JUNTA DE ANDALUCIA

UNIVERSIDAD D CÓRDOBA

IMIBIC
INSTITUTO MAIMÓNIDES DE INVESTIGACIÓN BIOMÉDICA DE CÓRDOBA

MAIMONIDES INSTITUTE OF BIOMEDICAL RESEARCH OF CORDOBA

Partner Profiles

Catalogue of interests and opportunities

HORIZON 2020

Call Personalising Health and Care 2014-2015

Oficina de Proyectos
INTERNACIONALES
Sistema Sanitario Público de Andalucía

IMIBIC INSTITUTO MAIMÓNIDES DE INVESTIGACIÓN BIOMÉDICA DE CÓRDOBA

Contents

IMIBIC Group GC2

Oxidative and Nitrosative Stress in Acute and Chronic Liver Diseases

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC-10-2014: Development of new diagnostic tools and technologies: in vitro devices, assays and platforms
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC2: Oxidative and Nitrosative Stress in Acute and Chronic Liver Disease. The members of the research team are divided into the BIO-216 and the STS-273 group –within the Andalusian Research Plan– and the CIBER for liver and digestive diseases (CIBERehd) in the context of a mixed group consisting of a healthcare team made up of hepatologists, surgeons and a biomedical research team of the University Hospital Reina Sofia's Research Unit, and the Department of Biochemistry and Molecular Biology of the University of Cordoba with associated teaching activity. Our biomedical research focuses on acute and chronic hepatocellular injury, hepatocarcinoma and liver transplantation, with special emphasis on post-translational modifications of the proteome as a consequence of oxidative stress (reactive oxygen species, ROS) and nitrosative stress (reactive nitrogen species, RNS) in eukaryotic cells (primary culture of hepatocytes and established cell lines). The intracellular cytoprotection signal for molecules of various antioxidants (N-acetylcysteine, alpha-tocopherol) or cellular redox state regulators (redoxins) have been characterized in models of cellular injury. The mitochondrial dysfunction caused by redox imbalance is at the root of a large number of pathologies. The group of proteins from the family of cellular and mitochondrial redoxins plays a major part in antioxidant defense, the maintenance of thiol systems and the interaction between reduced glutathione, ROS and RNS. For this purpose, normal and chimeric mutants and recombinant proteins are produced using techniques of molecular biology and in vitro characterization; and (second generation) targeted proteomics are carried out using biochemical analysis

	techniques. The group's proven experience in the analysis of post-translational modifications is employed in the identification of biomarkers for hepatocellular carcinoma detection and diagnosis using proteomic analysis tools. In the area of liver transplants, we have identified the cytoprotection mechanisms mediated by cardiotrophin-1 in the preservation injury in liver transplantation developed in experimental animals (rats and "mini-pigs"). In addition, the clinical group is involved in the development of a large number of phase II, III and IV clinical trials in the areas of viral hepatitis (boceprevir), hepatocellular carcinoma (sorafenib), liver cirrhosis (satavaptan), acute liver failure (bioartificial liver, MARS) and liver transplantation (immunosuppression strategies).
Expertise offered to the project (please describe the expertise you can provide)	Our research group has a long-standing experience on end stage liver disease and liver transplantation, both in the clinical and in the basic research fields. In the last years we have been involved in many multicentre randomized controlled trials and have led research projects aiming to identify biomarkers of hepatocellular carcinoma, to prevent tumor recurrence after liver transplantation, and to optimize immunosuppressive schedules, among others. Our group is able to proved expertise in the following aspects: - Recruitment of patients with chronic viral hepatitis, acute or chronic liver failure, liver transplanted, and hepatocellular carcinoma. - Statistical support. - Sample collection and storing. - Techniques for bacterial/mammalian cell culture and transformation/transfection. Overexpression/inhibition of proteins in mammalian cells (stable/inducible protein expression/inhibition systems). - Functional analysis of the OXPHOS system: polarographic assessment of mitochondrial respiratory chain performance (Clark electrode);spectrophotometric activity of mitochondrial respiratory complexes; ATP production. - Methods for the analysis of oxidative/nitrosative stress, andapoptosis and cell necrosis, by spectrophotometry (nitrite/ROS production, GSH/GSSG ratio,caspaseactivity, LDH production), western-blot and RT-qPCR analysis. - Techniques for protein analysis and manipulation:protein extraction and purification from cell cultures, organic fluids, or tissue samples; protein quantification by spectrophotometry; protein expression analysis by 1D-/2D-Polyacrylamide Gel Electrophoresis, or by 2-D Fluorescence Difference Gel Electrophoresis (DIGE), and the use of the software QuantityOne/PDQuest (BioRad) and Decyder (GE Healthcare); protein identification/quantification bymass spectrometry, western-blot analysis, and ELISA test; *in vitro* protein synthesis, … - Techniques for nucleic acid analysis and manipulation:DNA/RNA extraction and purification from bacteria, cell cultures, organic fluids, or tissue samples; plasmid preparation and manipulation;chromatin immunoprecipitation (ChIP) assay;nucleic acid quantification by spectrophotometry; expression analysis by RT-qPCR; nucleic acid resolution by electrophoresis.

	- Microscopy techniques: Conventional light microscopy, fluorescence microscopy and confocal microscopy.Staining techniques for histological examination of tissue samples (hematoxylin-eosin, Masson trichrome), andimmunohistochemistry (tunel staining assay, BrdU detection assay, protein location/quantification).
Research Results	Our most recent research has resulted in international publications with high impact factor. Some of them are summarized below: - Ferrin G et al. Identification of candidate biomarkers for hepatocellular carcinoma in plasma of HCV-infected cirrhotic patients by 2-D DIGE. Liver Int 2013 (In press). - Rodríguez-Perálvarez et al. Reduced exposure to calcineurin inhibitors early after liver transplantation prevents recurrence of hepatocellular carcinoma. J Hepatol 2013;59(6):1193-9. - Cruz-Ramírez et al. Predicting patient survival after liver transplantation using evolutionary multi-objective artificial neural networks. ArtifIntell Med 2013;58(1):37-49. - Aguilar-Melero et al. Cardiotrophin-1 reduces ischemia/reperfusion injury during liver transplant. J Surg Res 2013;181(2):83-91. - Rodríguez-Perálvarez et al. Tacrolimus trough levels, rejection and renal impairment in liver transplantation: a systematic review and meta-analysis. Am J Transplant 2012;12(10):2797-814. Briceño J, Ciria R, de la Mata M.Donor-recipient matching: myths and realities.JHepatol2013 Apr;58(4):811-20. - González et al. Targeting hepatoma using nitric oxide donor strategies.Antioxid Redox Signal. 2013;18(5):491-506. - Sánchez-Hidalgo et al. Impact of age on liver regeneration response to injury after partial hepatectomy in a rat model.J Surg Res. 2012;175(1):e1-9. - Aguilar-Meleroet al. Effects of nitric oxide synthase-3 overexpression on post-translational modifications and cell survival in HepG2 cells. J Proteomics 2012; 75(3):740-55. We have also collaborated in recent publications with a strong impact on clinical practice: - Moreau et al. Acute-on-chronic liver failure is a distinct syndrome that develops in patients with acute decompensation of cirrhosis. Gastroenterology 2013;144(7):1426-37. - Bañares et al. Extracorporeal albumin dialysis with the molecular adsorbent recirculating system in acute-on-chronic liver failure: the RELIEF trial. Hepatology 2013;57(3):1153-62. - Sulkowski MS et al. Anemia during treatment with peginterferon Alfa-2b/ribavirin and boceprevir: analysis from the serine protease inhibitor therapy 2 (SPRINT-2) trial. Hepatology 2013;57(3):974-84.
Commitmentoffered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☑ Dissemination
Keywords	Reactive oxygen species, nitric oxide, antioxidants, redoxins, proteomics, apoptosis, necrosis, hepatocytes, yeast, mitochondria, liver cancer, biomarkers, liver transplantation, organ rejection, immunosuppression, cirrhosis, viral hepatitis, acute and chronic liver failure.

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC-12-2014/2015 Clinical research for the validation of biomarkers and/or diagnostic medical devices
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC2: Inflammatory and Chronic Diseases Our research group consists of a healthcare team made up of gastroenterologists, surgeons and biomedical researchers from University Reina Sofia Hospital and IMIBIC. Our biomedical research focuses on developing new diagnostic, prognostic and therapeutic strategies for inflammatory bowel diseases (IBD), which allow an improvement in the quality of life of patients. Our team takes part in the Spanish Work Group for Crohn disease and ulcerative colitis (GETECCU), allowing an intense collaboration with the main Spanish groups in the area. One of the main research lines is the identification and validation of new loci or proteomic biomarkers related to IBD, in order to develop diagnostic/prognostic kits for Crohn disease and ulcerative colitis.
Expertise offered to the project (please describe the expertise you can provide)	Our group offers the opportunity to validate new diagnostic assays for inflammatory bowel diseases, like Crohn disease or ulcerative colitis: - The current number of patients who are being attended in our centre is 1493 (ulcerative colitis:828, Crohn disease: 639, indeterminate colitis: 11 and unclassified colitis:15) - Clinical information of IBD-patients is systematically recorded in a complete data base.

