institute
imdea food

food and health
science, industry and society

www.food.imdea.org

2018 annual report

foreword

IMDEA Food

In 2018, the Spanish food industry accounted for some 8.8% of the country's gross domestic product (GDP). The gross added value generated in that same year by the food and drinks sectors corresponded to 2.9% of the entire state economy - a slight increase after several years of following a downward trend; 3% has never been reached (INE, 2017). The data for the EU as a whole are no better, the food industry of the Eurozone accounting for only 9.5% of European GDP, and the gross added value generated just 2.1% (Eurostat, 2017).

In both Spain and Europe, however, the food sector is the most important in terms of production. An industry of such size has enormous potential to transform both country and continent, but its wealth-generating capacity needs to increased. The industry is also of great social importance, with influence on different facets of wellbeing, including pleasure, family life, culture and health.

The study of the relationship between food and health has traditionally been the remit of food science, an area that has entered a new era with the advent of precision nutrition. Based firmly on advances made in the life sciences, precision nutrition opens up new possibilities for food products to be used therapeutically in the fight against chronic diseases. This undoubtedly promises to be of great economic and social value, yet neither the Spanish nor European food industries have adopted schemes to help reap the benefits. It is worrying that while the European scientific community continues to research ever more intensely into the relationship between food and health, the majority of food companies continue to follow low-value strategies.

IMDEA Alimentación was born in 2007 with the mission of developing new scientific knowledge on nutrition, but also to make sure that this knowledge contributes to the economy and the wellbeing of the population. It was not until several years later, however, that the European Commission recognised that the results of the continent-wide research effort in nutrition were not being translated to industry or society. In 2016 this led to the European Institute of Innovation and Technology (EIT) launching the Knowledge and Innovation Community in Food (EIT Food).

EIT Food is probably the largest European platform to provide an impulse in this regard. Bringing together some 50 European

annual report 2018

www.food.imdea.org

Guillermo Reglero
Director of the IMDEA Food Institute

companies, universities and research centres, it aims to help change the European model of food production and consumption by encouraging science-based innovation through communication, education and the support of entrepreneurship.

IMDEA Alimentación and the Universidad Autónoma de Madrid have been part of EIT Food since its beginning. Acting as a single partner they have together participated in many different projects, including three in the 2018 call to tender, and 11 in the 2019 call. Over 20 have been proposed for 2020. IMDEA Alimentación also acts as the go-between connecting EIT Food and the Madrid Region's (Comunidad de Madrid) food industry, a result of funding secured in a competitive tender for projects announced by the Madrid Regional Government in 2018.

As well as undertaking communication activities within the EIT Food framework, IMDEA Alimentación has independently organised 31 national and international seminars and knowledge diffusion events. The "Top Science To Society on Aging" meeting, held in October 2018 was of particular importance; this brought the world's top researchers in the field of ageing to Madrid. IMDEA Alimentación also found its way into the press and onto the radio and television during 2018, being mentioned over 62 times.

During the same year, IMDEA Alimentación continued to push forward with its scientific project for precision nutrition. The development of products and therapies for different chronic diseases rests on new knowledge of the molecular mechanisms involved in physiological processes. The identification of therapeutic targets that can be modulated by nutrients is key in the idea of using nutrition as a therapeutic strategy. IMDEA Alimentación is following research lines involving nutritional genomics in the areas of cancer, ageing, obesity, chronic metabolic diseases, and child health.

Staff numbers at IMDEA Alimentación increased by 27% in 2018, reaching a total of 72 researchers of nine nationalities, all from universities and research centres of international prestige. Sixteen research projects were undertaken, six of which were European or international in nature. Funds were secured from 24 sources to finance the contracts of several researchers, including from the Juan de la Cierva and Ramón y Cajal programmes run by the Ministery of Science, Innovation and Universities, and from the Madrid Regional Government's

Atracción de Talento programme, as well as Research Assistants and Laboratory Technicians contracts were funded also by the Madrid Regional Government, and non-profit foundations. In total, IMDEA Alimentación was awarded €1,060,053 via competitive tenders; this, plus the nominative subvention received from the Madrid Regional Government, has given notable impulse to the centre.

During 2018, the centre's researchers had 158 scientific articles published, including 136 original research papers that together accumulated an impact factor of 607.91 (mean 4.46). Eighteen doctoral theses are underway and the centre was home to 35 master's degree students who undertook practical training.

During the same year, IMDEA Alimentación was involved in 12 collaborations with businesses and other entities. The GENYAL Platform continues to grow, and now has over 2300 volunteers involved in clinical trials on nutrition. In addition, the centre now has five patents, two of which have been transferred to a company within the Madrid Region, while another company (also from the Region) has been licensed to produce two products relating to a third patent. A technology-based business in which IMDEA Alimentación participates has also been set up; this will soon begin marketing materials developed by the centre regarding precision nutritional advice for safeguarding health and wellbeing.

IMDEA Alimentación

El valor de la producción de la industria alimentaria española en 2017 representó el 8,8% del PIB. Sin embargo, el valor añadido bruto generado ese mismo año por los sectores de la alimentación y bebidas correspondió al 2,9% sobre el total de la economía del Estado, iniciando un leve ascenso, tras varios años de tendencia negativa y sin haber alcanzado nunca el 3% (INE, 2017). Los datos para el conjunto de la UE no son mejores ya que la industria alimentaria de la eurozona aporta el 9,5% del PIB europeo y solamente genera el 2,1% del valor añadido bruto (Eurostat, 2017).

Tanto en España como en Europa, el alimentario es el primer sector por valor de producción. Una industria de tan gran tamaño posee un enorme potencial para transformar el país y el continente, pero su capacidad de generación de riqueza debe aumentar. Además del impacto económico, la alimentación tiene una gran importancia social por su influencia en diferentes aspectos del bienestar como son el placentero, el familiar, el cultural y el saludable.

La relación entre la alimentación y la salud ha sido estudiada tradicionalmente por la ciencia de la nutrición. Esta ciencia está en una nueva época, la de la nutrición de precisión que, apoyándose en los avances de las ciencias de la vida, abre nuevas posibilidades de aplicación terapéutica de productos alimentarios en el ámbito de las enfermedades crónicas. Es indudable que ello encierra valor económico y social, pero tanto la industria española como la europea no acaban de asumir esta estrategia de modo general. Es preocupante ver como la comunidad científica europea aumenta cada vez más la intensidad de la investigación en la relación entre la alimentación y la salud, mientras que la mayoría de empresas alimentarias continúan posicionadas en estrategias escasamente generadoras de valor.

IMDEA Alimentación nació en 2007 con la misión de contribuir al conocimiento científico en el campo de la nutrición humana, pero con un claro compromiso de que dicho conocimiento contribuya a la economía y al bienestar de la población. Sin embargo, hasta años después, la Comisión Europea no constató la paradoja que se da en el continente al tener una investigación fuerte pero cuyos resultados apenas se trasladan a la industria y la sociedad. En 2016, el European Institute of Innovation and Technology (EIT) lanzó la Knowledge and Innovation Community in Food (EIT Food).

EIT Food es probablemente la mayor plataforma europea para el impulso de la alimentación. Se apoya en la innovación basada en el conocimiento científico y agrupa a 50 empresas, universidades y centros de investigación europeos en torno a actividades de comunicación, educación y emprendimiento que pretenden cambiar en los próximos años el modelo europeo de la producción y consumo de alimentos.

IMDEA Alimentación y la Universidad Autónoma de Madrid se posicionaron en EIT Food desde su inicio, como un solo socio y han conseguido participar en diversos proyectos, tres

en la convocatoria de 2018 y once en la de 2019, habiendo presentado más de 20 propuestas para la de 2020. Además, IMDEA Alimentación se ha constituido como entidad de enlace entre EIT Food y la industria alimentaria de la Comunidad de Madrid, gracias a la financiación conseguida en la convocatoria competitiva de proyectos de innovación de la Comunidad de Madrid de 2018.

Además de las actividades de comunicación enmarcadas en EIT Food, IMDEA Alimentación ha realizado acciones propias con la organización de 31 seminarios y eventos de divulgación de la ciencia de carácter internacional y nacional. La presencia en los medios de comunicación de IMDEA alimentación se ha concretado en 65 apariciones en prensa, radio y televisión. Cabe destacar la Jornada "Top Science To Society on Aging" celebrada en octubre y en la que participaron los investigadores más destacados a nivel mundial en el campo del envejecimiento, reunidos en Madrid por IMDEA Alimentación.

En 2018, IMDEA Alimentación ha continuado creciendo en su proyecto científico de nutrición de precisión. El desarrollo de productos y terapias para diversas enfermedades crónicas se apoya sobre la base de los nuevos conocimientos científicos de los mecanismos moleculares que dan lugar a los diferentes procesos fisiológicos. La identificación de dianas terapéuticas susceptibles de ser moduladas por los nutrientes es clave para que la alimentación pueda alcanzar el carácter terapéutico que se le atribuye en el contexto científico actual. IMDEA Alimentación traza sus líneas de investigación a través de las estrategias y herramientas de la genómica nutricional, en campos como el cáncer, el envejecimiento, la obesidad, las enfermedades cardio metabólicas y la salud infantil.

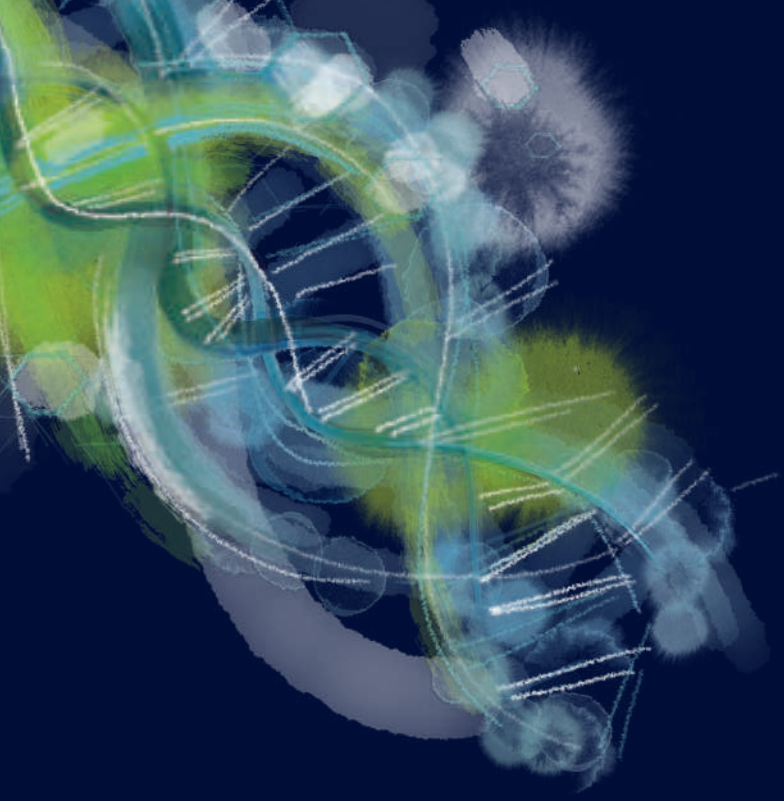
La plantilla de IMDEA Alimentación ha aumentado un 27% en 2018, alcanzando un total de 72 investigadores de nueve nacionalidades y procedentes de universidades y centros de investigación de prestigio internacional. Se han ejecutado 16 proyectos de investigación, 6 de los cuales de programas europeos o internacionales. Se han obtenido 24 ayudas para financiación de contratos personal investigador en el marco de programas como Juan de la Cierva y Ramón y Cajal del Ministerio de Ciencia, Innovación y Universidades; Atracción de Talento, Ayudantes de Investigación y Técnicos de Laboratorio de la Comunidad de Madrid y de fundaciones sin ánimo de lucro. En total, IMDEA Alimentación ha conseguido captar en convocatorias competitivas un total de 1.060.053€ que sumados a la subvención nominativa concedida por la Comunidad de Madrid han permitido dar un notable impulso al centro.

