



AREA 4 · Neurological, Mental Disorders and Ageing

Cerebrovascular Diseases



Coordinator

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Members

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Main Lines of Research

- ▶ Brain neurorepair after stroke.
- ▶ Role of statins in ischaemic and haemorrhagic stroke.
- ▶ Intracerebral haemorrhage: Prevention of cerebral haemorrhage with anticoagulants, prevention and treatment of hematoma growth, etiological classification, multi-centre registry.
- ▶ Endothelial progenitor cells in stroke.
- ▶ Reperfusion therapies: Benefits and risks of intravenous thrombolysis and mechanical thrombectomy, collateral circulation in acute ischaemic stroke
- ▶ Non-invasive monitoring of cerebral flow with applied optic methods.
- ▶ Vulnerability of the atherosclerotic plaque
- ▶ Stroke and infection with COVID-19
- ▶ Participation in clinical trials.

Scientific Challenges

- ▶ Enhance cooperation with other groups within the framework of Spanish stroke research.
- ▶ Spanish research network (RETICS/INVICTUS PLUS) and also intrahospital and extra-hospital cooperation.
- ▶ Obtain funding from FIS, European Community calls, regional authorities and private companies.
- ▶ Increase the number of contracted and grant-aided researchers and professionally develop existing researchers.

Collaborations

Collaborations with other IIB Sant Pau Groups

- ▶ Neuroradiology.
- ▶ Thrombosis and Haemostasis.
- ▶ Cardiovascular Biochemistry.
- ▶ Neurobiology of Dementia.
- ▶ Molecular Pathology and Therapeutic of Ischaemic and Atherothrombotic Diseases.
- ▶ Stroke Pharmacogenomics and Genetics.
- ▶ Genomics of Complex Diseases.
- ▶ Clinical Epidemiology and Healthcare Services.
- ▶ Inflammation and Vascular Remodeling.
- ▶ Nuclear Medicine.

External Collaborations

- ▶ Dr. García-Verdugo. Universidad de Valencia, Spain.
- ▶ Dr. Carles Arús. Facultat de Ciències, Universitat Autònoma de Barcelona, Spain.

- ▶ Dr. Turgut Durduran. Instituto de Ciencias Fotónicas, Castelldefels, Barcelona, Spain.
- ▶ Dr. Tomás Sobrino. Hospital General Universitario, Santiago de Compostela, Spain.
- ▶ Dr. Blanca Fuentes. Hospital La Paz, Madrid, Spain.
- ▶ Dr. Ángel Chamorro. Hospital Clínic de Barcelona, Spain.
- ▶ Dr. Antonio Dávalos. Hospital Germans Trias i Pujol, Badalona, Spain.
- ▶ Dr. Jaume Roquer. Hospital del Mar, Barcelona, Spain.
- ▶ Dr. Francesc Purroy. Hospital Arnau de Vilanova, Lleida, Spain.
- ▶ Dr. David Rodríguez Luna., Hospital Vall d'Hèron, Barcelona, Spain.
- ▶ Dr. Miquel Terceño. Hospital Dr. Josep Trueta, Girona, Spain.
- ▶ RETICS (cooperative health research network) / INVICTUS (ictus research).

Clinical trials

- ▶ SWITCH
- ▶ RESPECT-ESUS
- ▶ NAVIGATE-ESUS

- ▶ CONVINCE
- ▶ PACIFIC
- ▶ Dr. David Werring (HERO and CROMIS-2 study, Microbleeds consortium), National Hospital for Neurology and Neurosurgery, London.
- ▶ Dr. Peter Kelly (BIOVASC study, CONVINCE study), Mater University Hospital, Dublin.
- ▶ Dr Ashkan Soamanesh (ENRICH-AF trial).