	- The group has participated in numerous clinical trials with patients suffering from IBD and, therefore, its staff is trained to manage these patients and to collect biological samples and clinical data. - Our group can perform several techniques in molecular biology as real-time PCR, Western-blotting, RNA interference, ELISA tests, proteomic strategies (DIGE, iTRAQ, redox), post-translational modifications (nitration, nitrosylation, carbonylation and thiol oxidation) and cell culture.
Research Results	Recent Participation in R&D&I projects funded in competitive tenders by public or private bodies: Functional validation of SNP rs6105269 in Crohn Disease. Funding body or bodies: Ministerio de Economía y Hacienda (Nacional Government) and Junta de Andalucia (Regional Government). Start date: 2013, 3 years Main Publications: - A genome-wide association study on a southern European population identifies a new Crohn's disease susceptibility locus at RBX1-EP300. (Gut. 2013 Oct;62(10):1440-5. doi: 10.1136/gutjnl-2012-302865. Epub 2012 Aug 30.) - Does fecal calprotectin predict relapse in patients with crohn's disease and ulcerative colitis? Journal of Crohn's and Colitis 2010;4(2):144-152. - Can systemic cytokines predict relapse of inflammatory bowel disease?.Hepato-gastroenterology 2010; 57:1-6. Recent contribution to clinical practice: Implementation of fecal calprotectin determination at our hospital
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☑ Dissemination
Keywords	Inflammatory bowel disease, crohn disease, ulcerative colitis, polymorphism, proteomic biomarker

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC-24-2015: Piloting personalized medicine in health and care systems
Closing Date	14th October 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
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Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC2: Inflammatory and Chronic Diseases. Our research group consists of a healthcare team made up of gastroenterologists, surgeons and biomedical researchers from University Reina Sofia Hospital and IMIBIC. Our biomedical research focuses on developing new diagnostic, prognostic and therapeutic strategies for inflammatory bowel diseases (IBD), which allow an improvement in the quality of life of patients. Our team takes part in the Spanish Work Group for Crohn disease and ulcerative colitis (GETECCU), allowing an intense collaboration with the main Spanish groups in the area. One of the main research lines is the identification and validation of biomarkers of response to different drugs, in order to provide the right therapeutic strategy for each patient.
Expertise offered to the project (please describe the expertise you can provide)	Our group offers the opportunity to pilot new models of care in inflammatory bowel diseases, based on the concept of personalised medicine: - The current number of patients who are being attended in our centre is 1493 (ulcerative colitis:828, Crohn disease: 639, indeterminate colitis: 11 and unclassified colitis:15)

	- Clinical information of IBD-patients is systematically recorded in a complete data base. - The group has participated in numerous clinical trials with patients suffering from IBD and, therefore, its staff is trained to manage these patients and to collect biological samples and clinical data. - Our group can perform several techniques in molecular biology as real-time PCR, Western-blotting, RNA interference, ELISA tests, proteomic strategies (DIGE, iTRAQ, redox), post-translational modifications (nitration, nitrosylation, carbonylation and thiol oxidation) and cell culture.
Research Results	Recent Participation in R&D&I projects funded in competitive tenders by public or private bodies: Proteomic Markers of response to anti-TNF drugs in Crohn disease. Funding body or bodies: Junta de Andalucia (Regional Government). Start date: 2014, 3 years Main Publications: - Observational study on the efficacy of adalimumab for the treatment of ulcerative colitis and predictors of outcome.. J Crohns Colitis. 2013 Oct 1; 7(9):717-22. - TPMT activity and azathioprine metabolite concentrations do not predict clinical outcome in thiopurine treated inflammatory bowel disease patients: Results from the multicenter prospective METAZA study. Aliment Pharmacol Ther 2011; 34: 544-554. - Adalimumab for ulcerative colitis patients previously treated with Infliximab: outcomes at short and long-term and predictors of response. Aliment Pharmacol Ther. 2011 Feb;33(3):340-8. Recent contribution to clinical practice: Implementation of levels of anti-TNF and detectable antibodies to anti-TNF at our hospital
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☑ Dissemination
Keywords	Inflammatory bowel disease, crohn disease, ulcerative colitis, polymorphism, proteomic biomarker

IMIBIC Group GC3

Infectious Diseases

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 1 – 2014: Understanding health, ageing and disease: determinants, risk factors and pathways
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC3: Infectious Diseases. Our group studies infectious diseases from two approaches: - Clinical-epidemiological studies (which include clinical trials). In these studies, our objective is to differentiate risk factors, clinical features and efficacy/safety of new treatments, thus aiming to improve the prognosis of infectious diseases. - Studies on pathogenesis from which specific clinical strategies are planned. The most relevant are our studies on immunopathology (in collaboration with the Immunology group) All our studies start with the identification of a clinical problem that we try to solve using an experimental approach. Our aim is our scientific findings to have an impact on healthcare solutions and improve disease prognosis (translational research). In particular, our lines of research are as follows: - Clinical and epidemiological characterization of infection in transplant patients - Immunopathology of cytomegalovirus infection. CMV-related immunosenescence. Inmunologic monitorization of CMV infection after transplantation.
Expertise offered to the project (please describe the expertise you can provide)	Inmunologic characterization of CMV-specific T-cell immnunosenescence (phenotype, function) in total and CMV-specific cells. We work in different populations as transplant candidates, transplant patients, old people.
Research Results	The group has worked very actively in the network collaborating with the rest of the groups in epidemiologic and immunopathogenic projects that have permitted to improve the prognosis of the transplant population. It is also important the participation in the International Consensus Document on CMV and the coordination of the REIPI recommendations for the

management of CMV (Enferm Infecc Microbiol Clin. 2011; 29:735-58). It has been published 25 articles in International journals, 12 coordinated by the group (6 in the first quartile and 4 in the first decile); 13 of these 25 papers are collaborative works (10 in the first quartile and 7 in the first decile) and 7 have been coordinated by the group. The accumulated impact factor has been 130. The PI has been invited to publish 2 editorials in first decile journals. The group participated in 15 competitive projects (13 nationals and 2 autonomics): 9 are coordinated by the group (4 are collaborative projects) and 6 are coordinated by other groups. The total funds obtained have been 700.000 euro. The group has participated in 6 consensus documents: 2 published in International journals (one coordinated by the group) and 4 in nationals (2 coordinated by the group). They also collaborates 3 academic clinical trials. The group has participated in 16 epidemiologic works, 14 in collaboration (8 published in first decile journals).

Selected publications:

Torre-Cisneros J. Towards the individualization of cytomegalovirus control after solid organ transplantation: the importance of the “individual pathogenic balance”. Clin Infect Dis. 2009 Oct 15; 49(8):1167-8.
PMID: 19751150
I F: 8,186 1º Cuartil/1º Decil

Camille N. Kotton, Deepali Kumar, Angela M. Caliendo, Anders Åsberg, Sunwen Chou, David R. Snydman, Upton Allen and Atul Humar; on behalf of The Transplantation Society International CMV Consensus Group (J. Torre- Cisneros y otros). International Consensus Guidelines on the Management of Cytomegalovirus in Solid Organ Transplantation. Transplantation 2010 Apr 15; 89(7):779-95.
PMID: 20224515
I F: 3,676 1º Cuartil/3º Decil

Cantisán S, Solana R, Lara R, Rodríguez-Benot A, Vaquero JM, Gutiérrez-Aroca J, Gayoso I, Montejo M, Rivero A, Torre-Cisneros J. CD45RA expression on HCMV-specific effector memory CD8+ T cells is associated with the duration and intensity of HCMV replication after transplantation. Clinical Immunology (2010) 137: 81–88.
PMID: 20674505
I F: 3,932 1º Cuartil/3º Decil

S. Cantisán, J Torre Cisneros, R Lara, S Zarraga, M Montejo, R Solana. Impact of Citomegalovirus on early immunosenescence of CD8+T lymphocytes alter solid organ transplantation. J GERONTOL A-BIOL, 2013 Jan; 68(1):1-5.
PMID: 22552369
IF: 4,598 1º Cuartil/2º Decil

S. Cantisán, R. Lara, M. Montejo, J. Redel, A. Rodríguez-Benot, J. Gutiérrez-Aroca, M. González-Padilla, L. Bueno, A. Rivero, R. Solana, J. Torre-Cisneros.
Pretransplant interferon-γ secretion by CMV-specific cd8+ t cells informs the risk of CMV replication after transplantation. Am J Transplant. 2013 Mar; 13 (3):738-45. DOI: 10.1111/ajt.12049.
PMID: 23311355
IF: 6,192 1º Cuartil /1º Decil

Irene Gracia-Ahufinger, Juan Gutiérrez-Aroca, Elisa Cordero-Matía, Elisa Vidal-Verdú, Sara Cantisán-Bohórquez, Domingo del Castillo, Cecilia

	Martín-Gandul, Antonio Rivero-Román and Julián de la Torre Cisneros. Use of high-dose ganciclovir for the treatment of citomegalovirus replication in solid organ transplant patients with ganciclovir, resistance-inducing mutations. Transplantation. 2013 Apr 27; 95(8):1015-1020. DOI:10.1097/TP.0b013e31828555ac. PMID: 23407543 IF: 3,781 1º Cuartil/2º Decil Cantisán S, Torre-Cisneros J, Lara R, Rodríguez-Benot A, Santos F, Gutiérrez-Aroca J, Gayoso I, González-Padilla M, Casal M, Rivero A, Solana R. Age-dependent association between low frequency of CD27/CD28 expression on pp65 CD8+ T cells and cytomegalovirus replication after transplantation. Clin Vaccine Immunol. 2009 Oct; 16(10):1429-38. PMID: 19656991 IF: 2,471 2º Cuartil/6º Decil Cantisán S, Martín C, Romero-Sánchez MC, Ferrando-Martínez S, Martínez F, Rivero A, Torres A, Solana R, Torre-Cisneros J. Role of defective thymic function in onset of ganciclovir-resistant cytomegalovirus after cord blood transplantation. Clin Vaccine Immunol. 2012 Dec; 19(12):1994-8. DOI: 10.1128/CVI.00407-12 PMID: 23054743 IF: 2,546 2º Cuartil/6º Decil Inmaculada Gayoso, Sara Cantisán, Carolina Cerrato, Joaquín Sánchez-García, Carmen Martín, Rafael Solana, Antonio Torres-Gómez, and Julian Torre-Cisneros. Clinical Factors Influencing Phenotype of HCMV-Specific CD8+ T Cells and HCMV-Induced Interferon-Gamma Production after Allogeneic Stem Cells Transplantation. Clin Dev Immunol. 2013; 2013:347213. DOI: 10.1155/2013/347213 PMID: 23424600 IF: 3,064 4º Cuartil Torre-Cisneros J, Fariñas C, Caston JJ, Aguado JM, Cantisán S, Carrratala J, Cervera C, Cisneros JM, Cordero E, Crespo-Leiro MG, Fortun J, Frauca E, Gavalda J, Gil-Vernet S, Gurguí M, Len O, Lumbreras C, Marcos MA, Martin-Davila P, Monforte V, Montejo M, Moreno A, Muñoz P, Navarro D, Pahissa A, Perez JL, Rodriguez-Bernot A, Rumbao J, San Juan R, Santos F, Varo E, Zubano F. GESITRA-SEIMC/REIPI recommendations for the management of citomegalovirus infection in solid-organ transplant patients. Enferm Infecc Microbiol Clin. 2011 Dec; 29(10):735-58. PMID: 21925772 IF: 1,656 4º Cuartil/8º Decil Patent: Pretransplant CD8+ T Cells phenotype is associated with the risk of CMV replication after transplantation. Sara Cantisán Bohórquez. Julián de la Torre Cisneros. Antonio Rivero Román. Rafael Solana Lara. Rosario Lara Contreras (Intellectual property equally). EP 13382272.6
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☑ Dissemination
Keywords	CMV, Immunopathology, Transplantation,

