

Women and Perinatal Health Research Group



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Members

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Polo Ramos, Ana Maria (FGS)
Porta Roda, Josep Oriol (FGS)
Ribera Casellas, Irene (FGS)

Rodriguez Sureda, Victor (external entity)
Sánchez García, Olga (IR)
Zanini Mangialardi, Maria Julia (external entity)

Main Lines of Research

- ▶ Prediction and prevention of complications arising from placental insufficiency, intrauterine growth restriction/preeclampsia (IUGR/PE)
- ▶ Placental insufficiency and maternal cardiovascular risk later in life.
- ▶ Role of the oxygen transport deficit in the placental insufficiency.
- ▶ Development of predictive methods based on the integration of pre-natal and postnatal factors for the detection of abnormal neurodevelopment in congenital heart diseases.
- ▶ Toxin and air-pollution effects on pregnancy and fetal programming.
- ▶ Management of pelvic-floor dysfunction: chronic pelvic pain, urinary incontinence and pelvic organ prolapse.

Scientific Challenges

- ▶ To study novel placental biomarkers in the diagnosis and prognosis of preeclampsia (PE) and intrauterine growth restriction (IUGR) in order to generate future hypotheses for target prevention and therapeutic interventions in these diseases.
- ▶ To determine the usefulness of novel placental biomarkers (sFlt-1/PlGF ratio) in the diagnosis and prognosis of preeclampsia (PE) in order to change policies and improve maternal and neonatal health.
- ▶ To study novel maternal cardiovascular risk biomarkers after placental insufficiency and to explore potential preventive strategies in order to identify mothers at risk of cardiovascular disease later in life.
- ▶ To study the role of placental insufficiency and hypoxia in congenital heart disease in order to gain insights into the relationships between hypoxia-dependent placental morphogenesis, placental function and effects on oxygen metabolism in the fetus.
- ▶ To develop biomarkers in fetal and neonatal life that help to predict postnatal neurological risk in congenital heart diseases.
- ▶ To evaluate the impact of maternal exposure to traffic-related air pollution on fetal development in order to generate evidence base to support regulation, implementation of finely-targeted interventions, and in time, the inclusion of this impact in the next iteration of the global burden of diseases (GBD) attributable to ambient air pollution.

Collaborations

Collaborations with other IIB Sant Pau Groups

- ▶ Active collaboration with the Gynaecology and Obstetrics Service: Obdulia Alejos, Laura Gomila, Anna Olivella, Juan Parra, Cristina Tri-la.
- ▶ Active collaboration with Puigvert Foundation: Carlos Dosouto, Susana Peón, M. Jesús Saiz.
- ▶ Breast cancer: Dra. Bárbara García-Valdecasas.
- ▶ Genetic Research: Dr. Jordi Surallés.
- ▶ Oncogenesis and Antitumour Drugs: Dra. Virtudes Céspedes.
- ▶ Reproductive Health: Dr. Joaquim Calaf.
- ▶ Anesthesiology: Dra. M. Victoria Moral.
- ▶ General and Digestive Surgery: Dr. Antonio Moral.
- ▶ Endocrinology, Diabetes and Nutrition: Dr. Diego Mauricio.

- ▶ Paediatrics: Dr. Susana Boronat.
- ▶ Clinical Epidemiology and Healthcare Services: Dr. Xavier Bonfill.
- ▶ Clinical Biochemistry Service: Dr. Francisco Blanco.
- ▶ Image Diagnostic Service, Neuroradiology Section: Dra. Beatriz Gómez-Anson.

External Collaborations

International Collaborations

- ▶ Elisa Llorba, Antonio Fernández, Carla Domínguez, Olga Sánchez (collaborators). AMAG-423-201: Study of the Efficacy and Safety of AMAG-423, a Digoxin Immune Fab, in Antepartum Subjects with Severe Preeclampsia. A phase 2b/3a, Multi-Center, Randomized, Double-blind, Placebo-Controlled, Parallel-Group. AMAG Pharmaceuticals Inc (Waltham Massachusetts, US) with ICON Clinical.

Elisa Llorba (collaborator). Role of Placental Insufficiency and Hypoxia in Congenital Heart Defects. Principal investigator: Steven A. Fisher, M.D.; Professor of Medicine and Physiology S-012a HSF II, 20 Penn St. Univ of Maryland School of Medicine.

Elisa Llorba (collaborator). Accuracy of clinical characteristics, biochemical and ultrasound markers in the prediction of preeclampsia: an Individual Patient Data (IPD) Meta-analysis. Principal Investigator: Shakila Thangaratnam, PhD; Professor in maternal and perinatal health at Queen Mary University of London.