Active Grants

- ▶ Joan Martí Fàbregas. REgenerative Stem cell therapy for STroke in Europe - RESSTORE. PHC-15-2015. European Union. Duration: 2015-2020. 389,58 €.
- ▶ Joan Martí Fàbregas. Red de Enfermedades Vasculares Cerebrales. INVICTUS PLUS. RD16/0019/0010. Instituto de Salud Carlos III. Duration: 2017-2021. 125,020 €.
- ▶ Raquel Delgado Mederos. Cerebral blood flow-guided early rehabilitation intervention after stroke: a pilot randomized trial. MARATO 20170930. Fundació La Marató de TV3. Duration: 2018-2021. 118,500 €.
- ▶ Elena Jiménez Xarrie. Biomarcadors lipoproteics per determinar la inflamació de la placa carotídia en l'ictus isquèmic. MARATO 20171610. Fundació La Marató de TV3. Duration: 2018-2021. 158,060 €.
- ▶ Joan Martí Fàbregas. Malalties Vasculares Cerebrals. 2017 SGR 00665. Agència de Gestió d'Ajuts Universitaris i de Recerca. Duration: 2017-2021.
- ▶ Daniel Guisado Alonso. Evaluación multidisciplinar del pronóstico neurológico tras una muerte súbita cardiaca. CM18/00065. Instituto de Salud Carlos III. Duration: 2019-2021. 53,732 €.
- ▶ Joan Martí Fàbregas. Circulación colateral en ictus isquémico agudo con oclusión de gran vaso: un estudio de los factores clínicos, radiológicos, plasmáticos y genéticos relacionados. PI19/00859. Instituto de Salud Carlos III. Duration: 2020-2022. 122,000 €.
- ▶ Pol Camps / Sonia Benítez González. Lipoproteínas modificadas y marcadores inflamatorios asociados con vulnerabilidad de placa carotídea e ictus isquémico. PI19/00421. Instituto de Salud Carlos III. Duration: 2020-2022. 108,000 €.
- ▶ Registre multicèntric de pacients amb hemorràgia intracerebral a Catalunya (HIC-CAT). Dades sobre els circuits assistencials i avaluació del pronòstic en funció del temps fins a l'ingrés i del tipus de centre on es fa l'assistència. Fundació Ictus

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

Grants Awarded in 2020

- ▶ Luis Antonio Prats Sánchez. Proyecto MISTIC: papel del Microbioma intestinal en la evolución neurológica de pacientes con hemorragia intracerebral espontánea. PI20/00925. Instituto de Salud Carlos III. Duration: 2021-2023. 72,000 €.
- ▶ Joan Martí Fàbregas, Contractes per a la intensificació de l'activitat investigadora 2020. INT20/00011. Instituto de Salud Carlos III. Duration: 2021-2022. 60,000 €.
- ▶ Núria Puig Grífol, Contractes Predoctorals PFIS 2020. FI20/00252. Instituto de Salud Carlos III. Duration: 2021-2024. 82,400 €.
- ▶ Cristina Gallego Fàbrega, Contractes Sara Borrell 2020., CD20/00043, Instituto de Salud Carlos III. Duration: 2021-2023. 80,598 €.
- ▶ Joan Martí Fàbregas. Ensayo clínico sobre optimización hemodinámica de la perfusión cerebral tras el tratamiento endovascular en pacientes con ictus isquémico (Estudio HOPE). ICI20/00137. Instituto de Salud Carlos III. Duration: 2021-2021. 329,945 €.

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

Doctoral Theses

- ▶ Luis Prats Sánchez. Hemorragia remota secundaria al tratamiento fibrinolítico endovenoso en el ictus isquémico: frecuencia, factores de riesgo y pronóstico. Universitat Autònoma de Barcelona. Director: Joan Martí Fàbregas. Date of defense: 10/01/2020
- ▶ Pol Camps Renom. Nous marcadors de vulnerabilitat de l'aterosclerosi carotídia en pacients amb ictus isquèmic, Universitat Autònoma de Barcelona. Directors: Joan Martí Fàbregas, Raquel Delgado Mederos. Date of defense: 02/07/2020