En el año 2018 los investigadores del Instituto han realizado 158 publicaciones científicas de las que 136 son artículos originales de investigación que acumulan un factor impacto anual de 607,91, siendo el factor de impacto medio de 4,46. Están en desarrollo 18 tesis doctorales y 35 estudiantes universitarios de grado y máster han realizado estancias en prácticas en el Instituto.

En cuanto a convenios y otras acciones de transferencia de tecnología, durante 2018 en IMDEA Alimentación se han desarrollado 12 proyectos en colaboración con empresas y otros organismos. La Plataforma GENYAL sigue creciendo y ya cuenta con más de 2.300 voluntarios en su cohorte para ensayos clínicos de alimentos. El Instituto posee una cartera de 5 patentes. Dos de ellas ha sido transferidas a una empresa de la Comunidad de Madrid y a otra empresa, también de la Comunidad, se han licenciado dos productos derivados de una tercera patente. Se ha constituido una EBT (empresa de base tecnológica) participada por IMDEA Alimentación que, en un corto plazo, comenzará su actividad comercial, poniendo en el mercado algunos desarrollos del Instituto en materia de consejo nutricional de precisión para salud y el bienestar.

imdea food institute

food and health
science, industry and society



editor
IMDEA Food Institute

graphic design
www.loveodesign.es

L.D.
M-22447-2019

contact
contacto.alimentacion@imdea.org
tel. +34 91 727 81 00
fax +34 91 727 81 00

Ctra. Canto Blanco, 8
E-28049 · Madrid (Spain)

contents

1 In figures [10]

2 Our structure [16]

3 Strategic alliances [22]

4 Research programs and groups [26]

5 Technological platforms and technology transfer [94]

6 Research projects, grants and contracts [118]

7 Scientific results [140]

8 Dissemination activities [156]

9 Infrastructures [176]

annual report 2018

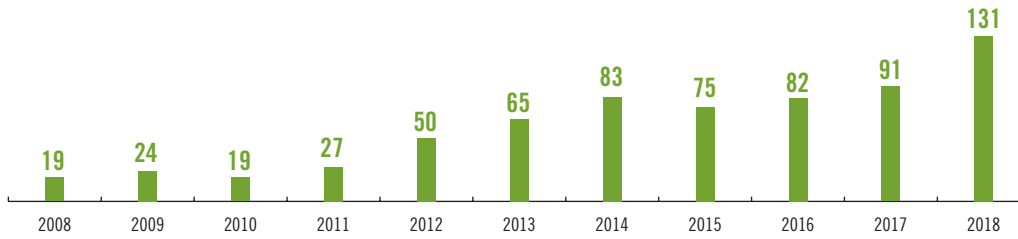
www.food.imdea.org

1.
in figures

R&D results

IMDEA Food carries out research focused on the highest levels of scientific excellence so that it contributes to solving population problems and it is a driver of competitive innovation for companies.

Indexed Scientific Publications



Scientific Excellence indicators (2008-2018)

657
Total papers published in indexed scientific journals

3.237
Cumulative impact factor

644
Average impact factor per R&D program

2018 Results

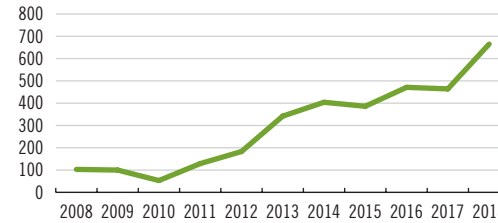
Congresses communications	63
Invited conferences	49
Book's chapters	7
Submited patents	1
Ph.D thesis under development	9
Ph.D thesis defended	1
International Awards	4

131
Publications in indexed scientific journals

642
Publications annual impact factor

51%
Publications ranked in Q1 SCI (Science Citation Index)

Average Impact Factor

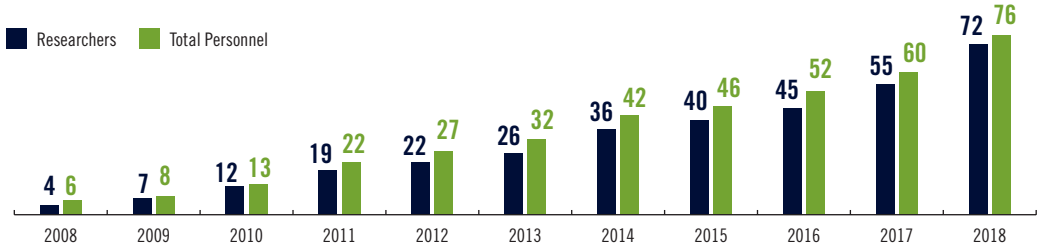


personnel

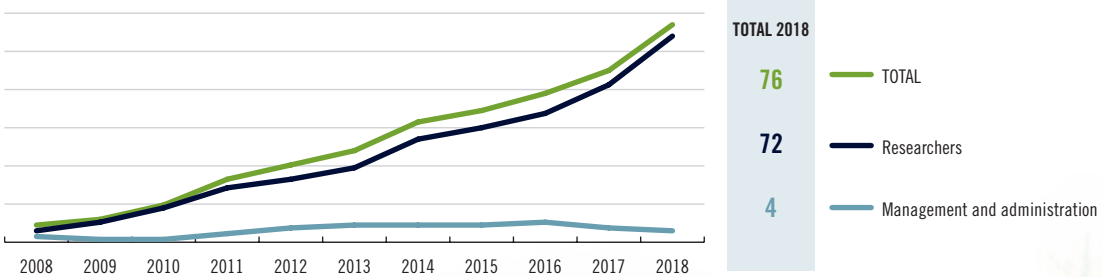
The attraction of talent and prestigious researchers is one of the key objectives of the Institute. IMDEA Food has recruited researchers from world-class universities such as the Pierre and Marie Curie University of Paris, the University of New York or the University of Tufts and renowned Spanish entities such as CNIC, CNIO, CSIC and Hospitals La Paz, Ramón y Cajal and Infanta Sofía.

IMDEA Food also promotes research careers by bringing the practice of research activity closer to students in their last year of Bachelor and Master's degree related to Food Sciences, Human Nutrition and Dietetics, through agreements signed with different universities.

Personnel Evolution



Personnel Evolution per category



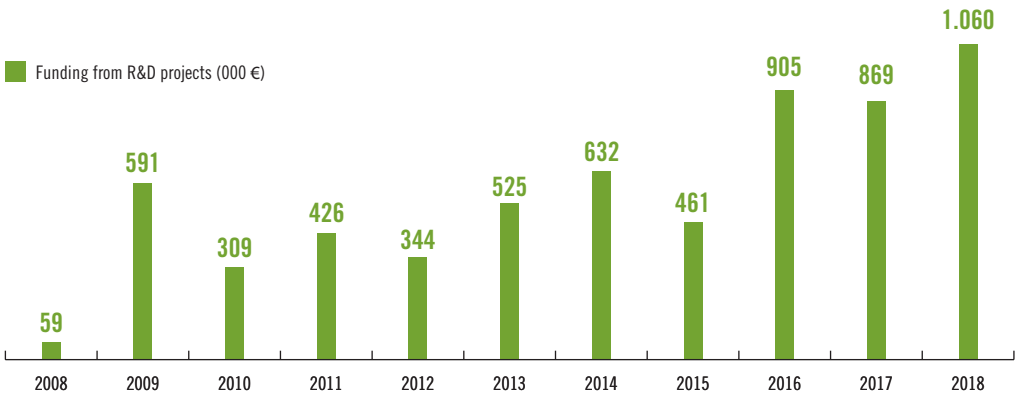
external funding

In 2018 IMDEA Food has participated in highly competitive national research projects - Plan Estatal de I+D+i, Instituto de Salud Carlos III, Fundación BBVA and Fundación Ramón Areces - as well as R&D Programs funded by the Regional Government of Madrid and international projects of great scope like those framed in the EIT Food Program funded by the European Commission.

In 2018, IMDEA food has received external funding of €1.063.053, €523,356 for personnel grants under programs such as Amarout-COFUND and Marie Skłodowska-Curie funded by European Union, Juan de la Cierva and Ramón y Cajal funded by MINECO, Attracting Talent Grants, PhD and Predoctoral contracts granted by the Regional Government of Madrid and Asociación Española contra el Cáncer Grants among others.

With the food industry, the current contracts amounting to €107.384. Public competitive funding for I+D projects reached €432.313.