National Collaborations

Eduard Gratacós. Centro de Investigación Biomédica en RED – Enfermedades Raras (CIBERER). CB06/07/0027.

M. Dolores Gómez Roig. Maternal and Child Health and Development Research Network (SAMID Network). RD16/0022/0014.

M. Virtudes Céspedes (PI); M. José Macías (co-PI). Olga Sánchez (collaborator). Indicadores genómicos para la predicción de la recurrencia i la metastasi en càncer endometrial. La Marató de TV3. Duración: 2020-2022.

Payam Dadvand (PI); Jordi Sunyer (co-PI); Elisa Llorba, Carmen Garrido, Carla Domínguez, Antonio Fernández, Irene Ribera, M. Julia Zanini, Victor Rodríguez-Sureda and Olga Sánchez (collaborators). Traffic-related air pollution and birth weight: the roles of noise, placental function, green space, physical activity, and socioeconomic

status (FRONTIER). The Health Effects Institute (HEI). Duration: 2018-2022.

Jordi Sunyer (PI); Elisa Llorba, Carmen Garrido, Carla Domínguez, Antonio Fernández, Irene Ribera, M. Julia Zanini, Victor Rodríguez-Sureda and Olga Sánchez (collaborators). Pre-natal exposure to urban Air pollution and pre- and post-Natal Brain development (AIR-NB). European Research Council (ERC), Horizon 2020, ERC-2017-ADG. Duration: 2018-2022.

Elisa Llorba (PI); Carla Domínguez, Antonio Fernández, Irene Ribera, M. Julia Zanini, Olga Sánchez, Ana Polo (collaborators). Maternal and Infant Health and Development Network (SAMID Network). RD16/0022/0015.

Octavi Córdoba (PI); Olga Sánchez (collaborator). Breast cancer during pregnancy. Neurologic and cardiologic outcomes after chemotherapy exposition during fetal period.

Lluís Cabero Roura (PI); Carmen Garrido, Olga Sánchez (collaborators). Angiogenic factors during pregnancy and cardiovascular risk in the medium to long term in patients with preeclampsia. Clinical and experimental approach.

Elisa Llorba (collaborator). Banc de Sang i Teixits (Blood and Tissue Bank) is a public agency of the Catalan Department of Health whose mission is to guarantee the supply and proper use of human blood and tissue in Catalonia.

Active Grants

Elisa Llorba Olivé. Incorporación del ratio sFlt1/PlGF en el diagnóstico y clasificación de preeclampsia: Ensayo clínico randomizado (EuroPE estudio). PI16/00375. Instituto de Salud Carlos III. Duration: 2017-2021. 92,500 €.

Josep Oriol Porta Roda. Estudio de las propiedades biológicas de una matriz dérmica de origen humano para su aplicación en cirugía de corrección del prolapso de órganos pélvicos e incontinencia urinaria femenina. CONVENI BST 2017-3. Banc de Sang i Teixits. Duration: 2017-2020. 136,904 €.

Elisa Llorba Olivé. Women and Perinatal Health Research Group. 2017 SGR 1267. Agència de Gestió d'Ajuts Universitaris i de Recerca. Duration: 2017-2020. 10,000 €.

Elisa Llorba Olivé. Red de salud materno-infantil y del desarrollo. RD16/0022/0015. Instituto de Salud Carlos III. Duration: 2017-2021. 178,530 €.

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

Grants Awarded in 2019

Elisa Llorba Olivé. Remodelado y disfunción cardíaca en pacientes con preeclampsia regulado por el ambiente anti-angiogénico: estudio clínico y experimental. PI19/00702. Instituto de Salud Carlos III. Duration: 2020-2022. 121,000 €.

Elisa Llorba Olivé. Contratos Juan Rodés 2019. JR19/00047. Instituto de Salud Carlos III. Duration: 2020-2023. 180,000 €.