Scientific Production

Total Impact Factor: 239.179 · Mean Impact Factor: 7.715

Amarencu P, Denison H, Evans SR, Himmelmann A, James S, Knutsson M, Ladenvall P, Molina CA, Wang Y, Johnston SC; THALES Steering Committee and Investigators. Ticagrelor Added to Aspirin in Acute Ischemic Stroke or Transient Ischemic Attack in Prevention of Disabling Stroke: A Randomized Clinical Trial. *JAMA NEUROL*. 2020 Nov 7;78(2):1–9. doi: 10.1001/jamaneurol.2020.4396. Epub ahead of print. Erratum in: doi: 10.1001/jamaneurol.2020.4906. PMID: 33159526; PMCID: PMC7648910. **IF: 13.608**

Amarencu P, Denison H, Evans SR, Himmelmann A, James S, Knutsson M, Ladenvall P, Molina CA, Wang Y, Johnston SC; THALES Steering Committee and Investigators*. Ticagrelor Added to Aspirin in Acute Nonsevere Ischemic Stroke or Transient Ischemic Attack of Atherosclerotic Origin. *Stroke*. 2020 Dec;51(12):3504–3513. doi: 10.1161/STROKEAHA.120.032239. Epub 2020 Nov 16. PMID: 33198608; PMCID: PMC7678660. **IF: 7.19**

Campo-Caballero D, de la Riva P, de Arce A, Martínez-Zabaleta M, Rodríguez-Antigüedad J, Ekiza J, Iruzubieta P, Purroy F, Fuentes B, de Lera Alfonso M, Krupinski J, Mengual Chirife JJ, Palomeras E, Guisado-Alonso D, Rodríguez-Yáñez M, Ustrell X, Tejada García J, de Felipe Mimbrenra A, Paré-Curell M, Tembl J, Cajaraville S, Garcés M, Serena J. Reperfusion

treatment in acute ischaemic stroke due to cervical and cerebral artery dissection: results of a Spanish national multicentre study. *Neurologia*. 2020 Dec 21;S0213-4853(20)30430-8. English, Spanish. doi: 10.1016/j.nrl.2020.10.016. Epub ahead of print. PMID: 33358059. **IF: 2.283**

Camps-Renom P, Prats-Sanchez L, Casoni F, Gonzalez-de-Echavarri J.M., Marrero-Gonzalez P, Castrillon I, Marin R., Jimenez-Xarrie E., Delgado-Mederos R., Martinez-Domeno A., Guisado-Alonso D., Martí-Fàbregas J., Plaque neovascularization detected with contrast-enhanced ultrasound predicts ischaemic stroke recurrence in patients with carotid atherosclerosis (2020) *EUR J NEUROL*, 27 (5), 809-816. **IF: 4.5160**

Colàs-Campàs L, Farre J, Mauri-Capdevila G, Molina-Seguín J, Aymerich N, Ois Á, Roquer J, Tur S, García-Carreira MDC, Martí-Fàbregas J, Cruz-Culebras A, Segura T, Arque G, Purroy F. Inflammatory Response of Ischemic Tolerance in Circulating Plasma: Preconditioning-Induced by Transient Ischemic Attack (TIA) Phenomena in Acute Ischemia Patients (AIS). *Front Neurol*. 2020 Oct 29;11:552470. doi: 10.3389/fneur.2020.552470. PMID: 33192985; PMCID: PMC7658473. **IF: 2.889**

Cullell N., Carrera C., Muino E., Torres-Aguila N.-P., Carcel-Marquez J., Gonzalez-Sanchez J., Gallego-Fabrega C., Molina J., Besora S., Sotoca J., Buongiorno M.-T., Jimenez-Conde J., Giralt-Steinhauer E., et al. Ge-