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 3 - 2015: Understanding common mechanisms of diseases and their relevance in co-morbidities
Closing Date	14th October 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
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Name	Jose Carlos Prieto	**Male /Female**	Male
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Research Results	The group has worked very actively in the network collaborating with the rest of the groups in epidemiologic and immunopathogenic projects that have permitted to improve the prognosis of the transplant population. It is also important the participation in the International Consensus Document on CMV and the coordination of the REIPI recommendations for the

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Selected publications:

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IF: 6,192 1º Cuartil /1º Decil

Irene Gracia-Ahufinger, Juan Gutiérrez-Aroca, Elisa Cordero-Matía, Elisa Vidal-Verdú, Sara Cantisán-Bohórquez, Domingo del Castillo, Cecilia

	Martín-Gandul, Antonio Rivero-Román and Julián de la Torre Cisneros. Use of high-dose ganciclovir for the treatment of citomegalovirus replication in solid organ transplant patients with ganciclovir, resistance-inducing mutations. Transplantation. 2013 Apr 27; 95(8):1015-1020. DOI:10.1097/TP.0b013e31828555ac. PMID: 23407543 IF: 3,781 1º Cuartil/2º Decil Cantisán S, Torre-Cisneros J, Lara R, Rodríguez-Benot A, Santos F, Gutiérrez-Aroca J, Gayoso I, González-Padilla M, Casal M, Rivero A, Solana R. Age-dependent association between low frequency of CD27/CD28 expression on pp65 CD8+ T cells and cytomegalovirus replication after transplantation. Clin Vaccine Immunol. 2009 Oct; 16(10):1429-38. PMID: 19656991 IF: 2,471 2º Cuartil/6º Decil Cantisán S, Martín C, Romero-Sánchez MC, Ferrando-Martínez S, Martínez F, Rivero A, Torres A, Solana R, Torre-Cisneros J. Role of defective thymic function in onset of ganciclovir-resistant cytomegalovirus after cord blood transplantation. Clin Vaccine Immunol. 2012 Dec; 19(12):1994-8. DOI: 10.1128/CVI.00407-12 PMID: 23054743 IF: 2,546 2º Cuartil/6º Decil Inmaculada Gayoso, Sara Cantisán, Carolina Cerrato, Joaquín Sánchez-García, Carmen Martín, Rafael Solana, Antonio Torres-Gómez, and Julian Torre-Cisneros. Clinical Factors Influencing Phenotype of HCMV-Specific CD8+ T Cells and HCMV-Induced Interferon-Gamma Production after Allogeneic Stem Cells Transplantation. Clin Dev Immunol. 2013; 2013:347213. DOI: 10.1155/2013/347213 PMID: 23424600 IF: 3,064 4º Cuartil Torre-Cisneros J, Fariñas C, Caston JJ, Aguado JM, Cantisán S, Carrratala J, Cervera C, Cisneros JM, Cordero E, Crespo-Leiro MG, Fortun J, Frauca E, Gavalda J, Gil-Vernet S, Gurguí M, Len O, Lumbreras C, Marcos MA, Martin-Davila P, Monforte V, Montejo M, Moreno A, Muñoz P, Navarro D, Pahissa A, Perez JL, Rodriguez-Bernot A, Rumbao J, San Juan R, Santos F, Varo E, Zubano F. GESITRA-SEIMC/REIPI recommendations for the management of citomegalovirus infection in solid-organ transplant patients. Enferm Infecc Microbiol Clin. 2011 Dec; 29(10):735-58. PMID: 21925772 IF: 1,656 4º Cuartil/8º Decil Patent: Pretransplant CD8+ T Cells phenotype is associated with the risk of CMV replication after transplantation. Sara Cantisán Bohórquez. Julián de la Torre Cisneros. Antonio Rivero Román. Rafael Solana Lara. Rosario Lara Contreras (Intellectual property equally). EP 13382272.6
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☑ Dissemination
Keywords	CMV, Immunopathology, Transplantation,

IMIBIC Group GC5

Systemic autoimmune and chronic inflammatory diseases of the musculoskeletal system and connective tissue

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014-two-stage
Area, activity or topic	PHC-1-2014: Understanding health, ageing and disease: determinants, risk factors and pathways
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC5 Systemic Autoimmune and Chronic Inflammatory Diseases of the Musculoskeletal System and Connective Tissue. Our research team uses synergistical clinical-therapeutic, molecular and cellular approaches. Its main objectives are as follows: 1) To analyze the cellular and molecular mechanisms regulating the effect of statins and other drugs on development (biological therapy) in preventing thrombosis and atherothrombosis in systemic autoimmune diseases (SAD), such as Primary Antiphospholipid Syndrome (APS), Systemic Lupus Erythematosus (SLE) and Rheumatoid Arthritis (RA). We also conduct studies on mitochondrial dysfunction and oxidative stress in atherothrombosis associated with SAD; in addition, we perform proteomic analyses aimed at identifying new genes/proteins whose expression in patients with APS, SLE or RA and atherosclerosis is altered, and determining the variations in expression patterns as a result of different treatments. 2) To register, describe and analyze the clinical, epidemiological, demographic, genetic and radiographic characteristics of the physiological and therapeutic response in patients with ankylosing spondylitis in Spain and compare them with data from Latin American patients. The most interesting point will be to ascertain whether the possible differences in clinical expression are due to the genetic load we assume comes from the same genotype (in terms of HLA-B27) and its relationship with the interaction with the environment. Moreover, in this same area: to design, develop and validate a new mobility

	measurement system (the most important expression of structural damage) in these patients.
Expertise offered to the project (please describe the expertise you can provide)	We offer expertise knowledge of the pathological mechanisms of thrombosis and cardiovascular disease development in autoimmune conditions, as well as technologies related to the study of that processes, including: - Intracellular signalling (Western blot, EMSA, kinase activity…) - Blood Cell isolation (purification of monocytes, lymphocytes and neutrophils) and sub cellular fractionation (mitochondria isolation) and analysis. - Study of cell surface receptors and cellular oxidative stress biomarkers (Flow cytometry, Confocal microscopy, etc). - Proteomic analysis (DIGE and iTRAQ). - Epigenetic studies, including microRNA analyses.
Research Results	**Articles** - Progression from high insulin resistance to type 2 diabetes does not entail additional visceral adipose tissue inflammation. Barbarroja N, Lopez-Pedrera C, Garrido-Sanchez L, Mayas MD, Oliva-Olivera W, Bernal-Lopez MR, El Bekay R, Tinahones FJ. PLoS One. 2012;7(10):e48155. doi: 10.1371/journal.pone.0048155. Epub 2012 Oct 24. - Mitochondrial dysfunction in antiphospholipid syndrome: implications in the pathogenesis of the disease and effects of coenzyme Q(10) treatment. Perez-Sanchez C, Ruiz-Limon P, Aguirre MA, Bertolaccini ML, Khamashta MA, Rodriguez-Ariza A, Segui P, Collantes-Estevez E, Barbarroja N, Khraiwesh H, Gonzalez-Reyes JA, Villalba JM, Velasco F, Cuadrado MJ, Lopez-Pedrera C. Blood. 2012 Jun 14;119(24):5859-70. doi: 10.1182/blood-2011-12-400986. Epub 2012 Apr 23. - Identification of miRNAs as potential modulators of tissue factor expression in patients with systemic lupus erythematosus and antiphospholipid syndrome. Teruel R, Pérez-Sánchez C, Corral J, Herranz MT, Pérez-Andreu V, Saiz E, García-Barberá N, Martínez-Martínez I, Roldán V, Vicente V, López-Pedrera C, Martínez C. J Thromb Haemost. 2011 Oct;9(10):1985-92. doi: 10.1111/j.1538-7836.2011.04451.x. - Global effects of fluvastatin on the prothrombotic status of patients with antiphospholipid syndrome. López-Pedrera C, Ruiz-Limón P, Aguirre MÁ, Barbarroja N, Pérez-Sánchez C, Buendía P, Rodriguez-García IC, Rodriguez-Ariza A, Collantes-Estevez E, Velasco F, Khasmahta M, Cuadrado MJ. Ann Rheum Dis. 2011 Apr;70(4):675-82. doi: 10.1136/ard.2010.135525. Epub 2010 Dec 20.

	- Differential expression of protease-activated receptors in monocytes from patients with primary antiphospholipid syndrome. López-Pedrera C, Aguirre MA, Buendía P, Barbarroja N, Ruiz-Limón P, Collantes-Estevez E, Velasco F, Khamashta M, Cuadrado MJ. Arthritis Rheum. 2010 Mar;62(3):869-77. doi: 10.1002/art.27299. - Proteomic analysis in monocytes of antiphospholipid syndrome patients: deregulation of proteins related to the development of thrombosis. López-Pedrera C, Cuadrado MJ, Herández V, Buendïa P, Aguirre MA, Barbarroja N, Torres LA, Villalba JM, Velasco F, Khamashta M. Arthritis Rheum. 2008 Sep;58(9):2835-44. doi: 10.1002/art.23756. **Patent** "DISPOSITIVO Y MÉTODO DE CAPTURA Y ANÁLISIS DE MOVIMIENTO. UCOTRACK" Eduardo Collantes Estévez / Juan Luis Garrido Castro / Rafael Medina Carnicer 22-mar-11 P201130413
Commitment offered	☑ Research ☐ Demonstration ☑ Training ☑ Technology ☐ Dissemination
Keywords	Systemic autoimmune diseases (Primary Antiphospholipid Syndrome, Systemic Lupus Erythematosus, Rheumatoid Arthritis), oxidative stress, inflammation, cardiovascular disease, new therapies, spondyloarthropathies, epidemiology, diagnostic criteria, structural damage.