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

Scientific Production

Total Impact Factor: 55.629 - Mean Impact Factor: 4.2792

Alijotas-Reig J, Esteve-Valverde E, Ferrer-Oliveras R, Sáez-Cornet L, Lefkou E, Mekinian A, Belizna C, Ruffatti A, Tincani A, Marozio L, Espinosa G, Cervera R, de Carolis S, Latino O, Llorba E, Meroni PL, Chighizola CB, et al. The European Registry on Obstetric Antiphospholipid Syndrome (EUROAPS): A survey of 1000 consecutive cases (2019) *AUTOIMMUN REV*. 18 (4), 406-414. **IF: 7.7160**

Alijotas-Reig J, Esteve-Valverde E, Llorba E, Gris JM. Treatment of refractory poor aPL-related obstetric outcomes with TNF-alpha blockers: Maternal-fetal outcomes in a series of 18 cases (2019) *SEMIN ARTHRITIS RHEUM*. 49 (2), 314-318. **IF: 5.0720**

Alijotas-Reig J, Esteve-Valverde E, Ferrer-Oliveras R, Sáez-Cornet L, Lefkou E, Mekinian A, Belizna C, Ruffatti A, Hoxha A, Tincani A, Nalli C, Marozio L, Maina A, Espinosa G, Rios-Garcés R, Cervera R, De Carolis S, Montealeone G, Latino O, Udry S, Llorba E, Garrido-Gimenez C, et al. Comparative study of obstetric antiphospholipid syndrome (OAPS) and non-criteria obstetric APS (NC-OAPS): report of 1640 cases from the EUROAPS registry [published online ahead of print, 2019 Oct 3]. *RHEUMATOLOGY (Oxford)*. 2019. **IF: 5.149**

Basile L, Ciruela P, Requena-Méndez A, Vidal MJ, Dopico E, Martín-Nalda A, Sulleiro E, Gascon J, Jané M, The Working Group Of Congenital Chagas Disease In Catalonia (Llorba E, Garrido C). Epidemiology of congenital Chagas disease 6 years after implementation of a public

health surveillance system, Catalonia, 2010 to 2015. *Euro Surveill*. 2019;24(26):1900011. **IF: 7.400**

Bautrant E, Porta O, Murina F, Mühlrad H, Levêque C, Riant T, Piteau S, Valancogne G, Levesque A. Provoked vulvar vestibulodynia: Epidemiology in Europe, physio-pathology, consensus for first-line treatment and evaluation of second-line treatments. *J GYNECOL OBSTET HUM REPROD*. 2019;48(8):685-688. **IF: 1.039**

Blanch Fons L, Estadella Tarriel J, Simó Gonzalez M, Rams Llop N, Longo A, Porta Roda O. Use of an Intrauterine Foley Probe for Ultrasound-Assisted Hysteroscopic Resection of Complete Uterine Septum [published online ahead of print, 2019 Jul 25]. *J MINIM INVASIVE GYNECOL*. 2019;51553-4650(19)30317-6. **IF: 2.414**

Dosouto C, Calaf J, Polo A, Haahr T, Humaidan P. Growth hormone and reproduction: Lessons learned from animal models and clinical trials (2019) *FRONT ENDOCRINOL*. 10 (JUN). **IF: 3.6340**

Hadi Zafarmand M, Goossens S MTA, Tajik P, Bossuyt P MM, Asztalos EV, Gardener G J, Willan A R, Roumen F JE, Mole B W, Gynecology Yosef Jon Barrett, Twin Birth Study Collaborative Group (Llorba E). Planned Cesarean or Planned Vaginal Delivery for Twins: A Secondary Analysis of a Randomized Controlled Trial. *ULTRASOUND OBSTET GYNECOL*. 2019 Oct 31. **IF: 5.595**

Mazarico E, Llorba E, Cabero L, Sanchez O, Valls A, Martín-Ancel A, Cardenas D, Gomez Roig M.D. Associations between neural injury markers of intrauterine growth-restricted infants and neurodevelopment at 2 years of age (2019) *J MATERN-FETAL NEO M*. 32 (19), 3197-3203. **IF: 1.5690**

Mendoza Cobaleda M, Ribera I, Maiz N, Goya M, Carreras E. Cervical Modifications After Pessary Placement in Singleton Pregnancies With Maternal Short Cervical Length: 2D and 3D Ultrasound Evaluation. *ACTA OBSTET GYNECOL SCAND*. 2019; 98 (11), 1442-1449. **IF: 2.741**

Pauls C, Dantas A P, Miranda J, Crovetto F, Eixarch E, Rodríguez-Sureda V, Domínguez C, Casu G, Rovira C, Nadal A, Crispi F, Gratacós E. Premature placental aging in term small-for-gestational-age and growth-restricted fetuses. *ULTRASOUND OBSTET GYNECOL*. 2019;53(5):615-622. **IF: 5.595**

Diffusion Activities

Dissemination Activities to Society

BISC Project:

- <https://www.isgloba.org/-/bisc-barcelona-life-study-cohort>

- <http://www.projectebisc.org/es/inicio/>

- <http://www.santpau.es/web/public/-/ja-ha-nascut-a-sant-pau-el-primer-nado-de-la-cohort-bisc>

Programa Cuida't (Ana Polo, oral communications):

- Relaxació i fertilitat. Yoga workshop with She Oak. Hospital de Sant Pau, 30 January 2019.

