NEPHROLOGY GROUP

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MAIN LINES OF RESEARCH

Fundació Puigvert's Nephrology Research Group has been part of the IIB since its very beginning. The group carries out translational research within the field of renal diseases along different lines from hypertension, hereditary diseases, glomerular diseases and renal fibrosis, to transplants and dialysis.

Those different lines are analysed in detail below:

Dra. Torra is the head researcher of the hereditary diseases line – she and Dra. Ars have leaded many research projects on these diseases, and both have supervised several doctoral theses. The hereditary renal diseases team is currently analysing phenotype variability of those diseases, both in its genomic and its clinical dimension. Dra. Torra coordinates both the Catalan and the Spanish hereditary renal diseases teams, and is a member of the homonymous European board of the EDTA (European Dialysis and Transplant Association).

Dra. Ars heads the molecular genetics laboratory; she has optimised the Next generation sequencing tools for hereditary renal diseases, in collaboration with Dra. Gemma Bullich. Dra. Ars coordinates the Sant Pau IIB's Fundació Puigvert's On-line Biobank node belonging to the National Biobanks Platform. She is also the person responsible for organising an European Molecular Quality Network (EMQN) outline for quality control of the genetic diagnoses of ADPKD by European laboratories. Currently she is leading a research project for applying this outline to kidney and urinary tract congenital abnormalities.

Jointly with Dra. Díaz, Dr.Ballarin leads a series of clinical trials, both national and international, on glomerular and systemic diseases affecting the kidneys. They also participate in registries at a Catalan, Spanish and European level.

Dra. Díaz leads the studies on renal inflammation and fibrosis. Renal grafts from cadaveric donors are an apt model for her study due to their less-good prognosis and to a high probability of inflammation and ensuing fibrosis as compared to living donor grafts. Dra. Díaz and Dra. Guillén have identified the activation of purinoma elements, both in cell cultures and in grafts from cadáver donors. This activation participates in inflammation and fibrosis, triggered by the phenotype change of macrophages into antiinflammatory and pro-fibrotic, and interacting with other pro-fibrotic classical pathways. This new role of the purinergic pathways could be the key for the detection of new markers and new therapeutic targets associated with renal graft dysfunction after transplant.

Dra. Fernández-Llama is participating in the deveopment of a prototype of a multiplex system for flow cystometry focused on a new multi-parametric etio-pathogenic diagnosis of acute renal damage. As an expert in hypertension, she participates in a collaborative trial for evaluating 24-hour central blood pressure, its circadian rythms and its relationship with organic damage.

Dr. Bover is also a member of the EDTA work force board on bone metabolism, this being his primary research subject.

Dr. Díaz leads the dialysis research line. Currently the two major research lines are concerned with the appropriateness of peritoneal dialysis, and the investigation for biomarkers of the acute renal failure.

Dra. Coll, who belongs in the dialysis team, heads the research of genomic damage in patients on renal replacement therapy, either transplant or dialysis. She analyses the differences of oxidative stress in transplanted vs. dialysis patients. She also analyses the effect of different antioxidants on genomic damage of dialysis patients.

The transplant team, leaded by Dr. Guirado, either participates or heads over 15 studies, amongst them clinical trials with drugs against kidney rejection or for treating associated viral infections. His active participation and his leadership in the investigation of biochemical, serologic and genomic biomarkers of both rejection and viral infections associated with renal transplant, are outstanding.

Ms. Luz San Miguel and Ms. Judith Ballart are the coordinators of clinical studies and trials. Their work is essential and of the utmost importance for carrying out the high number of clinical trials performed by the group.

SCIENTIFIC CHALLENGES

- Maintain the level of national and international publication.
- Continue with both clinical and basic research in all the previously described areas.
- Participate in the elaboration of clinical nephrology guidelines.
- Continue with active collection of research samples from CKD and transplant patients.
- Maintain participation in national working groups and increase international cooperation.
- Engage in new pharmaceutical clinical studies, including clinical trials.

COLLABORATIONS WITH IIB-SANT PAU GROUPS

Active collaborations in basic and clinical research projects

- Inflammatory Diseases Group: renal fibrosis.
- Anaesthesiology Group (in collaboration with the Catalan ANESCARDIOCAT Group): risk of major adverse cardiovascular and cerebrovascular events in non-cardiac surgery associated with the preoperative estimated glomerular filtration rate.
- Paediatrics Group: nephrotic syndrome evolution, Ig A nephropathy and inherited kidney diseases.
- Andrology Group: infertility.
- Urology Group: genetic predisposition to prostate cancer and transplant.
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- Ginecology: High risk pregnancies, prenatal diagnosis, preimplantation diagnosis.
- Multidisciplinary teams for inherited kidney diseases: collaboration with most specialities from Sant Pau Hospital for different inherited kidney diseases (data bases, articles, protocols...).

Platforms

- Biobank platform.

EXTERNAL COLLABORATIONS

National academic collaborations

- Department of Biochemistry and Molecular Biology, Universitat de Barcelona, Institute of Biomedicine and Oncology Programme, National Biomedical Research Institute of Liver and Gastrointestinal Diseases (CIBER EHD): renal fibrosis.