- nome-Wide Association Study of VKORC1 and CYP2C9 on acenocoumarol dose, stroke recurrence and intracranial haemorrhage in Spain (2020) *SCI REP-UK*, 10 (1), 2806-. **IF: 3.9980**
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- Guisado-Alonso D, Edo MC, Estrada Alarcón PV, García-Sánchez SM, Font MÀ, Mena Romo L, Marrero-González P, Mengual JJ, Castrillo L, Montull C, Corominas H, Gómez-Choco M. Progression of Large Vessel Disease in Patients With Giant Cell Arteritis-Associated Ischemic Stroke: The Role of Vascular Imaging: A Case Series. *J Clin Rheumatol*. 2020 Jul 23. doi: 10.1097/RHU.0000000000001498. Epub ahead of print. PMID: 32732523. **IF: 2.36**
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- Hemorrhagic Stroke Academia Industry (HEADS) Roundtable Participants; Second HEADS Roundtable Participants. Recommendations for Clinical Trials in ICH: The Second Hemorrhagic Stroke Academia Industry Roundtable. *Stroke*. 2020 Apr;51(4):1333-1338. doi: 10.1161/STROKEAHA.119.027882. Epub 2020 Feb 10. PMID: 32078490; PMCID: PMC7093252. **IF: 7.19**
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Sobrino T, Rodríguez-Yáñez M, Campos F, Iglesias-Rey R, Millán M, de la Ossa NP, Dávalos A, Delgado-Mederos R, Martínez-Domeño A, Martí-Fàbregas J, Castellanos M, Serena J, Lago A, Díez-Tejedor E, Castillo J. Association of High Serum Levels of Growth Factors with Good Outcome in Ischemic Stroke: a Multicenter Study. *Transl Stroke Res.* 2020 Aug;11(4):653-663. doi: 10.1007/s12975-019-00747-2. Epub 2019 Nov 25. PMID: 31768951; PMCID: PMC7340658. **IF: 5.78**

Terceño M, Silva Y, Bashir S, Vera-Monge VA, Cardona P, Molina C, Chamorro Á, de la Ossa NP, Hernández-Pérez M, Werner M, Camps-Renom P, Rodríguez-Campello A, Cánovas D, Purroy F, Serena J; Catalan Stroke Code and Reperfusion Consortium (Cat-SCR). Impact of general

anesthesia on posterior circulation large vessel occlusions after endovascular thrombectomy. *Int J Stroke.* 2020 Dec 1;1747493020976247. doi: 10.1177/1747493020976247. Epub ahead of print. PMID: 33573525. **IF: 4.882**

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Other Publications

Ibanez L, Heitsch L, Carrera C, Farias FHG, Dhar R, Budde J, Bergmann K, Bradley J, Harari O, Phuah CL, Lemmens R, Oliveira Souza AAV, Moniche F, Cabezas-Juan A, Arenillas JF, Krupinski J, Cullell N, Torres-Aguila N, Muiño E, Cárcel-Márquez J, Martí-Fàbregas J, Delgado-Mederos R, Marín-Bueno R, Hornick A, Vives-Bauza C, et al. Multi-ancestry genetic study in 5,876 patients identifies an association between excitotoxic genes and early outcomes after acute ischemic stroke. *medRxiv [Preprint].* 2020 Nov 3:2020.10.29.20222257. doi: 10.1101/2020.10.29.20222257. PMID: 33173895; PMCID: PMC7654887.

Prats-Sánchez L, Guasch-Jiménez M, Gich I, Pascual-Goñi E, Flores N, Camps-Renom P, Guisado-Alonso D, Martínez-Domeño A, Delgado-Mederos R, Rodríguez-Campello A, Ois A, Gómez-Gonzalez A, Cuadrado-Godia E, Roquer J, Martí-Fàbregas J. Influence of time to admission to a comprehensive stroke centre on the outcome of patients with intracerebral haemorrhage. *Eur Stroke J.* 2020 Jun;5(2):115-122. doi: 10.1177/2396987320901616. Epub 2020 Jan 29. PMID: 32637644; PMCID: PMC7313369.