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014-two-stage
Area, activity or topic	PHC-13-2014: New therapies for chronic non-communicable diseases
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC5 Systemic Autoimmune and Chronic Inflammatory Diseases of the Musculoskeletal System and Connective Tissue. Our research team uses synergistical clinical-therapeutic, molecular and cellular approaches. Its main objectives are as follows: 1) To analyze the cellular and molecular mechanisms regulating the effect of statins and other drugs on development (biological therapy) in preventing thrombosis and atherothrombosis in systemic autoimmune diseases (SAD), such as Primary Antiphospholipid Syndrome (APS), Systemic Lupus Erythematosus (SLE) and Rheumatoid Arthritis (RA). We also conduct studies on mitochondrial dysfunction and oxidative stress in atherothrombosis associated with SAD; in addition, we perform proteomic analyses aimed at identifying new genes/proteins whose expression in patients with APS, SLE or RA and atherosclerosis is altered, and determining the variations in expression patterns as a result of different treatments. 2) To register, describe and analyze the clinical, epidemiological, demographic, genetic and radiographic characteristics of the physiological and therapeutic response in patients with ankylosing spondylitis in Spain and compare them with data from Latin American patients. The most interesting point will be to ascertain whether the possible differences in clinical expression are due to the genetic load we assume comes from the same genotype (in terms of HLA-B27) and its relationship with the interaction with the environment. Moreover, in this same area: to design, develop and validate a new mobility

	measurement system (the most important expression of structural damage) in these patients.
Expertise offered to the project (please describe the expertise you can provide)	We offer expertise knowledge of the pathological mechanisms of thrombosis and cardiovascular disease development in autoimmune conditions, as well as patients samples and technologies related to the study of those processes, including: - Intracellular signalling (Western blot, EMSA, kinase activity…) - Blood Cell isolation (purification of monocytes, lymphocytes and neutrophils) and sub cellular fractionation (mitochondria isolation) and analysis. - Study of cell surface receptors and cellular oxidative stress biomarkers (Flow cytometry, Confocal microscopy, etc). - Proteomic analysis (DIGE and iTRAQ). - Epigenetic studies, including microRNA analyses.
Research Results	**Articles** - Progression from high insulin resistance to type 2 diabetes does not entail additional visceral adipose tissue inflammation. Barbarroja N, Lopez-Pedrera C, Garrido-Sanchez L, Mayas MD, Oliva-Olivera W, Bernal-Lopez MR, El Bekay R, Tinahones FJ. PLoS One. 2012;7(10):e48155. doi: 10.1371/journal.pone.0048155. Epub 2012 Oct 24. - Mitochondrial dysfunction in antiphospholipid syndrome: implications in the pathogenesis of the disease and effects of coenzyme Q(10) treatment. Perez-Sanchez C, Ruiz-Limon P, Aguirre MA, Bertolaccini ML, Khamashta MA, Rodriguez-Ariza A, Segui P, Collantes-Estevez E, Barbarroja N, Khraiwesh H, Gonzalez-Reyes JA, Villalba JM, Velasco F, Cuadrado MJ, Lopez-Pedrera C. Blood. 2012 Jun 14;119(24):5859-70. doi: 10.1182/blood-2011-12-400986. Epub 2012 Apr 23. - Identification of miRNAs as potential modulators of tissue factor expression in patients with systemic lupus erythematosus and antiphospholipid syndrome. Teruel R, Pérez-Sánchez C, Corral J, Herranz MT, Pérez-Andreu V, Saiz E, García-Barberá N, Martínez-Martínez I, Roldán V, Vicente V, López-Pedrera C, Martínez C. J Thromb Haemost. 2011 Oct;9(10):1985-92. doi: 10.1111/j.1538-7836.2011.04451.x. - Global effects of fluvastatin on the prothrombotic status of patients with antiphospholipid syndrome. López-Pedrera C, Ruiz-Limón P, Aguirre MÁ, Barbarroja N, Pérez-Sánchez C, Buendía P, Rodriguez-García IC, Rodriguez-Ariza A, Collantes-Estevez E, Velasco F, Khasmahta M, Cuadrado MJ. Ann Rheum Dis. 2011 Apr;70(4):675-82. doi: 10.1136/ard.2010.135525. Epub 2010 Dec 20.

	- Differential expression of protease-activated receptors in monocytes from patients with primary antiphospholipid syndrome. López-Pedrera C, Aguirre MA, Buendía P, Barbarroja N, Ruiz-Limón P, Collantes-Estevez E, Velasco F, Khamashta M, Cuadrado MJ. Arthritis Rheum. 2010 Mar;62(3):869-77. doi: 10.1002/art.27299. - Proteomic analysis in monocytes of antiphospholipid syndrome patients: deregulation of proteins related to the development of thrombosis. López-Pedrera C, Cuadrado MJ, Herández V, Buendïa P, Aguirre MA, Barbarroja N, Torres LA, Villalba JM, Velasco F, Khamashta M. Arthritis Rheum. 2008 Sep;58(9):2835-44. doi: 10.1002/art.23756. **Patent** "DISPOSITIVO Y MÉTODO DE CAPTURA Y ANÁLISIS DE MOVIMIENTO. UCOTRACK" Eduardo Collantes Estévez / Juan Luis Garrido Castro / Rafael Medina Carnicer 22-mar-11 P201130413
Commitment offered	☑ Research ☐ Demonstration ☑ Training ☑ Technology ☐ Dissemination
Keywords	Systemic autoimmune diseases (Primary Antiphospholipid Syndrome, Systemic Lupus Erythematosus, Rheumatoid Arthritis), oxidative stress, inflammation, cardiovascular disease, new therapies, spondyloarthropathies, epidemiology, diagnostic criteria, structural damage.

IMIBIC Group GC9

Nutrigenomics and Metabolic Syndrome

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 1 – 2014: Understanding health, ageing and disease: determinants, risk factors and pathways
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC9: Nutrigenomics. Metabolic Syndrome Our major research interests focus on the different factors predisposing to cardiovascular disease and how they may interact to determine clinical outcomes. With this aim, we are studying genetics, social, environment and behavioral factors, with special emphasis on diet and particularly on the gene-diet interaction to determine those factors influencing cardiovascular diseases, like lipids, insulin resistance, diabetes, metabolic syndrome, obesity or endothelial function. Moreover, we are exploring the action of nutrients on several chronic diseases (aging, cardiovascular disease, diabetes, etc) and the mechanisms involved, such as oxidative stress, inflammation, endothelial function, homeostasis, gut microbiota, cellular signaling, etc.
Expertise offered to the project (please describe the expertise you can provide)	Our research group is a multidisciplinary team of medical doctors, biologists, biochemistries, and nutritionists with a broad expertise in clinical nutrition, nutrigenomics and dietary intervention in cohorts. Our expertise includes: -More than 300 papers in peer review journals -More than 100 local, national and international projects funded in public/private competitive calls. -More than 10M € achieved in funding in the last 25 years -Several patents

Research Results	We have a broad expertise on management of large cohorts. As an example we conducted the European multicenter Lipgene study for the diagnosis and treatment of metabolic syndrome. Currently we are conducting the Cordioprev study (a long-term, diet based, clinical trial on secondary prevention of cardiovascular disease including more than 1000 patients from our hospital, NCT00924937).
Commitment offered	☑ Research ☐ Demonstration ☑ Training ☑ Technology ☑ Dissemination
Keywords	Atherosclerosis, metabolic syndrome, Mediterranean diet, endothelium, inflammation, oxidative stress, cholesterol, polyphenols, gene expression, proteomics, nutrigenetics, nutrigenomics.

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC-26-2014: Self management of health and disease: citizen engagement and Health
Closing Date	15th April 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC9: Nutrigenomics. Metabolic Syndrome. Our group has a long trajectory in the assessment of the effects of lifestyle on cardiovascular disease, as well as the influence of genetics and genomics on this relationship. The leader of our group has an H index of 40, more than 300 published papers and more than 6M € in continued funding through private and public grants in the last 25 years. Our group has founded a technological spin-off company (TIC), PadMedicine, which main interest area is the development of hardware and software for the management of health and disease by professionals and patients.
Expertise offered to the project (please describe the expertise you can provide)	Our expertise includes: - More than 300 papers in peer review journals - More than 100 local, national and international projects funded in public/private competitive calls. - More than 10M € achieved in funding in the last 25 years - Authors of algorithms used in the iOS operative system - Several patents -More than 25 years of expertise on dietary, lifestyle interventions on general population and specific risk groups like hypercholesterolemic cohorts.
Research Results	Our group is formed by recognized experts of the medicine and the informatic engineering fields. We have participated in several European studies, like LipGene©, for the study and dietary

	intervention of the Metabolic Syndrome. We have developed and we are the call center expert board of Nutrichip© genetic test tools for the personalized risk assessment for the development of dyslipidemia. We have a patent for the enrichment of industrial oils with natural phenols for the promotion of health in the "eating out" setting. As a part of our patents, we have recently launched the PadMed© app, an integrative tool created for helping to the medical doctors in the diagnosis, treatment and management of disease. This app (currently available only in Spanish) has been Top 10 downloaded in 15 countries, number 1 in Spain and other 3 countries, and achieved 15.000 downloads in less than 6 months. We are currently developing My Pad Lifestyle, a patient oriented app for the personalized self-management of patients of their lifestyle, depending on their health/disease setting. The app is being conducted by a multidisciplinary team of dietists, nutricionists, medical doctors and informatics engineers, and will be tested in the CordioPrev study (a long term dietary intervention study involving more than a thousand coronary patients)
Commitment offered	☑ Research ☑ Demonstration ☑ Training ☑ Technology ☑ Dissemination
Keywords	Atherosclerosis, metabolic syndrome, Mediterranean diet, cholesterol, polyphenols, gene expression, proteomics, nutrigenetics, nutrigenomics, lifestyle, diet, physical activity, medical software, medical hardware, patient oriented software, mHealth, eHealth, iHealth

IMIBIC Group GC13

Calcium Metabolism
Vascular Calcification

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 1 – 2014: Understanding health, ageing and disease: determinants, risk factors and pathways
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC13: Calcium Metabolism. Vascular Calcification Our group study different aspects of calcium metabolism and vascular calcification. Our first main area was focused to the pathogenetic mechanisms and alterations related to secondary hyperparathyroidism in renal failure. We therefore assess the parathyroid function on a cellular and molecular level (essentially the synthesis and secretion of PTH and cell proliferation) in normal and hyperplastic parathyroid glands. More recently we are studying through in vivo and in vitro experimental models the development and mechanisms of vascular calcification during the uremia. Among other things, this includes the regulation of gene expression of calcium and vitamin D receptors, intracellular signalling pathways, the role of phosphatonins (FGF23-klotho axis), the role of diet in the development of parathyroid hyperplasia, the osteoblastic transformation and inflammation of vascular smooth muscle cells and the mechanisms of action, at a cellular and molecular level, of therapeutic agents such as vitamin D derivatives and calcimimetics. We are studying the role of oxidative stress and inflammation in the progression of chronic kidney disease and vascular calcification. We used Zucker rats to evaluate the relationship between these processes. In addition, we are evaluating the involvement of bone marrow mesenchymal stem cells in vascular calcification as well as the signaling pathways whereby vascular calcification progresses. Finally we are involved in the study of the effects of magnesium supplementation on vascular calcification and osteogenesis of mesenchymal stem cells, FGF23 regulation and cardiovascular risk and micronutrients and cardiovascular disease.

