parkinson's Disease. Int Rev Neurobiol. 2017;133:657-678. doi: 10.1016/bs.irn.2017.05.025. Epub 2017 Jul 10.

IF: 2.371

Pagonabarraga J., Kulisevsky J., Safinamide from daily clinical practice: First clinical steps Safinamida desde la práctica clínica diaria: Primeros pasos clínicos (2017) REV NEUROLOGIA, 65 (10), 433-438.

IF: 0.384

Sala I., Illan-Gala I., Alcolea D., Sanchez-Saudinos M.B., Salgado S.A., Morenas-Rodriguez E., Subirana A., Videla L., Clarimon J., Carmona-Iragui M., Ribosa-Nogue R., Blesa R., Fortea J., Lleo A., Diagnostic and Prognostic Value of the Combination of Two Measures of Verbal Memory in Mild Cognitive Impairment due to Alzheimer's Disease (2017) J ALZHEIMERS DIS, 58 (3), 909-918.

IF: 3.071

Schapira A.H.V., Fox S.H., Hauser R.A., Jankovic J., Jost W.H., Kenney C., Kulisevsky J., Pahwa R., Poewe W., Anand R., Assessment of safety and efficacy of safinamide as a levodopa adjunct in patients with Parkinson disease and motor fluctuations a randomized clinical trial (2017) JAMA NEUROL, 74 (2), 216-224.

IF: 11.152

Spataro N., Roca-Umbert A., Cervera-Carles L., Valles M., Anglada R., Pagonabarraga J., Pascual-Sedano B., Campolongo A., Kulisevsky J., Casals F., Clarimon J., Bosch E., Detection of genomic rearrangements from targeted resequencing data in Parkinson's disease patients (2017) MOVEMENT DISORD, 32 (1), 165-169.

IF: 7.596

Other
Publications

- ▶ Catalán MJ, Antonini A, Calopa M, Băjenaru O, de Fábregues O, Mínguez-Castellanos A, Odin P, García-Moreno JM, Pedersen SW, Pirtošek Z, Kulisevsky J. Can suitable candidates for levodopa/carbidopa intestinal gel therapy be identified using current evidence? . *eNeurologicalSci*. 2017 Sep; 8: 44–53. Published online 2017 Jul 2. doi: 10.1016/j.ensci.2017.06.004 PMID: 29260038.
- ▶ Rosa-Grilo M , Qamar MA , Taddei RN , Pagonabarraga J, Kulisevsky J, Sauerbier A, Chaudhuri KR. Rotigotine transdermal patch and sleep in Parkinson's disease: where are we now?. *NPJ Parkinsons Dis*. 2017 Sep 5;3:28. doi: 10.1038/s41531-017-0030-4. eCollection 2017.