Diffusion Activities

Communications to Congresses

- ▶ Lisa Kobayashi Frisk; Daniel Guisado Alonso; Anna Bosch de Basea Gómez; Marta Navarro Roman; Joan Martí-Fàbregas; Raquel Delgado-Mederos. Diffuse optical evaluation of hemodynamic and metabolic biomarkers towards guiding management in acute ischemic stroke. 2020 OSA Biophotonics Congress: Biomedical Optics (BioMed 2020), Fort Lauderdale, April 2020.
- ▶ Francisco Purroy, Joan Martí-Fàbregas. Remote Ischemic Perconditioning Among Acute Ischemic Stroke Patients in Catalonia: Remote-Cat Project. International Stroke Conference. Los Angeles, February 2020.
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- ▶ Cristina Gallego Fabrega, Pol Camps-Renom, Luis Prats-Sanchez, Elena Jiménez-Xarrié, Joan Martí-Fàbregas. Epigenetic biological age might explain age differences between sexes at stroke onset. ESO/WSO Virtual Conference (Viena), 7-9 November 2020. <https://virtual-eso-wso20.kenes.com/en/hall>.
- ▶ Daniel Guisado-Alonso, Alejandro Martínez-Domeño, Raquel Delgado-Mederos, Pol Camps-Renom, Luis Prats-Sanchez, Rebeca Marín-Bueno, Joan Martí-Fàbregas. Reasons for excluding patients with acute ischemic stroke from mechanical thrombectomy. A population-based study. ESO/WSO virtual conference (Viena), 7-9 November 2020. <https://virtual-eso-wso20.kenes.com/en/hall>.
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- ▶ Luis Prats-Sánchez, Marina Guasch-Jiménez, Pol Camps-Renom, Daniel Guisado-Alonso, Alejandro Martínez-Domeño, Raquel Delgado-Mederos, Rebeca Marín-Bueno, Elena Jiménez-Xarrié, Joan Martí-Fàbregas. Influence of intensity and lipophilicity of statins on early neurological deterioration, mortality and long-term functional outcome in spontaneous intracerebral hemorrhage. ESO/WSO Virtual Conference (Viena), 7-9 November 2020. <https://virtual-eso-wso20.kenes.com/en/hall>.
- ▶ Pol Camps-Renom, Raquel Delgado-Mederos, Daniel Guisado-Alonso, Alejandro Martínez-Domeño, Luis Prats-Sanchez, Joan Martí-Fàbregas. A risk score including plaque inflammation on 18FDG-PET and carotid stenosis predicts early stroke recurrence in traditionally considered "low-risk" patients with carotid atherosclerosis. ESO/WSO Virtual Conference (Viena), 7-9 November 2020. <https://virtual-eso-wso20.kenes.com/en/hall>.
- ▶ Joan Martí Fàbregas, Raquel Delgado-Mederos, Alejandro Martínez-Domeño, Pol Camps-Renom, Daniel Guisado-Alonso, Marina Guasch-jiménez, Elena Jiménez-Xarrié, Rebeca Marín-Bueno, Luis Prats-Sanchez. Wake-up intracerebral hemorrhage: clinical and radiological characteristics and outcome. ESO/WSO virtual conference (Viena), 7-9 November 2020. <https://virtual-eso-wso20.kenes.com/en/hall>.

Diffusion Activities

- ▶ Ictus, reconèixe't i actuar. Cycle "Medicina al teu abast". Hospital de Sant Pau, 30 January 2020.
- ▶ ¿Cuándo se debe reiniciar la anticoagulación después de un infarto cerebral?, ¿y de una HIC? Papel de la anticoagulación después de microbleeds. Jornadas "Actualización en ictus. Una realidad que ocupa y preocupa. Consideraciones en el paciente mayor" Málaga, 1 February 2020.
- ▶ Tractament de prevenció secundària en pacients amb fibril·lació auricular i l'antecedent d'una hemorràgia cerebral. Perspectiva del Neuròleg. XXXIV Reunió de la Societat Catalana de Neurologia. Barcelona, October 2020.