Expertise offered to the project (please describe the expertise you can provide)	- Experimental Animal models of acute and chronic disease (nephrectomies, parathyroidectomies, hepatectomies, ovariectomies). - Animal procedures (Alzet pumps, acute treatments, diets intervention…) - Inflammation and oxidative stress in Zucker rats - Parathyroid glands cultures - Cell cultures (VSMC, UMR-109, adipose or bone marrow mesenchymal stem cells...) - Aortic rings cultures - Cell signaling (Wnt/b-catenin, Nocth, BMP/TGF, NF-kB, MAPKinase) - Molecular biology (epigenetic, genomic, siRNA, nucleofections, proteomic…) - Confocal analyses and histological studies related to vascular calcification and bone turnover. - Immunophenotype and flow citometry.
Research Results	1. High phosphate level directly stimulates parathyroid hormone secretion and synthesis by human parathyroid tissue in vitro. Almaden Y, Hernandez A, Torregrosa V, Canalejo A, Sabate L, Fernandez Cruz L, Campistol JM, Torres A, Rodriguez M. J Am Soc Nephrol. 9(10):1845-52, 1998. 2. Regulation of parathyroid vitamin D receptor expression by extracellular calcium. Garfia B, Cañadillas S, Canalejo A, Luque F, Siendones E, Quesada M, Almadén Y, Aguilera-Tejero E, Rodríguez M. J Am Soc Nephrol. 13(12):2945-52, 2002. 3. Calcium-sensing receptor expression and parathyroid hormone secretion in hyperplastic parathyroid glands from humans. Cañadillas S, Canalejo A, Santamaría R, Rodríguez ME, Estepa JC, Martín-Malo A, Bravo J, Ramos B, Aguilera-Tejero E, Rodríguez M, Almadén Y.J Am Soc Nephrol. 16(7):2190-7, 2005. 4. FGF23 fails to inhibit uremic parathyroid glands. Canalejo R, Canalejo A, Martinez-Moreno JM, Rodriguez-Ortiz ME, Estepa JC, Mendoza FJ, Munoz-Castaneda JR, Shalhoub V, Almaden Y, Rodriguez M. J Am Soc Nephrol. 21(7):1125-35, 2010 5. Calcium deficiency reduces circulating levels of FGF23. Rodriguez-Ortiz ME, Lopez I, Muñoz-Castañeda JR, Martinez-Moreno JM, Ramírez AP, Pineda C, Canalejo A, Jaeger P, Aguilera-Tejero E, Rodriguez M, Felsenfeld A, Almaden Y. J Am Soc Nephrol. 2012 23(7):1190-7, 2012. Patents: Use of a Selective agonist of AT2 Receptor for the treatment of vascular calcification. Number of application form: P201231890

	Use of platelet derived growth factor for the treatment of vascular calcification. Number of application form: P201231884 Compositions for the treatment of hepatic injury. Number of application form: P201330895
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination
Keywords	Calcium, phosphorus, metabolism, parathyroid, calcification, uremia. Mineral metabolism, parathyroid hormone, HPTH2o, vascular calcification, renal failure, VDR, CaSR, P, FGF23, Ca, Vitamin D. Mesenchymal stem cells, Wnt / beta-catenin, Notch signaling

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 3 - 2015: Understanding common mechanisms of diseases and their relevance in co-morbidities
Closing Date	14th October 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC13: Calcium Metabolism. Vascular Calcification Our group study different aspects of calcium metabolism and vascular calcification. Our first main area was focused to the pathogenetic mechanisms and alterations related to secondary hyperparathyroidism in renal failure. We therefore assess the parathyroid function on a cellular and molecular level (essentially the synthesis and secretion of PTH and cell proliferation) in normal and hyperplastic parathyroid glands. More recently we are studying through in vivo and in vitro experimental models the development and mechanisms of vascular calcification during the uremia. Among other things, this includes the regulation of gene expression of calcium and vitamin D receptors, intracellular signalling pathways, the role of phosphatonins (FGF23-klotho axis), the role of diet in the development of parathyroid hyperplasia, the osteoblastic transformation and inflammation of vascular smooth muscle cells and the mechanisms of action, at a cellular and molecular level, of therapeutic agents such as vitamin D derivatives and calcimimetics. We are studying the role of oxidative stress and inflammation in the progression of chronic kidney disease and vascular calcification. We used Zucker rats to evaluate the relationship between these processes. In addition, we are evaluating the involvement of bone marrow mesenchymal stem cells in vascular calcification as well as the signaling pathways whereby vascular calcification progresses. Finally we are involved in the study of the effects of magnesium supplementation on vascular calcification and osteogenesis of mesenchymal stem cells, FGF23 regulation and cardiovascular risk and micronutrients and cardiovascular disease.

Expertise offered to the project (please describe the expertise you can provide)	- Experimental Animal models of acute and chronic disease (nephrectomies, parathyroidectomies, hepatectomies, ovariectomies). - Animal procedures (Alzet pumps, acute treatments, diets intervention…) - Inflammation and oxidative stress in Zucker rats - Parathyroid glands cultures - Cell cultures (VSMC, UMR-109, adipose or bone marrow mesenchymal stem cells...) - Aortic rings cultures - Cell signaling (Wnt/b-catenin, Nocth, BMP/TGF, NF-kB, MAPKinase) - Molecular biology (epigenetic, genomic, siRNA, nucleofections, proteomic…) - Confocal analyses and histological studies related to vascular calcification and bone turnover. - Immunophenotype and flow citometry.
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Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination
Keywords	Calcium, phosphorus, metabolism, parathyroid, calcification, uremia. Mineral metabolism, parathyroid hormone, HPTH2o, vascular calcification, renal failure, VDR, CaSR, P, FGF23, Ca, Vitamin D. Mesenchymal stem cells, Wnt / beta-catenin, Notch signaling

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 13 – 2014: New therapies for chronic non-communicable diseases
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC13: Calcium Metabolism. Vascular Calcification Our group study different aspects of calcium metabolism and vascular calcification. Our first main area was focused to the pathogenetic mechanisms and alterations related to secondary hyperparathyroidism in renal failure. We therefore assess the parathyroid function on a cellular and molecular level (essentially the synthesis and secretion of PTH and cell proliferation) in normal and hyperplastic parathyroid glands. More recently we are studying through in vivo and in vitro experimental models the development and mechanisms of vascular calcification during the uremia. Among other things, this includes the regulation of gene expression of calcium and vitamin D receptors, intracellular signalling pathways, the role of phosphatonins (FGF23-klotho axis), the role of diet in the development of parathyroid hyperplasia, the osteoblastic transformation and inflammation of vascular smooth muscle cells and the mechanisms of action, at a cellular and molecular level, of therapeutic agents such as vitamin D derivatives and calcimimetics. We are studying the role of oxidative stress and inflammation in the progression of chronic kidney disease and vascular calcification. We used Zucker rats to evaluate the relationship between these processes. In addition, we are evaluating the involvement of bone marrow mesenchymal stem cells in vascular calcification as well as the signaling pathways whereby vascular calcification progresses. Finally we are involved in the study of the effects of magnesium supplementation on vascular calcification and osteogenesis of mesenchymal stem cells, FGF23 regulation and cardiovascular risk and micronutrients and cardiovascular disease.

Expertise offered to the project (please describe the expertise you can provide)	- Experimental Animal models of acute and chronic disease (nephrectomies, parathyroidectomies, hepatectomies, ovariectomies). - Animal procedures (Alzet pumps, acute treatments, diets intervention…) - Inflammation and oxidative stress in Zucker rats - Parathyroid glands cultures - Cell cultures (VSMC, UMR-109, adipose or bone marrow mesenchymal stem cells...) - Aortic rings cultures - Cell signaling (Wnt/b-catenin, Nocth, BMP/TGF, NF-kB, MAPKinase) - Molecular biology (epigenetic, genomic, siRNA, nucleofections, proteomic…) - Confocal analyses and histological studies related to vascular calcification and bone turnover. - Immunophenotype and flow citometry.
Research Results	1. High phosphate level directly stimulates parathyroid hormone secretion and synthesis by human parathyroid tissue in vitro. Almaden Y, Hernandez A, Torregrosa V, Canalejo A, Sabate L, Fernandez Cruz L, Campistol JM, Torres A, Rodriguez M. J Am Soc Nephrol. 9(10):1845-52, 1998. 2. Regulation of parathyroid vitamin D receptor expression by extracellular calcium. Garfia B, Cañadillas S, Canalejo A, Luque F, Siendones E, Quesada M, Almadén Y, Aguilera-Tejero E, Rodríguez M. J Am Soc Nephrol. 13(12):2945-52, 2002. 3. Calcium-sensing receptor expression and parathyroid hormone secretion in hyperplastic parathyroid glands from humans. Cañadillas S, Canalejo A, Santamaría R, Rodríguez ME, Estepa JC, Martín-Malo A, Bravo J, Ramos B, Aguilera-Tejero E, Rodríguez M, Almadén Y.J Am Soc Nephrol. 16(7):2190-7, 2005. 4. FGF23 fails to inhibit uremic parathyroid glands. Canalejo R, Canalejo A, Martinez-Moreno JM, Rodriguez-Ortiz ME, Estepa JC, Mendoza FJ, Munoz-Castaneda JR, Shalhoub V, Almaden Y, Rodriguez M. J Am Soc Nephrol. 21(7):1125-35, 2010 5. Calcium deficiency reduces circulating levels of FGF23. Rodriguez-Ortiz ME, Lopez I, Muñoz-Castañeda JR, Martinez-Moreno JM, Ramírez AP, Pineda C, Canalejo A, Jaeger P, Aguilera-Tejero E, Rodriguez M, Felsenfeld A, Almaden Y. J Am Soc Nephrol. 2012 23(7):1190-7, 2012. Patents: Use of a Selective agonist of AT2 Receptor for the treatment of vascular calcification. Number of application form: P201231890