- Laboratory of Proteomics CSIC/Universitat Autònoma de Barcelona: diabetic nephropathy.
- Mutagenesis Department of Universitat Autònoma de Barcelona: renal impairment in chronic kidney disease.
- Genomic Regulation Center (CRG): inherited kidney diseases.
- Universidad de Salamanca: acute kidney injury.
- Universitat de Lleida: chronic kidney disease.
- National Scientific Societies (such as Sociedad Española de Nefrología) and investigators of other centres: basic and clinical studies (including public grants, clinical trials, observational studies...) promoted by them.

International academic collaborations

- Biochemistry and Microbiology Institute UACH (Chile): renal fibrosis and diabetic nephropathy.
- Mayo Clinic (Rochester, USA): Autosomal Dominant Polycystic Kidney Disease (ADPKD).
- Hospital Tenon (Paris, France): Nephrotic syndrome.
- EURenOmics Plataform: membranous nephropathy and nephrotic syndrome.
- Toronto General Hospital (Canada): molecular genetics of idiopathic nephrotic syndrome.
- University of Melbourne (Australia): Alport syndrome.
- University Medicine Goettingen (Germany): Alport syndrome.
- EDTA (multinational, Europe): inherited kidney diseases and chronic kidney disease-mineral and bone disorders.
- Addenbrooke's Hospital, Cambridge University Hospitals NHS (United Kingdom): vasculitis.
- EUVAS Group (multinationational collaborative Group): vasculitis.

Private national and international collaborations

- Participation in clinical studies including clinical trials and postauthorisation studies promoted by national and international pharmaceutical companies.
- Research Joint-Venture with VU Medisch Centrum (Amsterdam, The Netherlands); Medizinische Klinik I (Aachen, Germany) and San Paolo Hospital (Milan, Italy) sponsored by Abbvie Co on effects of vitamina D derivatives in CKD-MBD.
- Other collaborations

- Patient organisations: inherited diseases (AIRG), lupus (ACLECA) and chronic kidney disease (ALCER).

ACTIVE GRANTS

- "Nefropatias familiares no filiadas: genes implicados en su causa y su variabilidad fenotípica". Torra R. Exp: PI15/01824. Instituto de Salud Carlos III (FEDER cofunded). Duration 2016-2018. 115.500 €.

- "Enfermedades renales hereditarias quísticas y glomerulares: secuenciación masiva de un panel de genes para mejorar su diagnóstico y del exoma para identificar nuevos genes". Ars E. Exp: PI13/01731. R. Instituto de Salud Carlos III (FEDER cofounded). Duration 2014-2017. 68.000 €.

- "Red de Investigación" Renal. Ballarin J. Exp: RD12/0021/0033 Instituto de Salud Carlos III (FEDER cofounded). Duration 2013-2017. 82.000 €

SCIENTIFIC PRODUCTION

TIF: 109,4570 MIF: 7,2971

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- Macaya A., Torra R., Recommendations for the multidisciplinary management of tuberous sclerosis complex (2016) MED CLINBARCELONA, 147 (5), 211-216, IF: 0.9800

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OTHER PUBLICATIONS

- Bover J, Ureña-Torres P, Górriz JL, Lloret MJ, da Silva I, Ruiz-García C, Chang P, Rodríguez M, Ballarín J. Cardiovascular calcifications in chronic kidney disease: Potential therapeutic complications. Nefrologia. 2016 Nov -Dec; 36(6):597-608. doi: 10.1016/j.nefro.2016.05.023. Epub 2016 Aug 30. English,Spanish. PubMed PMID: 27595517.

- Bover J, Górriz JL, Ureña-Torres P, Lloret MJ, Ruiz-García C, daSilva I, Chang P, Rodríguez M, Ballarín J. Detection of cardiovascular calcifications: Is it a useful tool for nephrologists? Nefrologia. 2016 Nov - Dec; 36(6):587-596. doi:10.1016/j.nefro.2016.05.021. Epub 2016 Aug 27. English, Spanish. PubMed PMID: 27575927.

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- Robotic-assisted kidney transplantation: our first case. A. Breda, L. Gausa, A. Territo, J. M. Lopez-Martinez, O. Rodriguez Faba J. Caffaratti, J. Ponce de León, L. Guirado, H.Villavicencio. World J Urol 2016 Mar;34(3):443-7. doi: 10.1007/s00345

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BOOKS OR CHAPTERS WITH ISBN

- “Malformaciones congénitas y enfermedades quísticas del riñón”,Farreras-Rozman. Medicina interna 18th Edition, Chapter 103

AWARDS

- “EX-AEQUO” Best Oral Communication. Diferencias entre vasculitis ANCA-PR3 positivas y ANCA MPO-positivas en una cohorte española. Marco, H; Fulladosa, X; Fernández-Juárez, G; Quintana, LF; Martin, N; García-Osuna, R; Martín, D; Praga, M; Ballarín, J; Díaz-Encarnación, M. XXXII Reunió Anual de la Societat Catalana de Nefrologia, Castelldefels, 2-3 June

DOCTORAL THESES

- G Bullich: “Molecular study of idiopathic nephrotic syndrom”, Universitat Autònma de Barcelona, Directors: E ARS, R Torra, 29th April