- Consells pràctics durant els tractaments. With She Oak. 20 February 2019.

- Nutrició i fertilitat. With She Oak. 6 March 2019.

- Teràpies naturals i reproducció assistida. With She Oak. 27 March 2019.

Scientific Dissemination

National Congresses

Medina, M. Carmen. Diabetes gestacional: poblacion de riesgo, complicaciones embriónicas y fetales, manejo durante la gestación, parto o cesárea y puerperio. (oral communication) 1er Congreso Nacional de Ginecología y Obstetricia AGOC. Castellón de la Plana, Spain, 27-29 November 2019.

Vega L, Llorba E, Ruiz CW, Montoliu A, Sánchez O, Sánchez-de-Toledo J. Evaluación del neurodesarrollo en niños con cardiopatía congénita. Análisis de marcadores de lesión neuronal como indicador de mal pronóstico neurológico. (poster) XXVII Congreso de Neonatología y Medicina Perinatal. Madrid, Spain, 2-4 October 2019.

International Congresses

Oriol Porta, Pathophysiology reminder and the Convergences PP consensus for the first line treatment – CONVERGENCES PP, Convergences in pelviperineal pain. (oral communication and moderator). Madrid, Spain, 14-16 November 2019.

Jose Pardo-Gea, Jaume Alijotas-Reig, Enrique Esteve-Valverde, Elisa Llorba and Josep M Gris. Treatment of Refractory Poor APL-Related Obstetric Outcomes with TNF-Alpha Blockers: Results of 18 Patients (poster). 16th International Congress on Antiphospholipid Antibodies (ICAPA). Manchester, UK, 17-20 September 2019.

Elisa Llorba (oral communication/docent activity). I Congreso Internacional de Técnicas y Cortes Ecográficas en Medicina Fetal. Lima, Perú, 30-31 August-1 September 2019.

Peró García M, Porta Roda O, Alserwan De Lamo L, Canovas Noé M, Casani Arazo L, Castells Sala C, Florit Carbonell S, Grandal Rejo B, Juan Babot J, Longo A, Lopez Chicon P, Minovas Granja G, Moga Naranjo M, Pérez Rodríguez M, Tur Tur V. Feasibility of New Zealand rabbit as an animal model for the study of biological grafts in pelvic reconstructive surgery (poster). 49th Annual Meeting of the International Continence Society (ICS 2019). Gothenburg, Sweden, 3-6 September 2019.

Ribera I, Ruiz A, Sánchez O, Eixarch E, Antolin E, Gómez-Montes E, Pérez-Cruz M, Cruz-Lemini M, Sanz-Cortés M, Arévalo S, Ferrer Q, Vázquez E, Vega L, Dolader P, Montoliu A, Boix H, Simões RV, Masoller N, Sánchez-de-Toledo J, Comas M, Bartha J M, Galindo A, Martínez J M, Gómez-Roig L, Crispi F, Gómez O, Carreras E, Cabero L, Gratacós E, Llorba E. Multicenter prospective clinical study to evaluate children short-term neurodevelopmental outcome in congenital heart disease (children NEURO-HEART): study protocol. *BMC Pediatr*. 2019;19(1):326. **IF: 2.110**

Zeisler H, Llorba E, Chantraine F J, Vatish M, Staff A C, Sennström M, Olovsson M, Brennecke S P, Stepan H, Allegranza D, Schoedl M, Grill S, Hund M, Verloren S. Soluble fms-like tyrosine kinase-1 to placental growth factor ratio: ruling out pre-eclampsia for up to 4 weeks and value of retesting. *Ultrasound Obstet Gynecol*. 2019;53(3):367-375. **IF: 5.595**

Porta O, Cornet A, Font A, Huguet E, Lleberia J, Solà I. Vaginal packing after vaginal hysterectomy with or without colporrhaphy: a systematic review of the literature (poster). 49th Annual Meeting of the International Continence Society (ICS 2019). Gothenburg, Sweden, 3-6 September 2019.