Total External Funding




SALIDA
ácido carnósico
idea alimentación
SALIDA

annual report 2018

www.food.imdea.org

2.
our structure

governing bodies

(+) next page

Board of Trustees

Delegate Commission

Ethics Committee

Scientific Council

executive board

Responsible for managing and dealing with the main business administration and scientific activities of the whole Institute, except those decisions taken by or shared with the Board of Trustees.

director

Prof. Guillermo Reglero Rada

It is the Director's responsibility, pursuant to the powers and guidelines granted by the Board, to represent the Foundation and sign on its behalf as well as to direct, promote and oversee all the activities

deputy director

Dr. Ana Ramírez de Molina

Appointed by the Board of Trustees at the proposal of the Director, she reports directly to the latter and assists him in his tasks, representing him in case of his absence or inability to act

general manager

Inmaculada Galindo Fernández

Appointed by the Board of Trustees at the proposal of the Director to whom she reports. Her functions are to manage and coordinate the general services, in particular, the administrative, economic, human resources and legal aspects of the Foundation

management, administration and technical support unit

Gema Alegre Pulido Technician	**Jowita Spytkowska Szklarczyk** Technician	**Luis Nevado Chamorro** Senior Technician	**Miryam Asunción Borda** Senior Technician

research programs and groups

Precision Nutrition and AGING
Dr. Manuel Serrano

groups

- **Metabolic Syndrome**
  Dr. Pablo Fernández
- **Nutritional Interventions**
  Dr. Rafael de Cabo
- **Hepatic Regenerative Medicine**
  Dr. Manuel Fernández
- **Posttranscriptional regulation of metabolic diseases**
  Dr. Cristina Ramírez

Precision Nutrition and CANCER
Dr. Ana Ramírez de Molina

groups

- **Molecular Oncology**
  Dr. Ana Ramírez de Molina
- **Clinical Oncology**
  Dr. Enrique Casado
  Dr. Jaime Feliú
- **Molecular Immunonutrition**
  Dr. Moisés Laparra
- **Computational Biology**
  Dr. Enrique Carrillo

Precision Nutrition and OBESITY
Dr. José María Ordovás

groups

- **Nutritional Genomics and Epigenomics**
  Dr. José María Ordovás
- **Cardiovascular Nutritional Epidemiology**
  Dr. Fernando Rodríguez-Artalejo
- **Nutritional control of the Epigenome**
  Dr. Lidia Daimiel

Precision Nutrition and CARDIOMETABOLIC HEALTH
Dr. Alfredo Martínez

groups

- **Cardiometabolic Nutrition**
  Dr. Alfredo Martínez
- **Bioactive Ingredients Food**
  Dr. Francesco Visioli
- **Epigenetics of Lipid Metabolism**
  Dr. Alberto Dávalos

CHILDHOOD Precision Nutrition
Dr. Jesús Argente
Dr. Julie A. Chowen

groups

- **Childhood Obesity**
  Dr. J. Argente
  Dr. J. Chowen

R+D+I platforms and technology transfer

Innovation, Education & Communication Unit

Director: Prof. Guillermo Reglero Rada
Deputy Director: Dr. Ana Ramírez de Molina

- Innovation
- Education
- Communication

GENYAL platform

Director: Prof. Guillermo Reglero Rada
Scientific Director: Dr. Ana Ramírez de Molina

- Nutrition and Clinical Trials Unit
- Genomics Laboratory

Precision for Health P4H

EBC UAM, EBT IMDEA FOOD

governing bodies

Board of Trustees

The Board is the highest body of government, representation and administration of the Foundation. The authority of the Board encompasses all matters concerning the government and administration of the Foundation, without exception, and the resolution of all legal and circumstantial incidents that occur. The Board is responsible for complying with the foundational purposes and for administering the assets and rights that constitute the patrimony of the Foundation, assuring their correct performance and effectiveness.

PRESIDENT OF THE FOUNDATION

Manuela Juárez Iglesias
Professor Ad Honorem. Spanish National Research Council. Spain

VICE-CHAIRMAN OF THE FOUNDATION

Rafael van Grieken Salvador
Counsellor. Education and Research Education and Research Counseling. Madrid Regional Government. Spain

REGIONAL ADMINISTRATION REPRESENTATIVES

Alejandro Arránz Calvo
General Director of Research and Innovation. Education and Research Counseling. Madrid Regional Government. Spain

José Manuel Torralba Castelló
General Director of Universities and Higher Artistic Teaching. Education and Research Counseling. Madrid Regional Government. Spain

Rafael A. García Muñoz
Deputy General Director of Research. Education and Research Counseling. Madrid Regional Government. Spain

José de la Sota Ríus
Scientific-Technical Coordinator. madri+d Foundation for Knowledge. Spain

INSTITUTIONAL TRUSTEES

Javier Ortega García
Vicerrector de Innovación, Transferencia y Tecnología. UAM. Madrid. Spain

Alberto Garrido Colmenero
Vice-rector of Quality and Efficiency. Universidad Politécnica de Madrid. Spain

Mercedes Gómez Bautista
Vicerrectora de Transferencia del Conocimiento y Emprendimiento. UCM. Madrid. Spain

Mª Isabel Medina Méndez
Coordinator of the Science and Technology. Department Spanish National Research Council. Spain

SCIENTIFIC TRUSTEES

Michael Heinrich
Director. Center for Pharmacognosy and Phytotherapy The School of Pharmacy. University of London. UK

Daniel Ramón Vidal
Scientific Director and Chief Executive Officer. Biopolis S.L. Spain

Gregorio Varela Moreiras
Professor of Nutrition and Bromatology. Universidad CEU San Pablo. Spain

EXPERT TRUSTEES

Jorge Jordana Butticaz de Pozas
Trustee Director. Fundación LAFER. Spain

Juan G. Vargas Olmo
Director Técnico. ADAM FOODS, S.L.U. Barcelona

COMPANY TRUSTEES

DANONE, S.A.
Gregorio Alegre Muñoz
Health Affairs Director. Spain

FRIAL TECHNOLOGIES S.L.
Leonor Paloma Frial Suárez
President. Spain

COCA-COLA IBERIAN DIVISION
Rafael Urrialde de Andrés
Responsible of Health and Nutrition. Spain

NATAC
José Carlos Quintela Fernández
Scientific General Director. Spain

ASEACAM - Food Industry Business Association of the Community of Madrid
Ricardo Oteros Sánchez - Pozuelo
President. Spain

SECRETARY

Alejandro Blázquez Lidoy
Spain

Delegate Commission

The powers of the Board of Trustees are delegated to the Foundation's Delegate Commission, with the exception of approval of the action plan, budgets, annual accounts, amendment of statutes, mergers, liquidation, extinction and any acts requiring the authorization of the Protectorate. Also, they may not elect or dismiss any trustee or appoint officers of the Board, elect or dismiss the Director, or take any decision having to do with the Scientific Council, or grant powers of attorney or general delegations.

PRESIDENT

Alejandro Arranz Calvo

MEMBERS

Rafael A. García Muñoz
José de la Sota Rius
José Manuel Torralba Castelló

SECRETARY

Julián García Pareja

Scientific Council

Composed of researchers of recognized international prestige in areas relevant to the Institute with the task of advising on and analyzing research programs that the Institute may take on, and evaluating the achievements and scientific results of the Institute research lines.

PRESIDENT

Dr. Manuela Juárez Iglesias
Professor Ad Honorem. Spanish National Research Council Madrid. Spain

MEMBERS

Dr. Michael Heinrich
Director of Centre for Pharmacognosy and Phytotherapy. The School of Pharmacy. University of London. UK

Dr. Carlos Fernández Hernando
Associate Professor. Yale University and New York University. USA

Daniel Ramón Vidal
Scientific Director and Chief Executive Officer. Biopolis S.L.. Spain

Dr. Francisco Pérez Jiménez
Medicine Professor at the Universidad de Córdoba. Director of the Maimónides Biomedical Research Institute of Córdoba. Spain

Dr. Carlos López Otín
Professor of Biochemistry and Molecular Biology. Universidad de Oviedo. Spain

Dr. Rafael Urrialde de Andrés
Responsible of Health and Nutrition. Coca-Cola Iberian Division. Spain

Dr. Gregorio Varela Moreiras
Professor of Nutrition and Bromatology.Universidad CEU San Pablo. Spain

MEMBER AND SECRETARY

Dr. Francisco A. Tomás Barberán
Research Professor. Spanish National Research Council (CEBAS CSIC) Murcia. Spain

Ethics Committee

The IMDEA Food Research Ethics Committee (According to the Article 12 of Law 14/2007, July 3, of biomedical research, and Article 22 of Royal Decree 1201/2005) aims:

- Respect bioethical principles and commitments made by the scientific community and by the Statutes of the Foundation.
- Protect fundamental rights of people, animal welfare and the environment.
- Provide a quick and effective response to the needs of scientific research carried out in the field.

PRESIDENT

Dr. José Carlos Quintela Fernández
Scientific General Director. Natac Biotech S.L.. Spain

VICE PRESIDENT

Dr. Ana Ramírez de Molina
Deputy Director and senior researcher. IMDEA Food. Spain

SECRETARY

Dr. Marta Corzo Martínez
Researcher. Institute of Food Science Research (UAM - CSIC). Spain

MEMBERS

Prof. Daniel Ramón Vidal
Scientific Director and Chief Executive Officer. Bipolis S.L.. Spain

Prof. José Mª Carrascosa Baeza
Professor of Biochemistry and Molecular Biology. Center for Molecular Biology Severo Ochoa (UAM-CSIC). Spain

Prof. Enrique Peñaranda Ramos
Professor of Criminal Law. Faculty of Law. Universidad Autónoma de Madrid. Spain

Prof. Rafael Garesse Alarcón
Professor of Biochemistry and Molecular Biology. Biomedical Research Institute Alberto Sols (UAM-CSIC). Spain

Prof. José Mª Ordovás Muñoz
IMDEA Food senior researcher. Spain
Professor of the Tufts University. USA

Dr. Viviana Loria - Kohen
Nutricionist, senior researcher IMDEA Food. Spain

executive board

(+) previous page

annual report 2018

www.food.imdea.org

3.
strategic alliances

strategic alliances

Regarding to Agreements and other technology transfer actions, in 2018 IMDEA Food has developed 12 projects in collaboration with companies and other entities. The GENYAL Platform continues to grow thanks to these collaborations and already has more than 2,300 volunteers in its cohort for food clinical trials. Within the framework of the Strategic Programme of National Business Research Consortia (CIEN), 2 R&D contracts are being developed with companies to carry out the project “Strategies for improving the quality of life of pre-senior and senior groups based on precision nutrition (NUTRIPRECISION)”.

strategic alliances

eit Food

Hospital Universitario Infanta Sofía

Cincuenta Aniversario 1968 2018 UAM Universidad Autónoma de Madrid

CEBAS
CENTRO DE EDAFOLOGÍA Y BIOLOGÍA APLICADA DEL SEGURA

Hospital Universitario La Paz
Hospital Carlos III
Hospital Cantoblanco

Campus Internacional excelencia UAM CSIC+

cnio
Centro Nacional de Investigaciones Oncológicas

Hospital Universitario Ramón y Cajal

Parc Sanitari Pere Virgili

CREAS
Centro Regional de Estudios en Alimentos Saludables

TransBioNet,
Red Nacional de Bioinformática

IMIBIC
INSTITUTO MAIMÓNIDES DE INVESTIGACIÓN BIOMÉDICA DE CÓRDOBA

CONACYT
Consejo Nacional de Ciencia y Tecnología

ILSI
International Life Sciences Institute

UNIVERSIDAD DE CHILE

CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

UNIVERSIDAD DE MURCIA

DANA-FARBER
CANCER INSTITUTE

IMPACT HUB Madrid

FEN
FUNDACIÓN ESPAÑOLA DE LA NUTRICIÓN

LifeTime

GBT
ETSIT UPM
POLITÉCNICA

METABOLON

annual report 2018

www.food.imdea.org

4. research programs and groups

1. **Precision Nutrition and Aging** **[28]**
Metabolic Syndrome [29]
Nutritional Interventions [33]
Hepatic Regenerative Medicine [36]
Posttranscriptional regulation of metabolic diseases [40]

