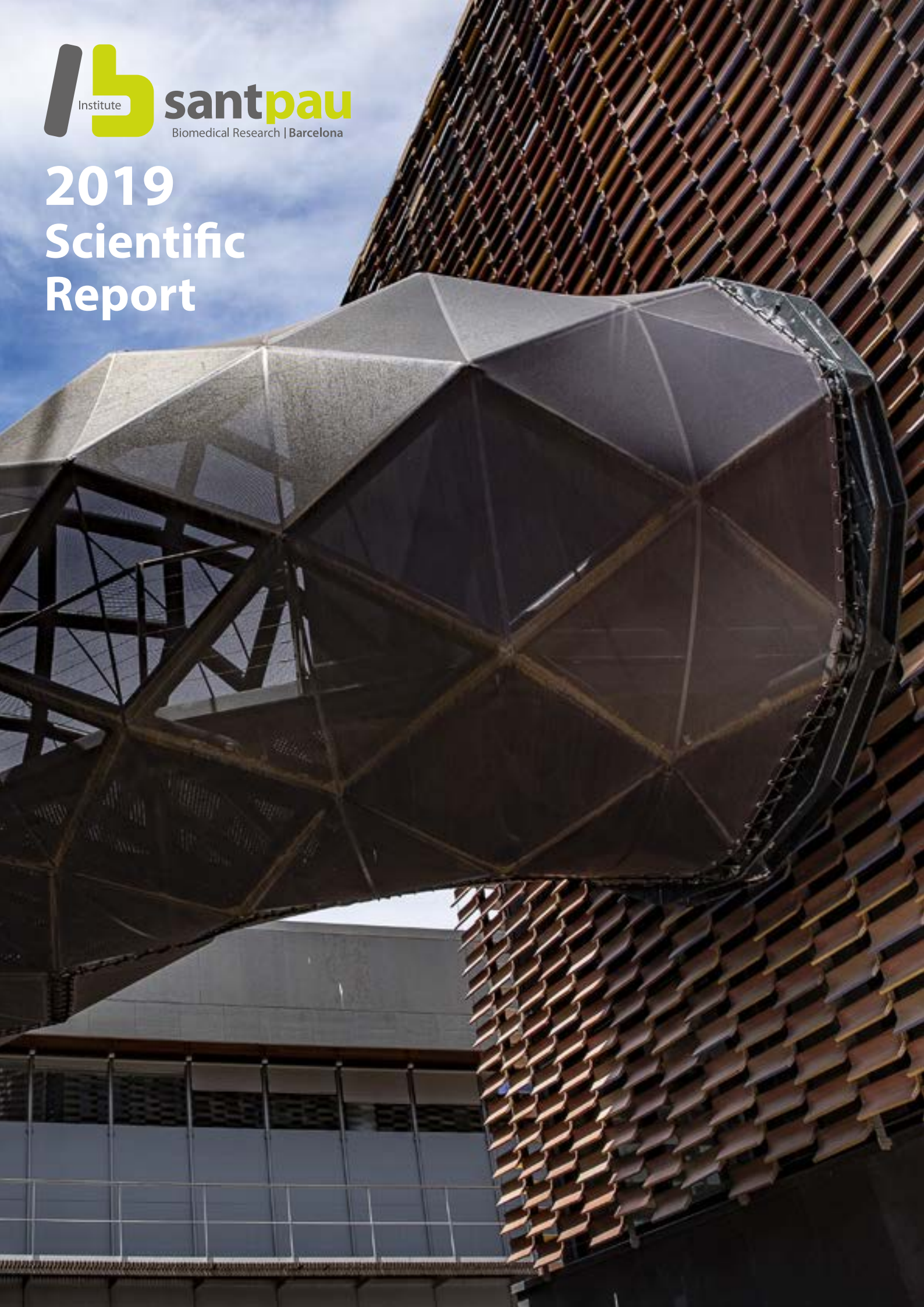


2019 Scientific Report



AREA 4 · Neurological, Mental Disorders and Ageing

Cerebrovascular Diseases



Coordinator

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Members

Bosch de Basea Gómez, Ana (IR)
Camps Renom, Pol (FGS)
Delgado Mederos, Raquel (FGS)
Fischer, Jonas Benedikt (IR-external)
Giovannella, Martina (external entity)
Guisado Alonso, Daniel (IR)
Jimenez Xarrie, Elena (IR)