	Use of platelet derived growth factor for the treatment of vascular calcification. Number of application form: P201231884 Compositions for the treatment of hepatic injury. Number of application form: P201330895
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination
Keywords	Calcium, phosphorus, metabolism, parathyroid, calcification, uremia. Mineral metabolism, parathyroid hormone, HPTH2o, vascular calcification, renal failure, VDR, CaSR, P, FGF23, Ca, Vitamin D. Mesenchymal stem cells, Wnt / beta-catenin, Notch signaling

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 15 – 2014/2015: Clinical research on regenerative medicine
Closing Date	15th April 2014 / 21 April 2015

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC13: Calcium Metabolism. Vascular Calcification In relation to stem cells and regenerative medicine our group study different aspects of these cells in the context of several pathologies. With respect to liver diseases we are interested in different issues. One of them is the relation between stem cells and cancer stem cells in the context of hepatocellular carcinoma. We have published that activation of Wnt/beta-catenin pathway during hepatocytes differentiation of mesenchymal stem cells leads to the generation of a tumoral phenotype. On the other hand we have gone deeply into the involvement of bone marrow stem cells mobilization and the hepatic regeneration. So, we have observed that bone marrow stem cells mobilization is achieved by the modulation of cytokines and chemokines such as SDF-1, SCF or HGP. These cytokines modulate SDF-1/CXCR4 axis whereby stem cells contribute to hepatic regeneration. Finally in this area we have carried and patented modifications in Mesenchymal stem cells which increase the beneficial effects of stem cells therapies. The treatment with these modified MSC recovery more efficiently than intact MSC hepatic injury induced by thioacetamide. Our group study also the contribution of stem cells with the process of vascular calcification. In this sense we have recently published that high phosphate interferes with vascular smooth muscle cell differentiation induced by TGF avoiding likely new generation of these cells and contributing to the progress of vascular calcification. These effects are achieved through the modulation of important pathways such as BMP or Wnt/beta catenin. In relation with stem cells and bone we have recently patented with Fresenius Medical Care the use of unphysiological concentrations

	of Mg on osteogenesis of mesenchymal stem cells. In this sense we have checked that Mg supplementation enhances mineralization and osteogenesis through an increase of Notch signalling. This finding may be useful for the treatment of osteoporosis, trauma injury or osteopenia. We are evaluating if Mg supplementation to mesenchymal stem cells induce colonization of artificial and natural bone structures and osteogenesis. In the same context of stem cells and bone we have recently started a pre-clinical study which dogs with osteoarthritis are being treated with a patented composition derived from stem cells. This investigation is carried out in association with an interested company.
Expertise offered to the project (please describe the expertise you can provide)	- Isolation and cultures of human bone marrow stem cells (HSC, MSC and MAPC). - Isolation and cultures of human HSC from apheresis products. - Isolation and cultures of rat and mouse mesenchymal stem cells from bone marrow and adipose tissue. - Differentiation of different types of stem cells into hepatocytes, VSMV, chondrocytes, osteoblasts, adipocytes. - Study of different cells signaling (Wnt, Notch, BMP/TGF). - Experimental Animal models of acute and chronic disease (nephrectomies, parathyroidectomies, hepatectomies, ovariectomies). - Animal procedures (Alzet pumps, acute treatments, diets intervention…) - Transplantation of marked stem cells (cell tracker) into animal models of disease. - Molecular biology (epigenetic, genomic, siRNA, nucleofections, proteomic…) - Confocal analyses and histological studies related to vascular calcification and bone turnover. - Immunophenotype and flow citometry.
Research Results	1.- Nuclear translocation of β-catenin during mesenchymal stem cells differentiation into hepatocytes is associated with a tumoral phenotype. Herencia C, Martínez-Moreno JM, Herrera C, Corrales F, Santiago-Mora R, Espejo I, Barco M, Almadén Y, de la Mata M, Rodríguez-Ariza A, Muñoz-Castañeda JR. PLoS One. 2012;7(4):e34656. doi: 10.1371/journal.pone.0034656. 2.- Differential bone marrow hematopoietic stem cells mobilization in hepatectomized patients. Herencia C, Rodríguez-Ariza A, Canalejo A, Naranjo A, Briceño FJ, López-Cillero P, De la Mata M, Muñoz-Castañeda JR. J Gastrointest Surg. 2011 Aug;15(8):1459-67. doi: 10.1007/s11605-011-1541-7. Epub 2011 Apr 22. 3.- Portal infusion of modified human mesenchymal stem cells decreases apoptosis and improves liver function better than intact

	mesenchymal stem cells transplantation Carmen Herencia, Yolanda Almaden, Julio M. Martinez-Moreno, Isabel Espejo, Concha Herrera, Carlos Pérez-Sánchez, Rubén Ciria, Javier Briceño, Gustavo Ferrín, Manuel de la Mata, Juan R. Muñoz-Castañeda. Submitted to: Cell Transplantation 4.- TGF-β prevents phosphate-induced osteogenesis through inhibition of BMP and Wnt/β-catenin pathways Fátima Guerreroa,*, Carmen Herenciaa,*, Yolanda Almadénb,# , Julio M. Martínez-Morenoa, Addy Montes de Ocaa, María Encarnación Rodriguez-Ortiza, Juan M. Diaz-Tocadosa, Antonio Canalejoc, Mónica Floriod, Ignacio Lópeze, William G Richards d, Mariano Rodriguez a, Escolástico Aguilera-Tejero e, Juan R Muñoz-Castañeda a. PLoS One 2014 (in press) 5.- Magnesium promotes osteogenesis of mesenchymal stem cells via Notch signaling Juan Miguel Díaz-Tocados, Carmen Herencia, Kristina Gundlach, Janine Büchel, Sonja Steppan, Jutta Passlick-Deetjen, Mariano Rodriguez, Yolanda Almaden, Juan Rafael Muñoz-Castañeda. Submitted to: Journal of Bone and Mineral Research 6.- High-phosphate-induced calcification is related to SM22α promoter methylation in vascular smooth muscle cells. Montes de Oca A, Madueño JA, Martinez-Moreno JM, Guerrero F, Muñoz-Castañeda J, Rodriguez-Ortiz ME, Mendoza FJ, Almaden Y, Lopez I, Rodriguez M, Aguilera-Tejero E. J Bone Miner Res. 2010 Sep;25(9):1996-2005. doi: 10.1002/jbmr.93. Patents: 1.- Compositions for the treatment of hepatic injury. Number of application form: P201330895. 2.- USE OF MAGNESIUM AS OSTEOINDUCTER OF MESENCHYMAL STEM CELLS Fresenius Medical Care
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination
Keywords	Mesenchymal stem cells; Medicine Regenerative; Differentiation; Liver diseases; Osteoartrosis; cell signaling

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 16 – 2015: Tools and technologies for advanced therapies
Closing Date	14th October 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC13: Calcium Metabolism. Vascular Calcification In relation to stem cells and regenerative medicine our group study different aspects of these cells in the context of several pathologies. With respect to liver diseases we are interested in different issues. One of them is the relation between stem cells and cancer stem cells in the context of hepatocellular carcinoma. We have published that activation of Wnt/beta-catenin pathway during hepatocytes differentiation of mesenchymal stem cells leads to the generation of a tumoral phenotype. On the other hand we have gone deeply into the involvement of bone marrow stem cells mobilization and the hepatic regeneration. So, we have observed that bone marrow stem cells mobilization is achieved by the modulation of cytokines and chemokines such as SDF-1, SCF or HGP. These cytokines modulate SDF-1/CXCR4 axis whereby stem cells contribute to hepatic regeneration. Finally in this area we have carried and patented modifications in Mesenchymal stem cells which increase the beneficial effects of stem cells therapies. The treatment with these modified MSC recovery more efficiently than intact MSC hepatic injury induced by thioacetamide. Our group study also the contribution of stem cells with the process of vascular calcification. In this sense we have recently published that high phosphate interferes with vascular smooth muscle cell differentiation induced by TGF avoiding likely new generation of these cells and contributing to the progress of vascular calcification. These effects are achieved through the modulation of important pathways such as BMP or Wnt/beta catenin. In relation with stem cells and bone we have recently patented with Fresenius Medical Care the use of unphysiological concentrations

	of Mg on osteogenesis of mesenchymal stem cells. In this sense we have checked that Mg supplementation enhances mineralization and osteogenesis through an increase of Notch signalling. This finding may be useful for the treatment of osteoporosis, trauma injury or osteopenia. We are evaluating if Mg supplementation to mesenchymal stem cells induce colonization of artificial and natural bone structures and osteogenesis. In the same context of stem cells and bone we have recently started a pre-clinical study which dogs with osteoarthritis are being treated with a patented composition derived from stem cells. This investigation is carried out in association with an interested company.
Expertise offered to the project (please describe the expertise you can provide)	- Isolation and cultures of human bone marrow stem cells (HSC, MSC and MAPC). - Isolation and cultures of human HSC from apheresis products. - Isolation and cultures of rat and mouse mesenchymal stem cells from bone marrow and adipose tissue. - Differentiation of different types of stem cells into hepatocytes, VSMV, chondrocytes, osteoblasts, adipocytes. - Study of different cells signaling (Wnt, Notch, BMP/TGF). - Experimental Animal models of acute and chronic disease (nephrectomies, parathyroidectomies, hepatectomies, ovariectomies). - Animal procedures (Alzet pumps, acute treatments, diets intervention…) - Transplantation of marked stem cells (cell tracker) into animal models of disease. - Molecular biology (epigenetic, genomic, siRNA, nucleofections, proteomic…) - Confocal analyses and histological studies related to vascular calcification and bone turnover. - Immunophenotype and flow citometry.
Research Results	1.- Nuclear translocation of β-catenin during mesenchymal stem cells differentiation into hepatocytes is associated with a tumoral phenotype. Herencia C, Martínez-Moreno JM, Herrera C, Corrales F, Santiago-Mora R, Espejo I, Barco M, Almadén Y, de la Mata M, Rodríguez-Ariza A, Muñoz-Castañeda JR. PLoS One. 2012;7(4):e34656. doi: 10.1371/journal.pone.0034656. 2.- Differential bone marrow hematopoietic stem cells mobilization in hepatectomized patients. Herencia C, Rodríguez-Ariza A, Canalejo A, Naranjo A, Briceño FJ, López-Cillero P, De la Mata M, Muñoz-Castañeda JR. J Gastrointest Surg. 2011 Aug;15(8):1459-67. doi: 10.1007/s11605-011-1541-7. Epub 2011 Apr 22. 3.- Portal infusion of modified human mesenchymal stem cells decreases apoptosis and improves liver function better than intact

