

Thrombosis and Haemostasis

Group leader

Souto Andrés, Joan Carles (FGS)

Researchers

Carrasco Expósito, Marina (FGS)

Mateo Arranz, José (FGS)

Millón Caño, Juan Antonio (FGS)

Moret Puig, Carla (FGS)

Vilalta Setó, Noèlia (FGS)

Research technicians

Acosta Isaac, Francisco René (FGS)

Bercianos Repes, Elaia (IR)

Llobet Lorente, Maria Dolors (FGS)

Mojal García, Sergio (IR)

Romero Román, Lúdia (FGS)

Tirado García, Isabel (FGS)



DESCRIPTION

Our group is dedicated to the clinical and basic research of haemostasis diseases, including both thromboembolic and hemorrhagic conditions, as well as to the clinical development of antithrombotic and antihemorrhagic therapies. We apply modern epidemiological AI methods to study complex diseases, such as venous thrombosis. The research group team consists of six physicians, four technicians, and one statistician. Five of them hold a doctorate in medicine (3), biology (1), and pharmacy (1). As a clinical team, our primary dedication, both in clinics and the laboratory, is to the diagnosis and treatment of patients.

MAIN LINES OF RESEARCH

- Development of predictive mathematical models of the individual thrombosis risk, by means of IA. (Souto Andrés, J. Carles)
- Translational research on new anticoagulants, anti IIa, Xa and XI, and a self-management model of VKA drugs. (Souto Andrés, J. Carles)
- Translational research on new anti-hemophilic drugs. (Mateo Arranz, José)

SCIENTIFIC CHALLENGES

- Use of Machine Learning models (Artificial Intelligence techniques) applied in the study of the venous thrombosis risk, at the individual level, by the combined analysis of plasma, cellular, genomic and epigenomic biomarkers.
- Improvement of clinical outcomes in anticoagulated patients with different

anticoagulants (VKA or DOACs) by minimising in real life the incidence of severe complications.

- Use of high-throughput genomic techniques in the diagnosis of hemostasis diseases (NGS, exome sequencing, genome sequencing).

ACTIVE & AWARDED GRANTS

- Souto Andrés, J. Carles. Perfil individual de Riesgo de Enfermedad Tromboembólica Venosa (RETROVE 4). PI21/01772. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 205.700,00 €
- Souto Andrés, J. Carles. Modelo de Aplicación Clínica de los AntiCoagulantes Orales de acción Directa MACACOD Register. Daiichi-Sankyo España, SA. Duration: 2019-2024. Non-competitive. 818.000,00 €-

SCIENTIFIC PRODUCTION

- de Vries PS, Reventun P, Brown MR, Heath AS, Huffman JE, Le NQ, Bebo A, Brody JA, Temprano G, Raffield LM, Ozel AB, Thibord F, Jain D, Lewis JP, Rodríguez B, Pankratz N, Taylor KD, Polasek O, Chen MH, Yanek LR, Carrasquilla GD, Marioni RE, Kleber ME, Trégouët DA, Yao J, Li R, Joshi PK, Trompet S, Martínez A, Ghanbari M, Howard TE, Reiner AP, Arvanitis M, Ryan KA, Bartz TM, Rudan I, Faraday N, Linneberg A, Ekunwe L, Davies G, Delgado GE, Suchon P, Guo XQ, Rosendaal FR, Klaric L, Noordam R, van F, Curran JE, Wheeler MM, Osburn WO, O'Connell JR, Boerwinkle E, Beswick A, Psaty BM, Kolcic I, Souto JC, Becker LC, Hansen T, Doyle MF, Harris SE, Moissi AP, Deleuze JF, Rich SS, Vlieg AV, Campbell H, Stott DJ, Soria JM, de Maat MPM, Almasy L, Brody LC, Auer PL, Mitchell BD, Ben Y, Fornage M, Hayward C, Mathias RA, Kilpeläinen TO, Lange LA, Cox SR, März W, Morange PE, Rotter JI, Mook DO, Wilson JF, van der Harst P, Jukema JW, Ikram MA, Blangero J, Kooperberg C, Desch KC, Johnson AD, Sabater M, Lowenstein CJ, Smith NL, Morrison AC, Trans Omics Precision Med TOPMed P, INVENT C. A genetic association study of circulating coagulation factor VIII and

von Willebrand factor levels. BLOOD. 2024; 143(18). DOI:10.1182/blood.2023021452. PMID:38320121. IF:21,000 (Q1/1D). Document type: Article.