Marín Bueno, Rebeca (IR)
Martínez Domeño, Alejandro (FGS)
Maruccia, Federica (external entity)
Montoliu Núñez, Lara (external entity)
Navarro Roman, Marta (IR)
Prats Sánchez, Luis Antonio (FGS)
Puig Grifol, Núria (IR)

Main Lines of Research

- ▶ Brain neurorepair after stroke.
- ▶ Role of statins in ischemic and hemorrhagic stroke.
- ▶ Intracerebral hemorrhage: Prevention of cerebral hemorrhage with anticoagulants, prevention and treatment of hematoma growth, etiological classification, multicenter registry.
- ▶ Endothelial progenitor cells in stroke.
- ▶ Reperfusion therapies: Benefits and risks of intravenous thrombolysis and mechanical thrombectomy, collateral circulation in acute ischemic stroke.
- ▶ Noninvasive monitoring of cerebral flow with applied optic methods.
- ▶ Vulnerability of the atherosclerotic plaque.
- ▶ Stroke and infection with COVID19.
- ▶ Participation in clinical trials.

Scientific Challenges

- ▶ Enhance cooperation with other groups in the framework of Spanish stroke research.
- ▶ Spanish research network (RETICS/INVICTUS PLUS) and also intrahospital and extra-hospital cooperation.
- ▶ To 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
- ▶ Regulatory Mechanisms of Cardiovascular Remodelling
- ▶ 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 Clínico 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.
- ▶ RETICS (cooperative health research network) / INVICTUS (ictus research)

Clinical trials

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

- ▶ Dra. Jennifer Linn (SUSPECT study), University of Rochester, New York
- ▶ 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. Estudio de la progresión y la vulnerabilidad de la aterosclerosis carotídea: influencia del recuento de Células Endoteliales Progenitoras y del control de factores de riesgo vascular. PI15/00884. Instituto de Salud Carlos III. Duration: 2016-2019. 106,500 €.
- ▶ Joan Martí Fàbregas. REgenerative Stem cell therapy for STroke in Europe - RESSTORE. PHC-15-2015. Unió Europea. 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 carotídea en l'íctus 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: 2017-2020.
- ▶ 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. 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. Duration: 2019-2020. 57,000 €.

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

Grants Awarded in 2019

- ▶ 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 €.

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

Awards

- ▶ Prize to the scientific career in ICTUS, awarded by the Grupo de Estudio de Enfermedades Cerebrovasculares de la Sociedad Española de Neurología. November 2019.

Scientific Production

Total Impact Factor: 352.272 · Mean Impact Factor: 11.3636

Ahmed N, Audebert H, Turc G, Cordonnier C, Christensen H, Sacco S, Sandset EC, Ntaios G, Charidimou A, Toni D, Pristipino C, Köhrmann M, Kuramatsu JB, Thomalla G, Mikulik R, Ford GA, Martí-Fàbregas J, Fischer U, Thoren M, *et al.* Consensus statements and recommendations from the ESO-Karolinska Stroke Update Conference, Stockholm 11-13 November 2018. *Eur Stroke J.* 2019 Dec;4(4):307-317. Epub 2019 Sep 2. **IF: 1.77**