	mesenchymal stem cells transplantation Carmen Herencia, Yolanda Almaden, Julio M. Martinez-Moreno, Isabel Espejo, Concha Herrera, Carlos Pérez-Sánchez, Rubén Ciria, Javier Briceño, Gustavo Ferrín, Manuel de la Mata, Juan R. Muñoz-Castañeda. Submitted to: Cell Transplantation 4.- TGF-β prevents phosphate-induced osteogenesis through inhibition of BMP and Wnt/β-catenin pathways Fátima Guerreroa,*, Carmen Herenciaa,*, Yolanda Almadénb,# , Julio M. Martínez-Morenoa, Addy Montes de Ocaa, María Encarnación Rodriguez-Ortiza, Juan M. Diaz-Tocadosa, Antonio Canalejoc, Mónica Floriod, Ignacio Lópeze, William G Richards d, Mariano Rodriguez a, Escolástico Aguilera-Tejero e, Juan R Muñoz-Castañeda a. PLoS One 2014 (in press) 5.- Magnesium promotes osteogenesis of mesenchymal stem cells via Notch signaling Juan Miguel Díaz-Tocados, Carmen Herencia, Kristina Gundlach, Janine Büchel, Sonja Steppan, Jutta Passlick-Deetjen, Mariano Rodriguez, Yolanda Almaden, Juan Rafael Muñoz-Castañeda. Submitted to: Journal of Bone and Mineral Research 6.- High-phosphate-induced calcification is related to SM22α promoter methylation in vascular smooth muscle cells. Montes de Oca A, Madueño JA, Martinez-Moreno JM, Guerrero F, Muñoz-Castañeda J, Rodriguez-Ortiz ME, Mendoza FJ, Almaden Y, Lopez I, Rodriguez M, Aguilera-Tejero E. J Bone Miner Res. 2010 Sep;25(9):1996-2005. doi: 10.1002/jbmr.93. Patents: 1.- Compositions for the treatment of hepatic injury. Number of application form: P201330895. 2.- USE OF MAGNESIUM AS OSTEOINDUCTER OF MESENCHYMAL STEM CELLS Fresenius Medical Care
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination
Keywords	Mesenchymal stem cells; Medicine Regenerative; Differentiation; Liver diseases; Osteoartrosis; cell signaling

IMIBIC Group GC20

Genetics and Behavioural Diseases

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 3 - 2015 Understanding common mechanisms of diseases and their relevance in co-morbidities
Closing Date	14th October 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC20: Genetics and Behavioural Diseases Altered neuron connections during the development of human nervous system could constitute the basis of the etiology of numerous cases of autism spectrum disorders (ASDs). The objectives of our group are the functional characterization of Caenorhabditis elegans genes, orthologous to human, which are implicated in the synaptic function and have been found to be involved in autism and other neurobiological disorders.
Expertise offered to the project (please describe the expertise you can provide)	Our research group has been pioneer using *C. elegans* as an experimental model in the study of ASDs and in particular, in the study of neurexin (*nrx-1*) and neuroligin (*nlg-1*)-deficient mutants of the nematode Our results suggest that the mechanism underpinning both neuroligin and neurexin is conserved throughout evolution and that the nematode might constitute a good model for studying the mechanisms of neuron connectivity were these proteins are involved. We also observed that medicaments widely used for the treatment of behavioral disorders in humans, such as fluoxetine (Prozac) and methylphenidate, were functional in *C. elegans*. restoring the wild type phenotypes in *nlg-1* and *nrx-1* defective mutant nematodes which were impaired in serotonergic and dopaminergic pathways.

Research Results	Izquierdo P.G., Calahorro, F. and M. Ruiz-Rubio. Neuroligin modulates the locomotory dopaminergic and serotonergic neuronal pathways of *C. elegans. Neurogenetics* (2013). 14(3-4):233-42 PMCID: 24100941. Calahorro, F. and M. Ruiz-Rubio. Human alpha- and beta-NRXN1 isoforms recue behavioral impairments of C. elegans neurexin-deficient mutants. *Genes Brain and Behavior* (2013) 12:453-464. PMCID: 23638761. Calahorro, F. and M. Ruiz-Rubio. Functional phenotypic rescue of neuroligin-deficient mutant of C. elegans by human and rat NLGN1 genes. *PLoS ONE* (2012) 7(6): e39277. PMCID: 22723984
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination
Keywords	Autism spectrum disorders, ASD, neuronal synapse, neuroligin, neurexin, dopamine, serotonin, epigenetic mechanisms, invertebrate animal models, C. elegans

IMIBIC Group GC21

Metabolomics.
Identification of Bioactive Components

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	Nutrimetabolomics
Closing Date	2014/2015

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
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Scientific Information and expertise offered

Main research areas	IMIBIC Group GC21: Metabolomics. Identification of Bioactive Components. Development of analytical platforms for proper elucidation of the influence of the diet on key metabolic pathways such the arachidonic acid pathway, tricarboxilic acid cycle, etc. Influence of the Mediterranean diet (mainly virgin olive oil) on the metabolic profile of healthy and ill individuals. Comparison of different diets on the metabolomic profile of different human cohorts formed by healthy and ill individuals. Microbiome and health.
Expertise offered to the project (please describe the expertise you can provide)	The experience of the research group on nutrimetabolomics deals with the following aspects: Untarget nutrimetabolomics, by using GC-Qq-TOF to compare individuals through the profile of volatile compounds or those easily converted into volatile products. Acceleration and/or automation of sample preparation is also a key objective of the platforms developed with this aim. Untarget nutrimetabolomics, by using LC-Qq-TOF for comparing individuals through the profile of nonvolatile or thermically unstable compounds. Target analysis of families of compounds for quantitation of the effects of the diet on given metabolic pathways. SPE-LC-triple quad MS is used for nonvolatile and thermically unstable compounds, and original sample preparation approaches based on the use of auxiliary energies are used prior to GC-MS/MS separation-detection.

Research Results	Ferreiro-Vera, C., Priego-Capote, F., Mata-Granados, J.M., Luque de Castro, M.D. Short-term comparative study of the influence of fried edible oils intake on the metabolism of essential fatty acids in obese individuals Food Chemistry, 136 (20013) 576-584. The impressive influence of degradation of ingested fried oils on the metabolic pathways of essential fatty acids is estimated in this research developed by as SPE-LC-MS/MS full automated approach. Orozco-Solano, M.I., Priego-Capote, F., Luque de Castro, M.D. Analysis of sterified and nonsterified fatty acids in serum from obese individuals after intake of breakfasts prepared with oils heated at frying temperature Anal. Bioanal. Chem. 405 (20013) 6117-6129. The enormous difference in the behavior of virgin olive oil as compared with other edible oils is clearly showed in this study in which sample preparation (extraction and derivatizations steps) was drastically accelerated by ultrasound; then, quantification was performed by GC-MS/MS. Álvarez-Sánchez, B., Priego-Capote, F., García-Olmo, J., Ortiz-Fernández, M.C., Sarabia-Peinador, L., Luque de Castro, M.D. Near-infrared spectroscopy and partial least squares-class modeling (PLS-CM) for metabolomics fingerprinting discrimination of intervention bresakfast ingested by obese individuals Chemometrics (2013) doi: 10.1002/cem.2526. The capacity of NIRS-chemometric approaches to study the influence of the quality of oils used for preparing breakfast on the effects of this meal on obese individuals is demonstated in this research. Mata-Granados, J.M., Ferreiro-Vera, C., Luque de Castro, M.D., Quesada-Gómez, J.M. Evaluation of vitamin D encocrine system (VDES) status and response to treatment of patients in intensive care units (ICUs) using an on-line SPE-LC-MS/MS method J. Steroid Biochem. Molecular Biology 121 (2010) 452-455. The key role of nutraceuticals on the evolution of patients under critical state is evaluated through metabolomics.
Commitmentoffered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination
Keywords	Nutrimetabolomics; mass spectrometry; target and untarget analysis; diet effects.

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	Clinical Metabolomics by Analysis of Biofluids
Closing Date	2014/2015

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GC21: Metabolomics. Identification of Bioactive Components. Metabolomics analysis to aid in the diagnostic of diseases. Global metabolomics analysis for identification of marker metabolites for development of prevention tools. Validation of markers by application of targeted metabolomics analysis. Development of analytical methods for analysis of biofluids.
Expertise offered to the project (please describe the expertise you can provide)	The research group possesses experience in the development of analytical methods for mass spectrometry-based metabolomics analysis applied to the clinical field. The group members have optimized global methods for analysis of conventional biofluids such as serum/plasma and urine, and less conventional fluids such as exhaled breath condensate, sweat, saliva or semen. The resulting methods have been applied to real cases as an attempt to find metabolite markers with potential to aid in the prognosis/diagnosis of atherosclerosis and lung cancer. Therefore, the group is ready to carry out clinical metabolomics studies applied to patient cohorts involving different pathological states. Additionally, the group is prepared to develop validation of metabolomics models based on panels of specific metabolites. These studies could aid in the interpretation of other results obtained by other omics (proteomics, transcriptomics, genomics), . Finally, the group has optimized a set of analytical methods for quantitative/qualitative analysis of groups of metabolites of clinical interest such as those from vitamin D, phospholipids, tricarboxylic

	acids, amino acids, drugs, inflammation markers, fatty acids, etc.
Research Results	Calderón-Santiago, M., Priego-Capote, F., Galache-Osuna, J.G., Luque de Castro, M.D. Metabolomic discrimination between patients with stable angina, non-ST elevation myocardial infarction, and acute myocardial infarct (2013) Electrophoresis, 34 (19), pp. 2827-2835 The manuscript summarizes the strategy to be followed in metabolomics analysis to find marker metabolites associated to atherosclerosis. Álvarez-Sánchez, B., Priego-Capote, F., Luque de Castro, M.D. Study of sample preparation for metabolomic profiling of human saliva by liquid chromatography-time of flight/mass spectrometry (2012) Journal of Chromatography A, 1248, pp. 178-181. This manuscript proves the capability of the research group for development of methods involving less conventional biofluids as an attempt to evaluate their potential in clinical analysis. The group has also worked with human sweat, which has led to a protocol for discrimination of individuals diagnosed with lung cancer. This protocol is currently under evaluation to be patented. Ferreiro-Vera, C., Priego-Capote, F., Luque de Castro, M.D. Comparison of sample preparation approaches for phospholipids profiling in human serum by liquid chromatography-tandem mass spectrometry (2012) Journal of Chromatography A, 1240, pp. 21-28. This manuscript is an example of optimization of a method for targeted analysis of a family of metabolites of clinical interest.
Commitmentoffered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination
Keywords	Clinical metabolomics; mass spectrometry; biofluids; cardiovascular diseases; lung cancer; sweat.