2. **Precision Nutrition and Cancer** **[46]**
Molecular Oncology [47]
Clinical Oncology [52]
Molecular Immunonutrition [56]
Computational Biology [58]

3. **Precision Nutrition and Obesity** **[66]**
Nutritional Genomics and Epigenomics [67]
Cardiovascular and Nutritional Epidemiology [70]
Nutritional Control of the Epigenome [73]

4. **Precision Nutrition and Cardiometabolic Health** **[78]**
Cardiometabolic Nutrition [79]
Bioactive Ingredients Food [82]
Epigenetics of Lipid Metabolism [85]

5. **Childhood Precision Nutrition** **[92]**
Chilhood Obesity [93]

research program

Precision Nutrition and Aging

Dr. Manuel Serrano Marugán

Chair of the Aging and Metabolism Program and Director of the Cellular Plasticity and Disease Group at Institute for Research in Biomedicine (IRB), in Barcelona. External supervisor of the Precision Nutrition and Aging Program of IMDEA Food

After completing his studies and PhD in Madrid, Dr. Manuel Serrano joined the laboratory of David Beach, at Cold Spring Harbor Laboratory, NY, USA, as postdoctoral fellow from 1992 to 1996. During this time, Manuel Serrano made one of his most important contributions with the discovery of the tumour suppressor p16. Manuel Serrano established his research group, first at the National Center of Biotechnology, Madrid, since 2003 until 2017 at the CNIO, as Director of the Tumor Suppresion Group and nowdays at the IRB in Barcelona. The main contributions of the Serrano's laboratory during these years are related to the concept of oncogene-induced senescence and the anti-aging activity of tumor suppressors. More recently, Serrano's group has reported on the relevance of tumor suppressors in metabolic Syndrome, the existence of senescence during embryonic development, and the feasibility of embryonic reprogramming within alive adult organisms (the latter was considered "Achievement of the Year 2013" in the stem cells field by Nature Medicine). The unifying theme of Manuel Serrano's research is to understand and manipulate cellular stress responses in relation to cancer and regeneration.

objectives

This Program is focused on the study of the molecular and physiological effects that nutrition exerts on aging.

Aging is a complex, multi-organ degenerative process, strongly influenced by the genetic background and the environment. Accordingly, this program covers a wide range of biological topics: from the dissection of molecular pathways involved in degenerative pathologies, to the discovery and development of new bioactive products active against aging-related pathologies, and including nutritional interventions with anti-aging properties, such as periodic fasting or calorie restriction.

group

Metabolic Syndrome

Group leader: Dr. Pablo José Fernández Marcos

objectives

Our group is devoted to the development of nutritional interventions reproducing short-term fasting benefits in metabolic syndrome and other pathologies, and to the study of the molecular mechanisms underlying these interventions. These are our main lines of research:

- Identification, characterization and development of new natural bioactive products that reproduce molecular features of short-term fasting: inhibition of the insulin signaling pathway, partial depolarization of mitochondria or activation of the pentose phosphate pathway.
- Study the role of p21 in the beneficial effects of short-term fasting during chemotherapy treatment: reduction of chemotherapy toxicity and induction of anti-tumor immune readction.
- Study the role of the fasting-induced sirtuin members Sirt1 and Sirt3 in lung and liver cancer development, respectively.

Dr. Pablo José Fernández Marcos

Group Leader of the Metabolic Syndrome Group

Dr. Pablo José Fernández Marcos studied Biochemistry in the Universidad Autónoma de Madrid. He obtained his PhD in the laboratory of Dr. Manuel Serrano, at the CNIO, for which he obtained the Special PhD Award and published 8 research articles about mouse models of cancer, metabolism and aging in mice. He then moved to the laboratory of Prof. Johan Auwerx, at the EPFL, Switzerland, studying mouse models of metabolic alterations and achieving 5 publications. He returned to the CNIO after two years at the EPFL, where he combined studies on cancer with research on metabolism, publishing 9 new articles. In December 2015, he was appointed Group leader Metabolic Syndrome Group at IMDEA Food, focused on nutritional interventions against obesity, diabetes and cancer. From this standpoint, Dr. Fernández Marcos has participated in several publications about the potential of molecular drugs and fasting to improve metabolic status and to enhance chemotherapy safety and efficacy. In total, he counts with 29 publications in prestigious journals as Cell, Cancer Cell, Cell Metabolism, Journal of Clinical Investigations, Nature Communications, PNAS or EMBO Journal, 4 of them as co-corresponding author (already from IMDEA Food) and 9 as first author.

Dr. Marta Barradas Solas

Postdoctoral researcher

Marta Barradas joined Manuel Serrano's lab at Centro Nacional de Biotecnología (Madrid) in 1997, where she obtained her PhD in the characterization of Ras-induced senescence in primary cells. In 2003 she moved to UK, where she was working as a postdoctoral researcher in several laboratories. First, in Fiona Watt's labsa at London Research and Cambridge Research Institutes, studying the role of catenin signalling in skin cancer. Then in 2008, she moved to Jesús Gil's lab at the MRC-CSC (London), where she studied the interplay between epigenetics and cancer. In 2011 she moved back to Spain to work in the Cell Signalling Therapies lab of EliLilly at Centro Nacional de Investigaciones Oncológicas, CNIO (Madrid), where she focused on the validation of new metabolic targets for cancer therapy. After a brief stay in the Brain Metastasis Group at CNIO, in December 2015 she joined the Metabolic Syndrome Group at IMDEA Food Institute.

Dr. Cristina Pantoja Castro

Postdoctoral researcher

Cristina Pantoja obtained her PhD in 2002 in the laboratory of Dr. Manuel Serrano at the Spanish National Center of Biotechnology (Madrid), where she was working on the molecular mechanisms implicated in the cellular senescence in mouse embryo fibroblasts. In 2003, she joined the group of Dr. Daniel Peeper at the Netherlands Cancer Institute (Amsterdam) as a posdoctoral fellow, working on the identification of novel genes involved in breast cancer by using functional screens with a retroviral RNA interference (RNAi) library. At the end of 2004, she came back to Manuel Serrano's lab at Spanish National Cancer Research Center (CNIO) where she has been involved in several projects aimed to understand the relationship between cellular senescence, tumour suppression, damage and reprogramming. In May 2017, she moved to IRB Barcelona as a Research Associate, where the group of Dr. Manuel Serrano was relocated. In May 2018, she joined the Bioactive Products and Metabolic Syndrome group at IMDEA Food Institute.

Dr. Adrián Plaza

Postdoctoral researcher

Adrian Plaza's research has been devoted to the evaluation of the effect of CCK-8 on adipose tissue metabolism, providing new strategies against obesity and type II diabetes. In his postdoctoral phase, he is evaluating the effect of different types of high fat diets (high content of unsaturated or saturated fatty acids) on cardiac and adipose tissue metabolism. The work performed during these years has resulted in several articles in high/medium impact journals, as well as awakened in me the interest on the role played by adipose tissue in the physiopatho cardiometabolic processes in obesity.

Luis Filipe Costa Machado
Predoctoral researcher

Luis Filipe Costa Machado has a bachelor degree in Pharmacy (2014) and a master's degree in Biomedical Research (2015) both from the University of Santiago de Compostela. In March 2013, he joined the group of neuropharmacology at the University of Bath (UK) where he worked in a research project focused on the study of the genetic bases of depression. During the last months of his undergrad, he also worked at the group of Oncology and Cell Cycle at the Center for Molecular Medicine and Chronic Diseases (CIMUS), to study the role of the transcription factor E2F in neuronal stem cells. During his master's research project, he joined the group of Stem Cells in Cancer and Aging at the Health Research Institute of Santiago de Compostela (IDIS) where he was responsible for the development of high-throughput methods to identify new senescence inducing compounds in tumor cells. In December 2015, he joined Dr. Pablo Fernández group, as a predoctoral researcher, in order to study new approaches to understand and treat metabolic disorders.

Andrés Pastor Fernández
Predoctoral researcher

Andrés Pastor Fernández studied Biotechnology at the Miguel Hernández University and a MSc in Bio-Entrepreneurship at the University of Granada. During his career, he has been researching in two fields: discovery of naturally-derived archaeal extracts in bacterial treatment and drug discovery in cancer and viral treatment. He has undertaken his research in 4 different centres. He first joined Marina Torreblanca and Manuel Sánchez lab at the Miguel Hernández University (2013-2014), where he discovered an antibacterial effect of extracts derived from Archaea. He then moved to the Karolinska Institute (2015-2018) where he studied the potential effect of DHODH inhibitors in wild-type p53 cancer cell lines and in infected fibroblasts under the supervision of Prof Sonia Laín and Prof Sir David Lane. Additionally, he undertook a research period at the University of Oxford / Cancer Research UK (2017) to study synthetic lethality between BRCA-deficient cancers and drug treatment, under the supervision of Prof Madalena Tarsounas.He joined Dr Pablo Fernández-Marcos group at the IMDEA Food Institute to study potential nutritional interventions in the pentose phosphate pathway and the beneficial effects of fasting in Metabolic Syndrome. Currently, he counts with 2 publications in recognised journals as Nature Communications y PLoS ONE.

Arantzazu Sierra Ramírez
Predoctoral researcher

Arantzazu Sierra Ramírez has a bachelor in Biology (2016) from the Autonoma University of Madrid. She studied a Master in cell signaling and therapheutic targets (2017) in Alcala de Henares University. She joined to José María Rojas Cabañero´s Cell Biology Group in the Health Institute Carlos III in Majadahonda (Madrid, 2015). During this period she studied the relationship between the protein Spry2 and Colorectal Cancer. In 2017 she developed her Master´s final proyect in PharmaMar S.A., a Biopharmaceutic Company specialiced in discover of new antitumoral molecules. There she worked in the mecanism of action of Plitidepsin, a new molecule for multiple mieloma. She joined to Metabolic Sindrome Group in Imdea Food, as a predoctoral reserecher. She is going to study new approaches to understand Celular Senescence and the role of the protein Sirt3 in hepatocarcinoma.

Jose Luis López
Technician

Jose Luis López is a highly skilled mouse technician, with more than 7 years of experience in the management of mouse colonies and a wide range of experimental techniques in mouse models. He has worked in the Comparative Medicine Unit at the Spanish National Cardiovascular Research Center - CNIC, where he gained expertise in mouse colonies databases. Currently, Jose Luis is the person in charge of the mouse experiments of the Metabolic Syndrome Group at IMDEA Food, coordinating the mouse colonies housed in different animal facilities (CNB, CNIO, UAM), performing the most specific experiments and setting up different animal techniques.