Bornstein NM, Saver JL, Diener HC, Gorelick PB, Shuaib A, Solberg Y, Thackeray L, Savic M, Janelidze T, Zarqua N, Yarnitsky D, Molina CA; ImpACT-24B investigators. An injectable implant to stimulate the sphenopalatine ganglion for treatment of acute ischaemic stroke up to 24 h from onset (ImpACT-24B): an international, randomised, double-blind, sham-controlled, pivotal trial. *Lancet.* 2019 Jul 20;394(10194):219-229. Epub 2019 May 24. **IF: 59.102**

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Caballero-Ávila M, Juanola E, Izquierdo A, Martínez-Domeño A, Martí-Fàbregas J. Corneomandibular reflex in a patient with pontine hemorrhage without impaired consciousness. *Neurology.* 2019 Jan 1;92(1):48-49. **IF: 8.689**

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Carrera C, Culléll N, Torres-Águila N, Muiño E, Bustamante A, Dávalos A, López-Cancio E, Ribó M, Molina CA, Giralt-Steinhauer E, Soriano-Tárraga C, Mola-Caminal M, Jiménez-Conde J, Roquer J, Vives-Bauza C, Navarro RD, *et al.*; Spanish Stroke Genetic Consortium. Validation of a clinical-genetics score to predict hemorrhagic transformations after rtPA. *Neurology.* 2019 Aug 27;93(9):e851-e863. Epub 2019 Jul 31. PMID: 31366724; **IF: 8.689**

Carrera D., Gorchs M., Querol M., Abilleira S., Ribo M., Millan M., Ramos A., Cardona P., Urrea X., Rodríguez-Campello A., Prats-Sánchez L., Purroy F., Serena J., Canovas D., Zaragoza-Brunet J., Krupinski J.A., Ustrell X., Saura J., Garcia S., Mora M.A., Jimenez X., Davalos A., Perez De La Ossa N., Revalidation of the RACE scale after its regional implementation in Catalonia: A triage tool for large vessel occlusion (2019) *J NEUROINTERV SURG*, 11 (8), 751-756. **IF: 3.9250**

Cortés-Vicente E, Guisado-Alonso D, Delgado-Mederos R, Camps-Renom P, Prats-Sánchez L, Martínez-Domeño A, Martí-Fàbregas J. Frequency, Risk Factors, and Prognosis of Dehydration in Acute Stroke. *Front Neurol.* 2019 Mar 29;10:305. **IF: 3.552**

Diener HC, Sacco RL, Easton JD, Granger CB, Bernstein RA, Uchiyama S, Kreuzer J, Cronin L, Cotton D, Grauer C, Brueckmann M, Chernyatina M, Donnan G, Ferro JM, Grond M, Kallmünzer B, Krupinski J, Lee BC, Lemmens R, Masjuan J, Odinak M, Saver JL, Schellinger PD, Toni D, Toyoda K; RE-SPECT ESUS Steering Committee and Investigators. Dabigatran for

Prevention of Stroke after Embolic Stroke of Undetermined Source. *N Engl J Med.* 2019 May 16;380(20):1906-1917. **IF: 70.67**

García-Pastor A, Gil-Núñez A, Ramírez-Moreno J.M., González-Nafria N, Tejada J, Moniche F, Portilla-Cuenca J.C., Martínez-Sánchez P, Fuentes B, Gamero-García M.A., Alonso de Lecinana M., Masjuan J, Canoas-Verge D., *et al.*, The risk of recurrent stroke at 24 months in patients with symptomatic carotid near-occlusion: results from CAOS, a multi-centre registry study (2019) *EUR J NEUROL*, 26 (11), 1391-1398. **IF: 4.3870**

García-Pastor A, Gil-Núñez A, Ramírez-Moreno JM, González-Nafria N, Tejada J, Moniche F, Portilla-Cuenca JC, Martínez-Sánchez P, Fuentes B, Gamero-García MÁ, Alonso de Lecinana M, Masjuan J, Cánovas D, Aladro Y, Parkhutik V, Lago A, De Arce AM, Usero-Ruiz M, Delgado-Mederos R, Pampliega A, Ximénez-Carrillo Á, Bártulos-Iglesias M, Castro-Reyes E. Progression of carotid near-occlusion to complete occlusion: related factors and clinical implications. *J Neurointerv Surg.* 2020 Apr 10;neurintsurg-2019-015638. Epub ahead of print. **IF: 3.925**