IMIBIC Group GE1

Oxidative Stress and Nutrition

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 13 – 2014: New therapies for chronic non-communicable diseases
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	IMIBIC Group GE1: Oxidative Stress and Nutrition Effects of different types of diet on oxidative stress profile and its participation in pathophysiology and development of disease. Role of reactive oxygen/nitrogen species in physiology of CNS and pathophysiology of diseases such as multiple sclerosis, Huntington's disease and Parkinson's disease Application of new strategies and treatment of neurodegenerative disease (transcranial magnetic stimulation, antioxidants,…)
Expertise offered to the project (please describe the expertise you can provide)	1. Analysis of oxidative/nitrative stress biomarkers 2. Analysis of antioxidant system 3. Quantification of others biochemical and molecular variables: neurotrophic factors, adhesion molecules, biomarkers of cell death (apoptosis and necrosis) 4. Evaluation of dynamic constructors of global oxidative damage and antioxidant status 5. Design and development of experimental (animals and cells) models of degenerative diseases and evaluation of behaviour test 6. Participation in clinical trial, contributing to the inclusion of patients and with the participation of neurologists and psychologists of our group
Research Results	1. E.R. Meza-Miranda, A. Camargo, O.A. Rancel-Zuñiga, J. Delgado-Lista, A. García-Ríos, P. Pérez-Martínez, I. Tasset-Cuevas, **I. Túnez**, F. Pérez-Jiménez, J. López-Miranda. Postprandial oxidative stress modulated by dietary fat in adipose Tissue from elderly people. **AGE** (2013) in press. IF: 4.084 (2012) Q: 1 (8/46) Geriatría y Gerontología.

	2. I. Tasset, C. Bahamonde, E. Agüera, C. Conde, A.H. Cruz, A. Pérez-Herrera, F. Gascón, A. Giraldo, M.C. Ruiz, R. Lillo, F. Sánchez-López, **I. Túnez**.. Effect of natalizumab on oxidative stress biomarkers in relapsing-remitting multiple sclerosis. **Pharmacological Reports**. 65: 624-632 (2013) IF: 1.956 (2012). Q: 3 (156/260) Farmacia y Farmacología 3. I.A. Pérez-Herrera, O.A. Rangel-Zúñiga, J. Delgado-Lista, C. Marín, P. Pérez-Martínez, I. Tasset, **I. Túnez**, G.M. Quintana-Navarro, F. López-Segura, M.D. Luque de Castro, J. López-Miranda, A. Camargo, F. Pérez-Jiménez. The antioxidants in oils heated at frying temperature, whether natural or added, could protect against postprandial oxidative stress in obese people. **Food Chemistry.** 138(4): 2250-2259 (2013). IF: 3.334 (2012) Q: 1 (9/71) Química Aplicada 4. I. Tasset, A. Pérez-Herrera, F.J. Medina, O. Arias-Carrión, R. Drucker-Colín, **I. Túnez.** Extremely low-frequency electromagnetic fields activate the antioxidant pathway Nrf2 in a Huntington's disease-like rat model. B**rain Stimulation.** 6: 84-86 (2013). IF: 4.538 (2012) Q: 1 (24/191) Neurología Clínica 5. I. Tasset, F.J. Medina, I. Jimena, E. Agüera, F. Gascón, M. Feijóo, F. Sánchez-López, E. Luque, J. Peña, R. Drucker-Colín, **I. Túnez**. Neuroprotective effects of extremely low-frequency fields on a Nuntington's disease rat model: effects on neurotrophic factors and neuronal density. **Neuroscience.** 209: 54-63 (2012) IF: 3.122. Q: 2 (112/251) Neurociencias 6. J. Ruiz-Medina, J.A. Flores, I. Tasset, **I. Túnez,** O. Valverde, E. Fernández-Espejo. Alteration of neuropathic and visceral pain in female C57BL/6Jmice lacking the PPARγ gene. **Psychopharmacology (Berlin).** 222(3): 477-488 (2012) IF: 4.061. Q: 1 (42/260) Neurociencias 7. I. Tasset, E. Agüera, F. Sánchez-López, M. Feijóo, A.I. Giraldo, A.H. Cruz, F. Gascón, **I. Túnez**. Peripheral oxidative stress in relapsing-remitting multiple sclerosis. **Clinical Biochemistry.** 45: 440-444 (2012). IF: 2.450. Q: 2 (8/31) Tecnología en Laboratorio Médico **8. I. Túnez**, F. Sánchez-López, E. Agüera, R. Fernández-Bolaños, F. Sánchez, I. Tasset. Important role of oxidative stress biomarkers in Huntington's disease. **Journal of Medicinal Chemistry.** 54(15): 5602-5606 (2011). IF: 5.248.Q: 1 (3/59) Química Médica
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☐ Dissemination
Keywords	Oxidative stress, neuroplasticity, neurodegenerative diseases (Huntington's disease and Multiple Sclerosis), diet and transcraninal magnetic stimulation

IMIBIC - Reina Sofia University Hospital

Radiation Oncology

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 13 – 2014: New therapies for chronic non-communicable diseases
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	AREA OF KNOWLEDGE: Radiation Oncology RESEARCH LINES: Arranged in two approaches: 1. Population-based Studies: - Population-based cancer characterization. - Rate of radiotherapy utilization. - Grade of adequacy of radiation rate in relation with scientific evidence. - Patient Information Systems. 2. Clinical approach / High-tech innovative radiation therapy: - IMRT / VMAT technology - Lung SBRT. - Total body irradiation techniques with high-energy photons. - Health outcomes.
Expertise offered to the project (please describe the expertise you can provide)	CONTRIBUTIONS. - The group attends to a population of 800,000 inhabitants with an estimated incidence of 3,200 cancer patients / year. - Multidisciplinary healthcare team specific for each oncological disease. - Patient Management System (MOSAIQ). - General acute care hospital (Service with 3 LINAC: 2 Elekta

	Precise and 1 Elekta Synergy®-IGRT-IMRT-VMAT). - In-house molecular biology lab.
Research Results	ARTICLES: -Radiotherapy in rectal cancer: development, adequacy and radiotherapy utilisation rate. A comparative analysis with the most frequent tumour sites. Sonia García Cabezas, Amalia Palacios Eito, María Martínez Paredes, Eleonor Rivin del Campo. Clinical and Translational Oncology 2011; 13 (2):115-20. -Characterization and adequacy of the use of the radiotherapy and its trend in time. A. Palacios, S. García, P. Font, E. Rivin, A. Otero, MM. Pérez, Roldán JM and M. Martínez. Radiother Oncol, 2013; 106 (2):260-265. RESEARCH PROJECTS: - Study of variability and adequacy of administration of radiation therapy in Andalusian public hospitals. Project VARA. PI 174/02 - Analysis of the casuistic in a typical regional Cancer Radiation Therapy Service. Characterization, adequacy, costs and health outcomes. Financed by the Andalusia Regional Government (Fundación Progreso y Salud), 2007. PI-0321/2007. - Study of variability and adequacy of administration of radiation therapy in lung cancer, bone and brain metastasis in Andalusian public hospitals. Regional Ministry of Health. PI 266/2007.
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☑ Technology ☐ Dissemination
Keywords	Radiotherapy, Population-based, Characterization, Referral Patient Characteristics, Adequacy, Appropriate Rate of Radiotherapy, Prostate cancer, rectal cancer, high grade astrocytomas. Treatment outcomes, evidence-based medicine.

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Quality Assurance

Call information	
Funding Programme	HORIZON 2020 - 8. Health, demographic change and wellbeing
Call: title and reference number	H2020-PHC-2014/2015
Area, activity or topic	PHC 23 – 2014: Developing and comparing new models for safe and efficient, prevention oriented, health and care systems
Closing Date	11th March 2014

Partner information

Contact person

Organisation	IMIBIC	**Type of organisation**	Research Institute
Department	Research Management	**Web**	http://www.imibic.org/
Name	Jose Carlos Prieto	**Male /Female**	Male
Tel.	+34 957 011 292	**email**	jcarlos.prieto@imibic.org

Scientific Information and expertise offered

Main research areas	University Hospital Reina Sofia - Clinical and Management Research: Clinical Governance, Health outcomes, Disease Management, Analytical Accounting.
Expertise offered to the project (please describe the expertise you can provide)	Expertise in social research techniques applied to health sciences, advanced epidemiology, clinical outcomes studies and clinical management, Information Systems and Telemedicine, Quality Assessment Methodology, economic information systems (analytical accounting) and clinical and production information systems (case mix).
Research Results	13 years of accumulated research with 14 research projects. Forty-seven journal papers. Sixteen clinical practice guidelines. More than 60 book chapters published. Books or relevant articles published: Strategic Plan of the Andalusian Health System, Health Plans (National Institute of Health Care, Autonomous Community of the Balearic Islands), Patient Summary in the "European patients Smart Open Services – epSOS – The European eHealth Project". 2010-2011, Pulmonary tuberculosis and associated disorders. .
Commitment offered	☑ Research ☐ Demonstration ☐ Training ☐ Technology ☑ Dissemination
Keywords	

	Clinical department's efficiency, Analytical Accounting for Clinical departments, Clinical Governance and Efficiency, organizational; Previsional Income Statement; Final Clinical Management Units; Case – Mix; Health Outcomes.