Students

Ana Gonjar
Universidad Autònoma de Madrid

Elsa Cano
Universidad Autònoma de Madrid

Manuel Romero
Universidad Autònoma de Madrid

Berta Muñoz
Universidad Autònoma de Madrid

most relevant publications

- **Sirt1 protects from KRas-driven lung carcinogenesis.** Costa-Machado LF, Martín-Hernández R, Sanchez-Luengo MA, Hess K, Vales-Villamarin C, Barradas M, Lynch C, de la Nava D, Diaz-Ruiz A, de Cabo R, Cañamero M, Martinez L, Sanchez-Carbayo M, Herranz D#, Serrano M#, Fernandez-Marcos#. *EMBO Reports* (2018). #: corresponding author.

main research grants

Principal Investigator: Pablo J. Fernandez-Marcos
Project Title: **Sirtuins as biomarkers and targets in cancer: Sirt1 and Sirt3 in lung and liver carcinogenesis - SIRTBIO**
Date: 2018-2021
Funded by: Asociación Española contra el Cáncer

Principal Investigator: Pablo J. Fernandez-Marcos
Project Title: **Ramón y Cajal Program. RYC-2017-22335**
Date: 2018-2022
Funded by: Spanish Ministry of Science, Innovation and Universities

Principal Investigator: Pablo J. Fernandez-Marcos
Project Title: **Characterization of the molecular mechanisms of short-term fasting as an enhancer of chemotherapy. SAF2017-85766-R**
Date: 2018-2021
Funded by: Ministry of Economy, Industry and Competitiveness

Principal Investigator: Pablo J. Fernandez-Marcos
Project Title: **New food-derived bioactive products against obesity and diabetes**
Date: 2017-2020
Funded by: Ramón Areces Foundation

group

Nutritional Interventions

Group leader: Dr. Rafael de Cabo

Dr. Rafael de Cabo
Chief of the Translational Gerontology Branch, National Institute on Aging (NIH) (USA). Associate researcher, IMDEA Food. Group Leader of the Nutritional Interventions Group

Rafael de Cabo, PhD is currently the chief of the Translational Gerontology Branch at the National Institute on Aging in Baltimore, Maryland. A native of Cordoba, Spain, he received his B.S. from the University of Cordoba, and his Ph.D. in 2000 from the Department of Foods and Nutrition at Purdue University. Upon completion of his graduate education, he trained as a postdoctoral fellow in the Laboratory of Neurosciences at the National Institute on Aging in Baltimore, Maryland. In 2004, he was appointed as a tenure track investigator in the Laboratory of Experimental Gerontology. His group applies both physiological and tissue-specific molecular approaches to investigate effects of nutritional interventions on basic mechanisms of aging and age-related diseases. Research within his unit strives to identify protective mechanisms invoked by caloric restriction and to evaluate the consequences of dietary interventions on lifespan, pathology, and behavioral function. Dr. de Cabo's research balances the exploration of in vivo rodent, as well as in vitro, paradigms of caloric restriction.

objectives

Our group is focused on understanding basic mechanisms underlying aging processes in order to develop and translate interventions aimed to preserve function late in life, to delay the onset of age-related diseases and to improve healthy life expectancy. The Nutritional Interventions Group focuses on energy restriction-based strategies applied to model organisms to decipher variations in energy demands and cellular energetic metabolism, a fundamental hallmark of the aging process.

Nutritional Interventions

Alberto Díaz-Ruiz
Posdoctoral researcher

Alberto Diaz-Ruiz is a M. Sc. Veterinary Medicine specialized in the fields of metabolism, obesity, and aging. He received a tenure track position granted by the Madrid Community "Talent Program" competitive call, within the Group of Nutritional Interventions, Precision Nutrition and Aging Program, at IMDEA Food Institute (Madrid). His research focuses on the effects of fasting-mediated nutritional interventions on lifespan and healthspan in mice and humans. By now, ha has co-authored 31 articles in the highest journals of the fields (Cell Stem Cell, Aging Cell, Embo Reports or Diabetes). His academic and research education was carried out in Spain and United States. He obtained his PhD in Sciences in 2011 (University of Cordoba). During his pre-doctoral phase, he was also awarded with two research training fellowships at the Center for Basic Neuroscience (University of Dallas) and the Department of Molecular and Cellular Physiology (Stanford University School of Medicine), supervised by Dr. Thomas C. Sudhof, who was awarded with the 2013-Nobel Prize in Medicine. His PhD studies aimed to understand the molecular mechanisms influencing the control of the secretory pathway in endocrine cells. In 2012, he obtained a two-years research associated period funded by a highly competitive grant (Proyecto de Excelencia, Junta de Andalucía) under the supervision of Dr. Maria del Mar Malagón. During this period, he successfully applied several proteomic methods for the study of human adipose tissue as an endocrine organ which helped to unveil novel factors and pathways underlying the association between obesity and metabolic disease. In 2014, he obtained a 5-years post-doctoral research fellowship under the supervision of Dr. Rafael de Cabo at the National Institute on Aging (NIA, USA). During this period, he successfully integrated genetic, nutritional, and pharmacological interventions that directly target nutrient sensing pathways, aiming to disclose the relevance of metabolic imbalances and deregulated nutrient sensing influencing aging and worldwide metabolic diseases including obesity and non-alcoholic fatty liver disease. Currently, he is devoted to study how modulation of the daily eating patterns such us the frequency and/or the fasting time, with or without reduction of total intake, influence circulating factors for the control of metabolic pathways, lately influencing health.

María Castejón
Predoctoral researcher

María Castejón Mariscal de Gante academic and research education was carried out in Spain and The Netherlands. She obtained her bachelor's degree in 2015 (Complutense University of Madrid) and her master's degree in biomedical science in Rijksuniversiteit Groningen (RUG) in 2017. She acquired broad knowledge in microbiology, from a bioinformatics point of view by analyzing the similarities between different bacterial species, and then by understanding the relationship between gut microbiota and brain (gut-brain axis), especially in relation with Parkinson 's disease. The results generated during this period have served to publish 2 articles in International Journal of Systematic and Evolutionary Microbiology and Nature Communication. In addition, she had the opportunity during the master to enrol in several courses related to the aging and nutrition field. Maria joined the group of Nutritional Interventions in January 2019, where she is currently doing her predoctoral thesis studying the effects of nutritional interventions based on energy restriction on healthspan and lifespan in mice.

most relevant publications

- Díaz Ruiz, A.; et al. 2018. **Benefits of Caloric Restriction in Longevity and Chemical-induced Tumorigenesis are Transmitted Independent of NQO1.**The journals of gerontology. Series A, Biological sciences and medical sciences.

- Díaz-Ruiz, A.; et al. 2018. **Overexpression of CYB5R3 and NQO1, two NAD+ -producing enzymes, mimics aspects of caloric restriction.** Aging Cell.

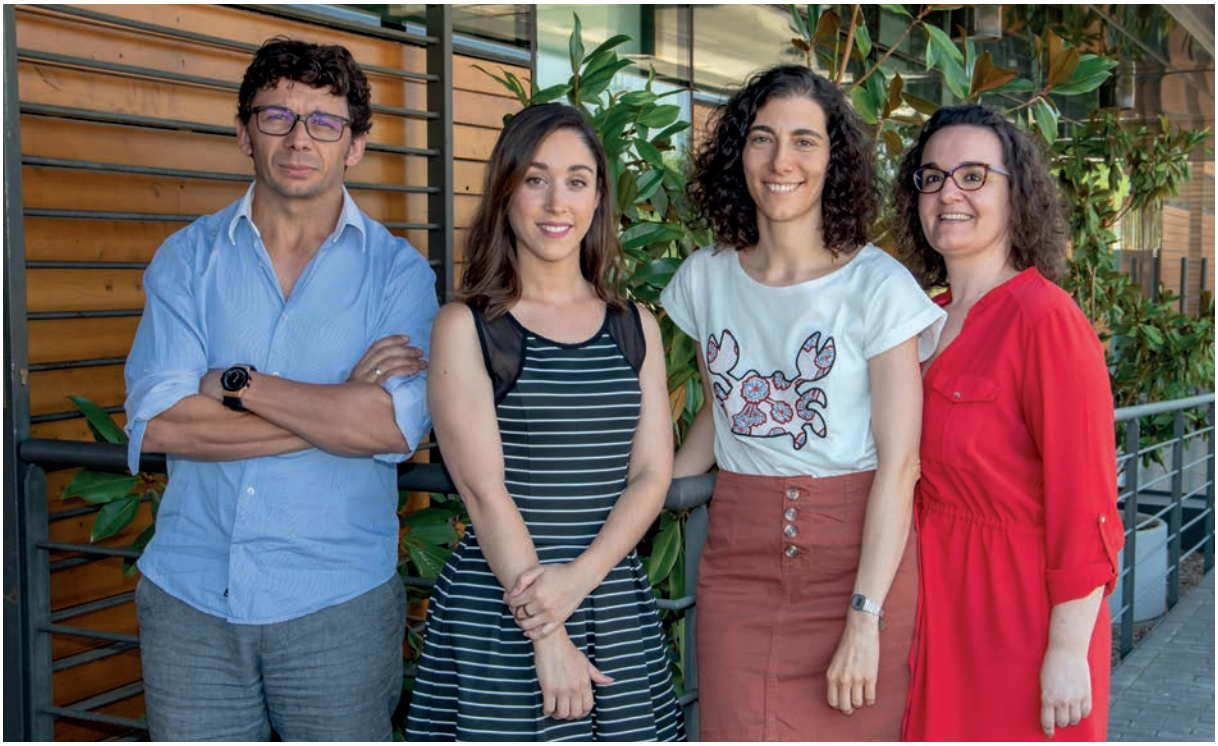
main research grants

Principal Investigator: Alberto Díaz-Ruiz
Project Title: **Estrategias alternativas para extender la longevidad y mejorar la calidad de vida: ciclos de ayuno 4:10**
Date: 2019-2022
Funded by: Talento Program Grant, Madrid Regional Government (2018-T1/BMD-11966)

group

Hepatic Regenerative Medicine

Group leader: Dr. Manuel Alejandro Fernández Rojo



objectives

The research conducted in the Hepatic Regenerative Medicine Group aims to restore the regenerative capacity of the liver in pathophysiological conditions such diabetes and chronic liver diseases. Within this aim we address non-invasive interventions to improve the treatment of chronic liver diseases and liver cancer by formulating novel diet-modifications. This includes nutritional approaches that promotes or represses therapeutic and deleterious proliferation of liver cells in cases of living-donor liver transplantation or after surgical removal of liver tumors, respectively. Our goal will be achieved using molecular, metabolism and cell biology examination on in vitro and in vivo experimental models of human liver diseases.