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Kim N.Y., Hsu J., Talmasov D., Joutsa J., Soussand L., Wu O., Rost N.S., Morenas-Rodríguez E., Martí-Fabregas J., Pascual-Leone A., Corlett P.R., Fox M.D., Lesions causing hallucinations localize to one common brain network (2019) *MOL PSYCHIATR.* **IF: 11.9730**

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and Safety of Rivaroxaban Versus Aspirin in Embolic Stroke of Undetermined Source and Carotid Atherosclerosis (2019) *STROKE*, 50 (9), 2477-2485. **IF: 6.0460**

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Purroy F., Vena A., Forne C., De Arce A.M., Davalos A., Fuentes B., Arenillas J.F., Krupinski J., Gomez-Choco M., Palomeras E., Martí-Fabregas J., Castillo J., Ustrell X., Tejada J., Masjuan J., Garces M., Benabdelhak I., Serena J., Age- and sex-specific risk profiles and in-hospital mortality in 13,932 Spanish stroke patients (2019) *CEREBROVASC DIS*, 47 (3-4), 151-164. **IF: 2.6810**

Renu A., Blasco J., Millan M., Martí-Fabregas J., Cardona P., Oleaga L., Macho J., Molina C., Roquer J., Amaro S., Davalos A., Zarco F., Laredo C., Tomasello A., Guimaraens L., Barranco R., Castano C., Vivas E., Ramos A., Lopez-*et al.*, The Chemical Optimization of Cerebral Embolectomy trial: Study protocol (2019) *INT J STROKE*. **IF: 4.4660**

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Other Publications

- ▶ Farrant M, Easton JD, Adelman EE, Cucchiara BL, Barsan WG, Tillman HJ, Elm JJ, Kim AS, Lindblad AS, Palesch YY, Zhao W, Pauls K, Walsh KB, Martí-Fabregas J, Bernstein RA, Johnston SC. Assessment of the End Point Adjudication Process on the Results of the Platelet-Oriented Inhibition in New TIA and Minor Ischemic Stroke (POINT) Trial: A Secondary Analysis. *JAMA Netw Open.* 2019 Sep 4;2(9):e1910769.

Diffusion Activities

Dissemination (Communications to Congresses)