Zanini MJ, Llorba E, Gómez-Roig MD, Sunyer J, Dadvand P, Ribera I, Sánchez O, Bustamante M, Álvarez M, Foraster M, Gascón M, Eixarch E, Crispi F. Barcelona Life Cohort Study (BISC) a prospective cohort study of pregnant women, their offspring and partners exposed to urban pollution. BISC project presentation and pregnant women follow-up (poster). 18th World Congress in Fetal Medicine. Alicante, Spain, 25-29 June 2019.

Fernández-Oliva A, Mora J, Mendoza M, Valle L, Pelegay MJ, Ruiz A, Maroto A, Mazarico E, Rodríguez A, Martínez J, Abellan M, Llorba E. Randomized open-label control trial to evaluate if the incorporation of sFlt-1/PlGF ratio in the diagnosis and classification of preeclampsia, improves maternal and perinatal outcomes. EUROPE Study: protocol presentation (poster). 18th World Congress in Fetal Medicine. Alicante, Spain, 25-29 June 2019.

Trilla C, Ribera I, Zanini MJ, Fernández-Oliva A, Mora J, Llorba E. Contingent screening for preeclampsia in the first trimester: the additional value of Placental Growth Factor (poster). 18th World Congress in Fetal Medicine. Alicante, Spain, 25-29 June 2019.

Trilla C, Fernández-Oliva A, Parra J, Mora J, Antonijuan A, Orantes V, Llorba E. Relationship between placental biometry, uterine artery Doppler and biochemical markers in the first trimester (poster). 18th World Congress in Fetal Medicine. Alicante, Spain, 25-29 June 2019.

Elisa Llorba Early prophylactic Enoxaparin for the prevention of preeclampsia and intrauterine growth restriction. 18th World Congress in Fetal Medicine (oral communication). Alicante, Spain, 25-29 June 2019.

Esteve-Valverde E, J. Alijotas-Reig, E. Llorba, R. Ferrer-Oliveras, D. Ruiz-Hidalgo, L. Sáez-Cornet, C. Belizna, A. Mekinian, E. Lefkou, G. Espinosa on behalf of EUROAPS study group. Obstetric antiphospholipid syndrome (OAPS) vs. with obstetric morbidity related with antiphospholipid antibodies (OMAPS): a survey of 1650 cases from EUROAPS registry (poster). European Congress of Rheumatology (EULAR). Madrid, Spain, 12-15 June 2019.

Elisa Llorba. Protocol for IOL: A Shared Experience (oral communication). 4th European Congress of Intrapartum Care. Turin, Italy, 14-16 March 2019.

Oriol Porta. Obstetric trauma and pelvic floor dysfunction: from knowledge to prevention (oral communication and moderator). 1st World Federation of Incontinence Patients (WFIP) Forum. Barcelona, Spain, 3 June 2019.

Oriol Porta. Vaginal therapies in menopausal sexual and orgasmic dysfunction (oral communication). VI Mediterranean Incontinence and Pelvic Floor Society (MIPS) Annual Meeting. Barcelona, Spain, 25-27 April 2019.

Meetings/Seminars

- ▶ Ana Polo. Diagnóstico e indicaciones en IA (oral communication). I Foro Inseminación en Sanidad Pública. Madrid, Spain, 8 March 2019.
- ▶ Ana Polo. Incorporación del screening de portadores en nuestra práctica clínica diaria IX Simposium Fertilidad Ferring. Sevilla, Spain, 16 February 2019.
- ▶ Ana Polo. TRA en el contexto de una enfermedad reumática (oral communication). Jornada de embarazo y enfermedades reumáticas. Madrid, Spain, 19 February 2019.
- ▶ Ana Polo. Diagnóstico e indicaciones en IA (oral communication). I Foro sobre Inseminación en Sanidad Pública. Madrid, Spain, 8 March 2019.
- ▶ Oriol Porta. Atrofia vaginal y nuevos tratamientos con dosis ultrabajas de estradiol (oral communication and moderator). 8ª Reunión científica GINEP (Ginecólogos Privados). Granada, Spain, 25-26 October 2019.

Teaching Activity

- ▶ Oriol Porta. (professor) Máster propio profesional medico-quirúrgico sobre disfunciones del suelo pélvico. Universidad Miguel Hernández Elche (UMH). October 2019 – June 2020.
- ▶ Oriol Porta (oral communication and director), and Carmen Garrido (oral communication). Curs de Formació Teòrica en Obstetrícia i Ginecologia. Nivell 1. Societat Catalana d'Obstetrícia i Ginecologia. Barcelona, Spain, 18 September 2018-11 June 2019.