- Diz-de Almeida S, Cruz R, Luchessi AD, Lorenzo-Salazar JM, de Heredia ML, Quintela I, González-Montelongo R, Nogueira Silbiger V, Porras MS, Tenorio Castaño JA, Nevado J, Aguado JM, Aguilar C, Aguilera-Albesa S, Almadana V, Almoguera B, Álvarez N, Andreu-Bernabeu Á, Arana-Arri E, Arango C, Arranz MJ, Artiga MJ, Baptista-Rosas RC, Barreda-Sánchez M, Belhassen-García M, Bezerra JF, Bezerra MAC, Boix-Palop L, Brion M, Brugada R, Bustos M, Calderón EJ, Carbonell C, Castano L, Castela JE, Conde-Vicente R, Cordero-Lorenzana ML, Cortes-Sánchez JL, Corton M, Darnaude MT, De Martino-Rodríguez A, Del Campo-Pérez V, de Bustamante AD, Domínguez-Garrido E, Eirós R, Fariñas MC, Fernández-Nestosa MJ, Fernández-Robelo U, Fernández-Rodríguez A, Fernández-Villa T, Gago-Dominguez M, Gil-Fournier B, Gómez-Arrue J, Álvarez BG, Bernaldo de Quirós FG, González-Neira A, González-Peñas J, Gutiérrez-Bautista JF, Herrero MJ, Herrero-González A, Jiménez-Sousa MA, Lattig MC, Borja AL, López-Rodríguez R, Mancebo E, Martín-López C, Martín V, Martínez-Nieto O, Martínez-López I, Martínez-Resendez MF, Martínez-Pérez A, Mazzeu JF, Macías EM, Minguez P, Cuerda VM, Oliveira SF, Ortega-Paino E, Parellada M, Paz-Artal E, Santos NPC, Pérez-Matute P, Pérez P, Pérez-Tomás ME, Perucho T, Pinsach-Abuin M, Pita G, Pompa-Mera EN, Porras-Hurtado GL, Pujol A, León SR, Resino S, Fernandes MR, Rodríguez-Ruiz E, Rodríguez-Artalejo F, Rodríguez-García JA, Ruiz-Cabello F, Ruiz-Hornillos J, Ryan P, Soria JM, Souto JC, Tamayo E, Tamayo-Velasco A, Taracido-Fernández JC, Teper A, Torres-Tobar L, Urioste M, Valencia-Ramos J, Yáñez Z, Zarate R, de Rojas I, Ruiz A, Sánchez P, Real LM; SCOURGE Cohort Group; Guillen-Navarro E, Ayuso C, Parra E, Riancho JA, Rojas-Martínez A, Flores C, Lapunzina P, Carracedo Á. Novel risk loci for COVID-19 hospitalization among admixed American populations. Elife. 2024; 13:RP93666. DOI:10.7554/eLife.93666. PMID:39361370. IF:6,400 (Q1/1D). Document type: Article.