- ▶ Sarah Lee, Adam MacLellan, Sebastián F Ameriso, Antonio Arauz, Karl G Häusler, Marcel Arnold, Lee A Birnbaum, Joan Martí-Fàbregas, Verónica V Olavarría, Amanda Taylor, Kanjana S Perera. Longitudinal Study of Young Patients with Embolic Stroke of Undetermined Source (ESUS). International Stroke Conference. Honolulu, May 2019.
- ▶ Clara Gregori-Pla, Rickson C. Mesquita, Christopher G. Favilla, David R. Busch, Igor Blanco, Lisa Kobayashi Frisk, Pol Camps-Renom, Michael T. Mullen, Joan Martí-Fàbregas, Luís Prats-Sánchez, Alejandro Martínez-Domeño, Raquel Delgado-Mederos, John A. Detre, Arjun G. Yodh, Turgut Durduran. A mild orthostatic challenge shows impairment of cerebrovascular autoregulation on the ipsilesional hemisphere of ischemic stroke patients. Diffuse Optical Spectroscopy and Imaging Conference. Munich, June 2019.
- ▶ Clara Gregori-Pla, Rickson C. Mesquita, Christopher G. Favilla, David R. Busch, Igor Blanco, Lisa Kobayashi Frisk, Pol Camps-Renom, Michael T. Mullen, Joan Martí-Fàbregas, Luís Prats-Sánchez, Alejandro Martínez-Domeño, Raquel Delgado-Mederos, John A. Detre, Arjun G. Yodh, Turgut Durduran. A mild orthostatic challenge shows impairment of cerebrovascular autoregulation on the ipsilesional hemisphere of ischemic stroke patients. *Brain* 2019.
- ▶ Sarah Lee, Adam MacLellan; Sebastian F Ameriso; Antonio Arauz; Karl G Häusler; Marcel Arnold; Lee A Birnbaum; Joan Martí-Fàbregas; Verónica V Olavarría; Amanda Taylor, Kanjana S Perera. Longitudinal Study of Young Patients With Embolic Stroke of Undetermined Source (ESUS). International Stroke Conference. Honolulu, February 2019.
- ▶ Xucla T, Prats-Sánchez L, Martí-Fàbregas J. Limitation of therapeutic effort in acute intracerebral hemorrhage: Do we apply it correctly? World Intracerebral Hemorrhage 2019. Granada, 19-21 May 2019.
- ▶ Peter J Kelly, P Camps-Renom, N Gianno, J Martí-Fàbregas, JC Baron, S Cronin, SB Coutts, E Dolan, A Fernández-Leon, S Foley, J Harbison, G Horgan, J McCabe, C McDonnell, J McNulty, V Sharma, D Williams, M Marnane, M O'Connell, S Murphy. A simple clinical score (SCAIL) including plaque inflammation-related metabolism on 18FDG-PET and stenosis severity identifies patients with carotid stenosis and early recurrent stroke. European Stroke Organization. Milan, 23-25 May 2019.
- ▶ P. Camps-Renom, L. Prats-Sánchez, F. Casoni, J.M. González-de-Echávarri, P. MarreroGonzález, I. Castrillón, R. Marin, E. Jiménez-Xarrié, R. Delgado-Mederos, A. Martínez-Domeño, D. Guisado-Alonso, J. Martí-Fàbregas. Carotid plaque neovascularization detected with contrast-enhanced ultrasound predicts ischemic stroke recurrence. European Stroke Organization. Milan, 23-25 May 2019.
- ▶ P. Camps-Renom, A. Fernández-León, L. Prats-Sánchez, F. Casoni, R. Marin, E. Jiménez-Xarrié, R. Delgado-Mederos, A. Martínez-Domeño, D. Guisado-Alonso, J. Martí Fàbregas. Plaque neovessels detected with contrast-enhanced ultrasound are associated with inflammation measured with 18-FDG positronemission tomography in patients with ischemic stroke and carotid atherosclerosis. European Stroke Organization, Milan, 23-25 May 2019.
- ▶ Martinez-Majander, G. Ntaios, Y.Y. Liu, P. Ylikotila, H. Joensuu, J. Saarinen, K. Perera, J. Martí-Fàbregas, A. Chamorro, S. Rudilosso, L. Prats-Sánchez, S. Berkowitz, H. Mundl, E. Themeles, M. Tiainen, A. Demchuk, R.G. Hart, T. Tatlisumak. Cancer and antithrombotic treatment with rivaroxaban versus aspirin in the navigate esus trial N. European Stroke Organization, Milan, 23-25 May 2019.