Dr. Manuel Alejandro Fernández Rojo

Group Leader of the Hepatic Regenerative Medicine Group

Dr. Manuel A. Fernandez Rojo joined IMDEA-Food Institute in April 2017 as a "TALENTO" Fellow within the recruitment program for outstanding researchers by the Madrid Region Government. Since then, Manuel is leading the Hepatic Regenerative Medicine Group in order to design novel diet-interventions, compounds and molecular mechanism that either promote the regenerative capacity of the liver or prevent the progression of hepatic carcinogenesis. Manuel obtained his degree in Biology and his PhD in Cell Biology in the IDIBAPS Institute/Faculty of Medicine at the University of Barcelona. Afterwards, he moved to Australia to continue his work in Caveolins, metabolism, liver regeneration, insulin resistance and hepatocarcinogenesis in Rob Parton's lab in the Institute for Molecular Bioscience (The University of Queensland) and in Prof. Tiganis' laboratory (Monash University, Melbourne). Then, he returned to Brisbane and worked in the Hepatic Fibrosis group leaded by Prof. Grant Ramm at the QIMR Berghofer exploring the involvement of the hepatic stellate cells on liver inflammation during the progression of chronic liver diseases. Manuel's outstanding research has been recognized with the Margalef Award, the Spanish Government postdoctoral fellowship, several grants from very competitive Australia funding bodies and he is co-author in a patent. He has also built a large network of Australian, European and American collaborators that allows him to perform multidisciplinary projects to answer fundamental questions underlying the development of novel conceptual paradigms in liver research.

Dr. Marta Garrido Novelle

Postdoctoral researcher

Dr. Marta Garrido Novelle studied Biology at the Universidad Complutense de Madrid. She obtained her PhD in the laboratory of Professor Carlos Diéguez, world leader in the field of obesity, at Universidade de Santiago de Compostela, achieving the Extraordinary PhD award. Her thesis dissertation was focused on the role of different obesogenic factors and their interaction with estrogen levels in the development of obesity and metabolic syndrome. During this period, she also did a stay in the Dr María del Mar Malagón laboratory at Universidad de Córdoba, in order to apply proteomic techniques in the adipose tissue studies. She worked as a postdoctoral researcher at the National Institute on Aging, NIH, Baltimore, under supervision of Dr Rafael de Cabo from 2014 to 2015, where she has the opportunity to widen her knowledge about the interrelationship between aging and metabolic disorders. In 2015, she obtained the Xunta de Galicia postdoctoral fellow and moved to UK. In the University of Manchester, at the Professor Simon Luckman's lab, she developed a new mouse model to study the brain areas implicated in the regulation of learned food cues and their interaction with homeostatic signals. Then she moved back to Spain, and after a brief stay in the CIMUS (Santiago de Compostela), she has recently joined to Hepatic Regenerative Medicine Group at IMDEA Food Institute.

Dr. Maite Martínez Uña

Postdoctoral researcher

In 2017 I obtained my PhD in Molecular Biology and Biomedicine with *Cum Laude* and international honours at the University of the Basque Country (UPV/EHU). Previously I gained my Pharmacy degree at the University of Salamanca and I studied Biochemistry at the University of the Basque Country (UPV/EHU). Further, I have a Specialisation degree in Science Management and Knowledge Transference by the Polytechnic University of Valencia/INGENIO (CSIC-UPV). For what it is related to my research interests, my thesis was about how S-Adenosylmethionine alters lipid metabolism in the liver and very-low-density lipoproteins (VLDL) clearance. Besides, during my training I spent a few months at the University of Cambridge where I worked characterising the metabolic impact of PGC1β absence in the liver and the adipose tissue. In May 2018 I will join Manuel Fernández Rojo group at IMDEA Food as a postdoc.

Yaiza López Mancheño
Predoctoral researcher

Yaiza López Mancheño has a degree in Biology with the Biosanitary Biotechnology itinerary from the University of Alicante (2015). During 2015 and 2017 she completed a Master's Degree in Bioengineering at the School of Engineering of the Chemical Institute of Sarriá (IQS) belonging to the Ramón Llull University in Barcelona. During the second year of her Master, she acquired the know how in the use of the CRISPR-Cas9 system as a genomic editing tool, being responsible of a research project focused on the identification of the gene responsible of a rare genetic disease through the generation of animal models with the cited CRISPR-Cas9 technology, carried out at the National Center for Biotechnology (CNB-CSIC) in Madrid. In March 2018 she joined the group of Hepatic Regenerative Medicine in IMDEA Food to develop her Doctoral Thesis in this field.

independent researcher

Dr. María Ikonomopoulou
Senior researcher

Dr. Ikonomopoulou is a Senior Research TALENTO Fellow (Program of excellence in research by the Madrid Government), who returned to Europe in 2017 as a "Marie Curie" AMAROUT Fellow to lead the "Translational Venomics" Project. After being awarded her PhD in Biomedical Sciences at the University of Queensland in Australia, Maria found her research niche in "Venomics" and drug discovery. Her primary focus lies on the identification, characterization & development of anticancer, anti-aging, senolytic and immunomodulatory bioactive compounds. For this, Maria utilizes cell and molecular biology, mouse and zebrafish experimental models, medicinal chemistry, nuclear magnetic resonance spectroscopy and structure-activity relationship to reveal and modify the amino acid domains and the structural conformations responsible for the therapeutic activity of venom compounds. Maria is working to build a large and diverse animal venom biobank for therapeutic purposes. Maria´s innovative research has attracted the Biopharma industry, national and international collaborations and received international media attention.

Most relevant publications:

Ikonomopoulou MP*, Fernández-Rojo MA*, Pineda SS* et al. **Gomesin inhibits melanoma growth by manipulating key signaling cascades that control cell death and proliferation.** *Scientific Reports.* 2018 Aug 1;8(1):11519. *Equal contribution.

Fernandez-Rojo, M.A., et al., Ikonomopoulou, M.P*. **Gomesin peptides prevent proliferation of Devil Facial Tumour Disease cells.** *Cell Death Discovery.* February 2018. 14;4:19. *Senior author.

Ikonomopoulou MP and Fernandez-Rojo MA. **The antiproliferative and apoptotic profile of gomesin against DFTD.** (2018). Invited editorial *Cell Death & Disease* 9(8):833.

Main research grants:

Principal Investigator: Maria Ikonomopoulou
Project Title: Venom-compounds with senolytic activity for the treatment of aging- and metabolic-related disorders
Date: 2019-2023
Funded by: Talento Program Grant, Madrid Regional Government (#2018-T1/BIO-11262)

Principal Investigator: Maria Ikonomopoulou
Project Title: An octopus venom-derived peptide as a novel therapeutic lead against melanoma
Date: 2017-2018
Funded by: COFUND European FP7 Program (#291803)

Principal Investigator: Evelyne Deplazes
Co-Investigator: Maria Ikonomopoulou
Project Title: Cell membrane-disrupting peptides from spider venom as novel anticancer drugs
Date: 2017-2018
Funded by: Western Australia Cancer Council

most relevant publications

- Diego A. Calvopina, Mark Chatfield, Anna Weis, Miranda A. Coleman, Manuel A. Fernández-Rojo, Louise E. Ramm, Daniel H. Leung, Peter J. Lewindon and Grant A. Ramm. **miRNA-Seq identifies a serum miRNA panel, which combined with APRI constitutes a new tool to detect and monitor liver disease in paediatric cystic fibrosis.** *Hepatology* Dec;68(6):2301-2316. 2018.

Patents

- **Patent Cooperation Treaty (PCT), PCT/AU2018/050427:** 'Anti-inflammatory agents and methods of treatment'. Authors: Manuel Alejandro Fernandez-Rojo and Grant A Ramm. 9 May 2018 (claims priority from Australian Provisional Application 2017901713, filed 9 May 2017). Anti-Inflammatory Agents and Methods of Treatment of chronic liver diseases.

main research grants

Principal Investigator: Manuel Fernández Rojo
Project Title: **Diet modifications to improve liver regeneration and reduce liver cancer**
Date: 2017-2020
Funded by: Talento Program Grant, Madrid Regional Government (2016/T1-BIO-1854)

Principal Investigator: Manuel Fernández Rojo
Date: 2017
Funded by: QIMR Berghofer Medical Research Institute

Project Title: **HLA-G/H2-BI is Critical for Regulating Inflammation in the Liver**
Date: 2017-2019
Funded by: National Health and Medical Research Council, Australia. NHMRC Grant (APP1124026)

Principal Investigator: Manuel Fernández Rojo
Project Title: **Caveolin-1 dependent regulation of hepatic bile acid singling: understanding metabolic disease**
Date: 2013
Funded by: The Diabetes Australia Research Trust (#Y13G-FERM)

group

Posttranscriptional Regulation of Metabolic Diseases

Group leader: Dr. Cristina Ramírez Hidalgo

objectives

Aging is an important contributor to the etiologies of metabolic decline and related diseases, including cardiovascular disease, T2DM and neurodegenerative disorders. Metabolic diseases are characterized by the failure of regulatory genes or enzymes to effectively orchestrate specific pathways involved in the control of key biological processes. In addition to the classical transcriptional regulators, small non-coding RNAs (microRNAs) and RNA binding proteins (RBPs) play a key role in the regulation of metabolism at the posttranscriptional level, and their function or expression are altered during many pathological states. Our interest in this area is to discover and characterize novel molecular mechanisms that underlie dysregulation of lipid metabolism, glucose homeostasis, and inflammation during the development of pathologies like Alzheimer´s Disease, Diabetes and Atherosclerosis.

Our group will approach these studies from a global perspective. Using a combination of genomics, *in vivo* models of human diseases, biochemistry, bioinformatics and molecular biology, we will investigate networks of non-coding RNAs and RBPs and their target genes to evaluate their impact on biological processes and age-related pathologies.

These areas of investigation are necessary, not only because they address fundamental questions, but also because they will be of undeniable benefit in our efforts to better understand and potentially treat age-associated diseases.