- Gendre B, Martínez A, Kleber ME, Vlieg AV, Boland A, Olaso R, Germain M, Munsch G, Moissl AP, Suchon P, Souto JC, Soria JM, Deleuze JF, März W, Rosendaal FR, Sabater M, Morange PE, Tregouët DA, CHARGE Hemostasis Working GRP. Genome-Wide Search for Nonadditive Allele Effects Identifies *PSKH2* as Involved in the Variability of Factor V Activity. *Journal of the American Heart Association*. 2024; 13(21):e034943. DOI:10.1161/JAHA.124.034943. PMID:39424413. IF:5,000 (Q1/2D). Document type: Article.
- Huffman JE, Nicholas J, Hahn J, Heath AS, Raffield LM, Yanek LR, Brody JA, Thibord F, Almasy L, Bartz TM, Bielak LF, Bowler RP, Carrasquilla GD, Chasman DI, Chen MH, Emmert DB, Ghanbari M, Haessler J, Hottenga JJ, Kleber ME, Le NQ, Lee J, Lewis JP, Li R, Luan J, Malmberg A, Mangino M, Marioni RE, Martínez A, Pankratz N, Polasek O, Richmond A, Rodríguez B, Rotter JI, Steri M, Suchon P, Trompet S, Weiss S, Zare M, Auer P, Cho MH, Christofidou P, Davies G, de Geus E, Deleuze JF, Delgado GE, Ekunwe L, Faraday N, Gögele M, Greinacher A, Gao H, Howard T, Joshi PK, Kilpeläinen TO, Lahti J, Linneberg A, Naitza S, Noordam R, Paüls F, Rich SS, Rosendaal FR, Rudan I, Ryan KA, Souto JC, van F, Wang HM, Zhao W, Becker LC, Beswick A, Brown MR, Cade BE, Campbell H, Cho K, Crapo JD, Curran JE, de Maat MPM, Doyle M, Elliott P, Floyd JS, Fuchsberger C, Grarup N, Guo XQ, Harris SE, Hou LF, Kolcic I, Kooperberg C, Menni C, Nauck M, O'Connell JR, Orrú V, Psaty BM, Rääkkönen K, Smith JA, Soria JM, Stott DJ, Vlieg AV, Watkins H, Willemsen G, Wilson PWF, Ben Y, Blangero J, Boomsma D, Cox SR, Dehghan A, Eriksson JG, Fiorillo E, Fornage M, Hansen T, Hayward C, Ikram MA, Jukema JW, Kardina SLR, Lange LA, März W, Mathias RA, Mitchell BD, Mook DO, Morange PE, Pedersen O, Pramstaller PP, Redline S, Reiner A, Ridker PM, Silverman EK, Spector TD, Völker U, Wareham NJ, Wilson JF, Yao J, Trégouët DA, Johnson AD, Wolberg AS, de Vries PS, Sabater M, Morrison AC, Smith NL, Va Million Vet P, Nhlbi Trans T. Whole-genome analysis of plasma fibrinogen reveals population-differentiated genetic regulators with putative liver roles. *BLOOD*. 2024; 144(21). DOI:10.1182/blood.2023022596. PMID:39226462. IF:21,000 (Q1/1D). Document type: Article.
- León M, Humphries B, Xie F, Gravholt DL, Golembiewski E, Eckman MH, Bates SM, Hargraves I, Pelayo I, López SR, Caño J, Alcántara M, D'Souza R, Shehata N, Jack SM, Guyatt G, Perestelo L, Alonso P. Values and preferences towards the use of prophylactic low-molecular-weight heparin during pregnancy: a convergent mixed-methods secondary analysis of data from the decision analysis in shared decision making for thromboprophylaxis during pregnancy (DASH-TOP) study. *Thrombosis Journal*. 2024; 22(1):81. DOI:10.1186/s12959-024-00648-x. PMID:39243049. IF:2,600 (Q2/4D). Document type: Article.
- Martínez J, Torramade S, Moreno AB, Llobet D, Jerez D, Sánchez P, Carrasco M, Mojal S, Moret C, Camacho M, Soria JM, Palomo M, Martín L, Vidal F, Escolar G, Díaz M, Souto JC. Increased Platelet Adhesiveness in Patients with Venous Thromboembolic Disease. *TH OPEN*. 2024; 08(04). DOI:10.1055/s-0044-1800798. PMID:39619107. Document type: Article.
- Morales CM, Gil JG, García NB, Varillas JLM, del Río VC, Alvarado PM, García FJN, Espinosa G, Fontecha PDD, Rodríguez MG, Arranz JM, Gómez ML, Hernández FMF, Trujillo MM, Sobrín RD, Sánchez J, Manzano JM, Cuba JS. SER recommendations on treatment of refractory Behçet's syndrome. *Reumatología Clínica*. 2024; 20(4). DOI:10.1016/j.reuma.2023.12.001. PMID:38614885. Document type: Article.
- Walter A, Winsauer H, Crespo E, Walter D, Winsauer C, Schwärzler A, Mojal S, Arcos I, Puigdollers A. Adult maxillary expansion: CBCT evaluation of skeletal changes and determining an efficiency factor between force-controlled polycyclic slow activation and continuous rapid activation for mini-screw-assisted palatal expansion - MASPE vs. MARPE. *Head & Face Medicine*. 2024; 20(1):70. DOI:10.1186/s13005-024-00474-6. PMID:39617918. IF:2,400 (Q2/3D). Document type: Article.