- ▶ E. Jiménez-Xarrié, P. Camps-Renom, A. Martínez-Domeño, R. Marin, L. Prats-Sánchez, D. Guisado-Alonso, R. Delgado-Mederos, J. Martí-Fàbregas. The human circulating microRNA MIR-28-3p is a potential biomarker for ischemic stroke etiology classification. European Stroke Organization. Milan, 23-25 May 2019.
- ▶ A. Martínez-Domeño, E. Juanola-Mayos, A. Carbayo, V. Agudelo, X. Freixa, D. Arzamendi-Aizpurua, X. Millán-Álvarez, L. Llull, P. Camps-Renom, L. Prats-Sánchez, R. Delgado-Mederos, J. Martí-Fàbregas. Where are patients with acute intracerebral hemorrhage being cared? A population-based study. European Stroke Organization, Milan, 23-25 May 2019.
- ▶ J. Martí-Fàbregas. Left atrial appendage closure effectiveness in patients with prior intracranial hemorrhage after long-term follow-up. European Stroke Organization, Milan, 23-25 May 2019.
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 - ▶ Xuclà Ferrarons, T.; Prats Sánchez, L.; Guasch Jimenez, M.; Caballero Ávila, M.; Izquierdo Tapiz, A.; Martínez Domeño, Á.; Delgado Mederos, R.; Camps Renom, P.; Guisado Alonso, D.; Martí Fàbregas, J. Limitación del esfuerzo terapéutico en pacientes con hemorragia intracerebral: ¿La aplicamos correctamente? LXXI Annual Meeting of the SEN. Sevilla, 19-23 November 2019.
 - ▶ Campo Caballero, D.; de la Riva Juez, P.; de Arce, A.M.; Purroy, F.; Fuentes, B.; Arenillas, J.F.; Krupinski, J.; Gómez Choco, M.; Palomeras, E.; Martínez, M.; Martí Fábregas, J.; Castillo, J.; Ustrell, X.; Tejada, J.; Masjuan, J.; Garcés, M.; Serena, J. Tratamiento de reperfusión en el ictus isquémico agudo por disección espontánea cerebral y cervical: descripción de los resultados de un estudio nacional multicéntrico. LXXI Annual Meeting of the SEN. Sevilla, 19-23 November 2019.
 - ▶ Ruiz Barrio, I.; Vesperinas Castro, A.; Tauron Ferrer, M.; Camps Renom, P.; Martínez Domeño, A.; Prats Sánchez, L.; Guisado Alonso, D.; Rivilla Lizano, M.T.; Martí Fabregas, J.; Delgado Mederos, R. Rendimiento diagnóstico y pronóstico del estudio neurosonológico preoperatorio en pacientes sometidos a cirugía cardíaca. LXXI Annual Meeting of the SEN. Sevilla, 19-23 November 2019.
 - ▶ Vesperinas Castro, A.; Ruiz Barrio, Í.; Tauron Ferrer, M.; Camps Renom, P.; Martínez Domeño, A.; Prats Sánchez, L.; Rivilla Lizano, M.T.; Guisado Alonso, D.; Martí Fábregas, J.; Delgado Mederos, R. Riesgo de ictus de la cirugía cardíaca en una cohorte contemporánea. LXXI Annual Meeting of the SEN. Sevilla, 19-23 November 2019.

Scientific Dissemination

- ▶ Predictors of intracerebral hemorrhage in ischemic stroke treated with fibrinolysis. World Intracerebral Hemorrhage 2019. Granada, 19-21 May 2019.
- ▶ Highlights of the European Stroke Organization Conference. Barcelona, 12 June 2019.
- ▶ Hemorragia encefálica hipertensiva, Hemorragia por trombolíticos y anticoagulantes, Tratamiento de la Hemorragia encefálica. Invited conferences in the Diplomado de Neurología. Universidad Católica de Santiago de Chile, 6 September 2019.
- ▶ Hemorragia cerebral y hemorragia subaracnoidea. Curso de Residentes del Grupo de Estudio de Enfermedades Cerebrovasculares de la Sociedad Española de Neurología. Bilbao, October 2019.
- ▶ III Meeting of the Neurología Crítica. Ponencia: ¿Es la hemorragia intracerebral una entidad trabale? Madrid, October 2019.
- ▶ Importancia clínica de los microbleeds. Symposium Retos en el Manejo de la Anticoagulación en el Paciente Mayor Neurológico. LXXI Reunión Anual de la Sociedad Española de Neurología. Sevilla, November 2019.