Dr. Cristina Ramírez Hidalgo

Group Leader of the Posttranscriptional Regulation of Metabolic Diseases Group

Cristina M. Ramírez received the her B.S. in Biology in 2001, and her PhD from the University of La Laguna in 2007. In 2010, after a first postdoctoral period at ULPGC, she was recruited by Dr. Carlos Fernández at NYU to study post-transcriptional regulators of lipid and glucose metabolism. She continued her work at Yale where she was appointed to the rank of faculty as an Associate Research Scientist. In 2015, she was awarded the prestigious "AHA´s Scientific Development Grant" and the "AHA-James and Donna Dickenson-Sublett Award for the Advancement of Cardiovascular Research" special award. Dr. Ramírez´s main research has been focus on the characterization of post-transcriptional regulators of ABCA1, and their implication in Atherosclerosis and Alzheimer´s Disease. She has authored more than 40 publications including book chapters, reviews and peer reviewed articles published in top journals such as *Circulation, Circulation Research, Cell Reports, Mol Cell Biol, ATVB, PNAS, Diabetes and Nat Med,* among others. Currently, Dr. Cristina Ramírez is a "TALENTO Program" fellow and leads the group of posttranscriptional regulation of metabolic diseases which a primarily focus on better understanding and deciphering novel molecular mechanisms and potential therapeutic opportunities to treat age-associated pathologies.

www.researchgate.net/profile/Cristina_Ramirez5

Google Scholars;
Total Citation **3319**; *h*-Index: **29**
Scopus;
Total Citation **2628**; *h*-Index: **27**

Dr. Virginia Pardo Marqués

Senior research assistant

Virginia Pardo Marqués studied Biology at the Alcala de Henares University and a Master in Cell Signaling and Therapheutic Targets in the same university (2009). Then, she obtained her PhD in 2014 in the laboratory of Dra. Ángela M. Martínez Valverde at the Institute of Biomedical Research "Alberto Sols" (IIIBm-CSIC) in Madrid, where she was working on the molecular mechanisms of insulin resistance associated to inflammation in obesity and non-alcoholic liver disease states. In 2016, she joined the group of Dra. Rocio García Carbonero at the Hospital 12 de Octubre (Madrid), working on development of new drugs or therapeutic strategies in the field of gastrointestinal tumours, particularly pancreatic and colorectal cancer, and the development of biomarkers of diagnostic. In 2017, she moved to Laboratory of Clinical-Translational Oncology at the Hospital 12 de Octubre, where she focused on several projects aimed to study of new biomarkers for the diagnosis of lung and breast cancer. In January 2019 she joined the Posttranscriptional Regulation of Metabolic Diseases Group at IMDEA Food Institute where her research is focus on the role of novel posttranscriptional regulators of insulin signaling and metabolism.

Mario Fernández de Frutos

PhD student

Mario Fernández de Frutos has a degree in Biology (2015) and a master´s degree in Cell Biology and Genetics (2016) both from the Universidad Autónoma de Madrid. During his degree and master´s research project, he joined at the group of Endocrine and Nervous System Pathophysiology at the Institute of Biomedical Research "Alberto Sols" (IIIBm-CSIC), where he worked on the characterization of double knock out mice model for future studies of the Allan-Herndon-Dudley syndrome, a rare neurological disease due to deficit of thyroid hormone transport. He joined to the posttranscriptional regulation of metabolic disease group at IMDEA Food Institute as Ph.D candidate, focused on elucidate new postranscriptional regulation mechanism of metabolism and their implications in neurodegenerative diseases.

Posttranscriptional Regulation of Metabolic Diseases

Dr. Ana Pérez García
Postdoctoral researcher - CAM

Ana Pérez García has a degree in Biology from University of Salamanca (2012) and a master´s degree in Biomedicine from University Complutense of Madrid (2014). She obtained her Ph.D in Biomedicine from University Complutense of Madrid (2018) and her doctoral thesis focused on role of PAS Kinase in adapting to different nutritional states in the liver and resistance to obesity, by using of PASK-deficient mice. In March 2019 she joined the Posttranscriptional Regulation of Metabolic Diseases group at IMDEA Food Institute.

Marta Torrecillas
Research assistant - CAM

Marta Torrecilla Parra has received a degree in Biochemistry (2016) and a MSc in Neuroscience (2018) from the Autonomous University of Madrid (UAM). During her undergraduate and postgraduate projects, she studied the role of IGF-1 as a neuroprotector in two different contexts: sensorineural hearing loss provoked by exposure to cisplatin (at the at the Institute of Biomedical Research “Alberto Sols” (IIIBm-CSIC) and diabetes and obesity, focusing on the adverse effects of palmitic acid on the astrocytes and neurons of the hypothalamus (at the “Niño Jesús” University Children’s Hospital). In the latter case, she was also interested in the dimorphic responses to high fat diet and the collaboration of estrogens and IGF-1 to exert protective actions in the brain. In June 2019 she joined the group of Posttranscriptional Regulation of Metabolism in IMDEA Food as a research assistant.

main research grants

Principal investigator: Cristina Ramírez Hidalgo
Project Title: **Nuevos reguladores postranscripcionales de enfermedades metabólicas**
Date: 2018-2020
Funded by: Agencia Estatal de Investigación. Convocatoria 2018. Ministerio de Ciencia

Principal investigator: Cristina Ramírez Hidalgo
Project Title: **Novel posttranscripional regulators as molecular links between Diabetes and Alzheimer´s Disease**
Date: 2018-2021
Funded by: Comunidad Autónoma de Madrid. Spain

Principal investigator: Cristina Ramírez Hidalgo
Project Title: **Role of miRNA in controlling LDLR activity and plasma LDL levels**
Date: 2015-2018
Funded by: American Heart Association. USA

Principal investigator: Cristina Ramírez Hidalgo
Project Title: **Role of miR-33 during progression and regression of atherosclerosis**
Date: 2012-2013
Funded by: American Heart Association; FDA Summer 2011 Postdoctoral grant AHA

Principal investigator: Cristina Ramírez Hidalgo
Project Title: **Control de la respuesta inmune en macrófagos por receptores nucleares**
Date: 2009-2011
Funded by: University of Las Palmas de Gran Canaria

Principal investigator: Cristina Ramírez Hidalgo
Project Title: **Mecanismos de neuroprotección: Papel de LXR-PPAR en procesos isquémicos neuroinflamatorios**
Date: 2009
Funded by: University of Las Palmas de Gran Canaria

program highlight

This has been a year of successful and productive consolidation for the Research Program "Precision Nutrition and Ageing". The four Groups that compose this Program have made important contributions to different aspects of the interaction between nutrition and ageing. These include:

- the discovery that a main nutrient sensor gene, SIRT1, is an important protector against cancer (Metabolic Syndrome Group, published in EMBO Reports);
- the observation that enzymes that produce NAD, which is the subtrate of SIRT1, can recapitulate some beneficial effects of reduced caloric intake (Nutritional Interventions Group, published in Aging Cell);
- the identification of protective mechanisms against atherosclerosis mediated by the protein Caveolin-1 (Post-transcriptional Regulation of Metabolic Diseases Group, published in Circulation); and,
- the discovery of the anti-tumoral activity of a particular venom-derived peptide, known as Gomesin (Hepatic Regenerative Medicine, published in Scientific Reports).

In addition, our investigators have secured funding from prestigious competitive agencies, such as two projects from the Spanish National Plan (RETOS), one grant from the Spanish Association Against Cancer (AECC), and one grant from the Australian Government (NHMRC). These awards reflect the demonstrated quality of the research of our scientists and guarantee that they will continue making exciting discoveries during the coming years.

highlight

research program

Precision Nutrition and Cancer

Dr. Ana Ramírez de Molina
Deputy Director of IMDEA Food, Director of the Precision Nutrition Program and Cancer. Group Leader of the Molecular Oncology Group

Dr. Ana Ramírez de Molina has developed her scientific career in the field of lipid metabolism, molecular oncology, nutrition and cancer. She has worked as an associated researcher in the Traslational Oncology Unit CSIC-UAM-La Paz Hospital (Madrid), and has performed long postdoctoral stays at Cancer Research UK Centre for Therapeutics (London) and the Molecular Pathology Division of the Sloan Kettering Cancer Center (New York). She has published more than 60 scientifi c articles in her research field, is co-inventor of 6 patents in different phases of exploitation by a biotechnology company and has supervised 6 PhD Thesis. Several of her patents promoted the creation of a spin-off company from CSIC focused on the development of new tumour markers and therapies in Cancer in which she was former Director of Research, Development and Innovation for more than 3 years. She joined IMDEA Food Institute in 2010, where she leads the Programe of Precision Nutrition and Cancer. From 2011 she has been the Coordinator of Research, Development and Transfer, and in 2014 was promoted to Deputy Director of the Institute. In 2002 she was awarded with the prize Young Researchers MSD, in 2003 the ex- traordinary doctorate recognition as the best Thesis of her promotion in Molecular Biology, and in 2016 the 8th March distinction from the Community of Madrid as an outstanding woman in Science.

objectives

The objective of this Program is to study the molecular bases explaining how diet and lifestyle constitute key factors in cancer prevention or exert essential function as coadjutants for cancer treatments during and after therapy.

Metabolic reprogramming is a hallmark of cancer in which nutritional strategies might play a key role. Knowledge of the precise (molecular) mechanism of action of bioactive compounds present in foods, the metabolic profile and its impact in the personal susceptibility to develop cancer or to respond to specific treatments, as well as the development of personalized nutritional strategies for specific conditions, will result in highly effective products and strategies for an integrative precision approach for cancer patients.

group

Molecular Oncology

Group leader: Dr. Ana Ramírez de Molina

objectives

The group is currently focused on **three research topics:**

1. **Lipid metabolism alterations in cancer:** identification of new biomarkers and therapeutic targets in diet-related tumors such as colon or pancreatic cancer. We are especially interested in identifying metabolic profiles associated to the disease progression together with treatment response and analysing their role from in-vitro cell systems to organoids and cancer patients. These analyses are mainly focused on the identification of metabolic pathways and distinctive oncometabolites that may constitute novel markers and targets for the development of future cancer precision therapies.
2. **Metabolic reprogramming** analysis in cancer and its relationship with other associated diseases such as obesity. We are interested in the molecular basis underlying the link between obesity and cancer, especially on the role of fatty acid metabolism and cholesterol reprogramming and the tumor progression.
3. **Precision nutrition strategies in cancer.** Analysis of the activity and mechanism of action of bioactive compounds and natural extracts as possible effective dietary supplements in the prevention and treatment of cancer and associated metabolic disorders. The objective is to establish the scientific basis for the development of precision nutrition strategies in oncology by including or avoiding specific products due to their effect on specific cancer signaling pathways.

Dr. Marta Gómez de Cedrón Cardeñosa
Senior postdoctoral researcher

PhD in Molecular Biology (UAM, 2004), Marta Gómez de Cedrón currently focuses her scientific career in the study of metabolic alterations in cancer, as well as in the identification of new treatments and biomarkers in cancer patients. Her PhD training was performed at the National Centre of Biotechnology (CNB-UAM-CSIC). In 2005, she obtained a postdoctoral Fullbright Grant and she moved to the Institute for Biological Sciences (IBS-NRC) in Canada at Danica Stanimirovic's lab to investigate the role of Grb7 mutants in angiogenesis in glioblastomas. From 2006-2013, she joined Dr. Marcos Malumbres' group at the Spanish National Cancer Research Centre (CNIO) investigating the role of mir203 (mouse models for depletion (cKO) and overexpression (iKI) in skin cancer and leukaemias. She also investigated the regulation of cell cycle regulators by microRNAs. In 2013, she joined the Molecular Oncology and Nutritional Genomics of Cancer Group (Precision Nutrition and Cancer), to study cell metabolism alterations and metabolites implicated in pathophysiological processes in chronic diseases such as metabolic syndrome, obesity, and cancer. More than fifteen years of experience as a researcher in various fields of science: cancer, cell metabolism, cell cycle, microRNAs, bioactive compounds, lipid metabolism, precision nutrition ..., from cell culture to animal models and human clinical trials, being the author of more than 25 scientific publications including book chapters. She also participates in the scientific dissemination and the training of undergraduate, master's and predoctoral students.

Dr. Cristina Aguirre Portolés
Postdoctoral researcher

Dr. Cristina Aguirre Portolés, BS in Biology at Autonoma University in Madrid, started her scientific career at the Spanish National Cancer Institute in 2006. Her studies were mainly focused in the role of the mitotic protein TPX2 both in mouse development and tumorogenisis in adults. Part of this research was performed at the Max Plank Institute of Molecular Cell Biology and Genetics under the supervision of Dr. Anthony Hyman. After obtaining her PhD degree in Molecular Biology and Genetics she joined the European Molecular Biology Laboratory (EMBL) in 2012. She focused her work in the implication of chromosomal instability in the initiation, progression and regression of non-small-cell lung cancer (NSCLC). She joined IMDEA in 2014 as a postdoctoral researcher focusing her studies in the association between metabolic syndrome, obesity and cancer.

Dr. Lara P. Fernández Álvarez
Postdoctoral researcher

Lara P. Fernández Álvarez, obtained her PhD in Biochemistry, Molecular Biology and Biomedicine from the Autonomous University of Madrid (UAM) and the Spanish National Cancer Research Centre (CNIO), Spain, in 2009. Her thesis focused on the characterization of genetic susceptibility to malignant melanoma. Since 2010, she had conducted postdoctoral research at the Molecular and Cell Biology of the Thyroid group in the Biomedical Research Institute (IIBm-CSIC-UAM), in Madrid. In December 2014 she joined IMDEA Molecular Oncology Cancer Group where her research is focused on the study of molecular biomarkers of cancer risk, prognostic factors and resistance to treatment. She has a solid and multidisciplinary professional experience in Cancer biology, Cancer Susceptibility, Oncology, Melanoma, Human Genetics and Molecular Endocrinology. Additionally, she has published more than twenty research articles in international journals, thirteen of them as first author.

Dr. Clara Ibáñez Ruiz
Postdoctoral researcher

Clara Ibáñez Ruíz received her PhD in Chemistry with International Mention from the University of Alcala (UAH) in 2013. Her thesis was awarded with the special mention by the UAH and for the Best Doctoral Thesis in Analytical Methods in Biochemistry (Prize Juan Abelló Pascual II) by the Royal Academy of Doctors of Spain. Her scientific career has been primarily focused on the development and application of metabolomic strategies directed towards the search for metabolic biomarkers related to the onset and / or development of different diseases, diagnosis, and preven- tive effect of food ingredients. She has worked in the IMDEA Food Institute as a postdoctoral researcher with a Juan de la Cierva contract. Her scientific work is reflected in more than 30 publications and in the dissemination of results in more than 30 congresses.

Dr. Ruth Sánchez Martínez
Associate researcher

Dr. Ruth Sánchez Martínez, obtained her BSc at the Oviedo University (2001). Her PhD training (2002-2007) was focused on the molecular mechanisms of action of nuclear receptors of thyroid hormone, vitamin D and retinoids under the supervision of Prof. Ana Aranda at the IIB Madrid (CSIC). In 2008 she joined, as a postdoctoral fellow, Dr. Marcos Malumbres group at the CNIO to study the role of new proteins involved in mitotic exit regulation of importance in cancer therapy using genetically modified mice. She also studied microRNA regulation of several important cell cycle regulators. In the last years she has published several articles in prestigious international journals and she took part in both national and international research grants and consortiums. In 2012 she joined IMDEA to study new biomarkers and bioactive compounds in human cancer.

Jorge Martínez Romero
Predoctoral researcher

Jorge Martínez Romero is currently working on his Doctoral Thesis at the IMDEA Food Institute's Molecular Oncology Group, after completing the Diploma in Human Nutrition, the Degree in Human Nutrition and Dietetics and a Masters in Agricultural Chemistry and Novel Foods from the Universidad Autónoma de Madrid (2014). He holds a Bachelor of Economics Science ICADE E-2 degree from Pontificia University of Comillas (1989), and has led several companies related to the manufacture and assembly of machinery for the food industry. He currently combines his work in the field of research with his business administration.

Silvia Cruz Gil
Predoctoral researcher

Silvia Cruz Gil obtained her Biochemistry Degree at Universidad Complutense de Madrid in 2013. During the last two years of her degree she collaborated with the Biochemistry II Department at Pharmacy School in Universidad Complutense de Madrid studying the molecular biology of hepatocellular carcinoma. Later, she continued her training by obtaining a Master in Molecular Biosciences at Universidad Autónoma de Madrid in 2014. Meanwhile, Silvia joined ALGENEX (Alternative Gene Expression S.L.) in association with I.N.I.A. (National Institute of Agricultural and Food Research and Technology) for an internship. During this period she worked in the development of vectored vaccines. In October 2014, she started studies conductive to her PhD Degree at IMDEA Food Institute in the Molecular Oncology Group. Her research primarily focuses on the role of the lipid metabolism in tumor progression. In April 2016 she obtained a Boehringer Ingelheim Travel Grant to perform a short research stage in the University Hospital Carl Gustav Carus (Dresden, Germany) to learn organoids technique under the supervision of Dr. Daniel Stange. Her thesis oral defense will be held at the beginning of 2019 titled "Lipid metabolism alterations in colorectal cancer: potential clinical relevance in the prognosis of the disease".

Lamia Mouhid Al Achbili
Predoctoral researcher

Lamia Mouhid obtained her Biotechnology degree at the University of Lleida in 2010, a Master in Administration and Innovation in the Food Industry at the same university, and a Master in Pharmacology at the University Autónoma de Madrid. During 2010 and 2011 she worked at the R&D department in a private company, where she developed a fermented beverage from fruit juice. In 2012, she worked in a pharmaceutical company and in 2013 at La Princesa Hospital and at the University of Montreal, where she studied molecular mechanisms associated with neurodegenerative diseases and the efficacy of neuroprotective drugs. In November 2014, Lamia joined IMDEA Food as a predoctoral researcher, where she is currently developing customized nutritional products for patients with gastric cancer, thesis defended on January 2019.

Adriana Quijada Freire
Research assistant

Adriana Quijada obtained her degree in Sanitary Biology at the University of Alcalá. She completed her Master's degree on Immunology at the University Complutense de Madrid. In February of 2016, she joined the group of Antigenic Processing, at the National Centre for Microbiology (ISCIII), where she did her degree and master's research projects. During this time, she carried out different research lines about viral immunology and antigenic processing and presentation. Here, she contributed to preliminary studies about in vivo monitoring of the human respiratory sincitial virus infection and the improving of techniques and procedures increasing the presentation of viral ligands on the surface of the cells and their detection with mass spectrometry. Currently, Adriana works in Dr. Moisés Laparra's group of Molecular Immunonutrition at IMDEA Food focused immunonutritional strategies for a selective modulation of the neuro-immune axis and its impact in cognitive function.

Elena García Carrascosa
Research assistant

Elena García Carrascosa obtained her Biology Degree in 2013 at Complutense University in Madrid specializing in Health Biology, in 2013 she made a practical stay at the Clinical Analysis Laboratory of Hospital General Mancha Centro. In 2015 she obtained a Master degree of Food Quality and Innovation at the University of Valladolid. Meanwhile, she joined Biosearch Life as a student in practice, she took part in the characterization of probiotic bacteria in breast milk samples. In February 2016, she joined IMDEA Food Institute where she is working in GENYAL Platform as a research assistant.

Students

Sara Garrido Galand
Grado de ciencias de la alimentación/ Curso 2018-2019. Universidad Autónoma de Madrid

María Victoria Martínez
Extracurricular training. Universidad Autónoma de Madrid

María Fernández Valero
Grado en Ciencia y tecnología de Alimentos/ Curso 2017-2018. Universidad Complutense de Madrid

ONCOGENOM and their members are included in the **ALIBIRD2020-CM** project. **"Precision nutrition therapeutic formulas for cancer"**.

Call for R&D Technology Programs of 2018 of the Community of Madrid and co-financed with Structural Funds of the European Union.

Web:
http://alibird.org/2020-CM/

ALIBIRD

most relevant publications

- Aguirre-Portolés C, Feliu J, Reglero G, Ramírez de Molina A. **ABCA1 overexpression worsens colorectal cancer prognosis by facilitating tumour growth and caveolin-1-dependent invasiveness, and these effects can be ameliorated using the BET inhibitor apabetalone.** *Mol Oncol.* 2018 Oct;12(10):1735-1752. doi: 10.1002/1878-0261.12367. Epub 2018 Sep 17.

- Fernández LP, Sánchez-Martínez R, Vargas T, Herranz J, Martín-Hernández R, Mendiola M, Hardisson D, Reglero G, Feliu J, Redondo A, Ramírez de Molina A. **The role of glycosyltransferase enzyme GCNT3 in colon and ovarian cancer prognosis and chemoresistance.** *Sci Rep.* 2018 May 31;8(1):8485. doi: 10.1038/s41598-018-26468-4.

- Martinez-Romero J, Bueno-Fortes S, Martín-Merino M, Ramirez de Molina A, De Las Rivas J. **Survival marker genes of colorectal cancer derived from consistent transcriptomic profiling.** *BMC Genomics.* 2018 Dec 11;19(Suppl 8):857. doi: 10.1186/s12864-018-5193-9.

- Cruz-Gil S, Sanchez-Martinez R, Gomez de Cedron M, Martin-Hernandez R, Vargas T, Molina S, Herranz J, Davalos A, Reglero G, Ramirez de Molina A. **Targeting the lipid metabolic axis ACSL/SCD in colorectal cancer progression by therapeutic miRNAs: miR-19b-1 role.** *J Lipid Res.* 2018 Jan;59(1):14-24. doi:10.1194/jlr.M076752. Epub 2017 Oct 26.

- Cortés-Martín A, García-Villalba R, González-Sarrías A, Romo-Vaquero M, Loria-Kohen V, Ramírez-de-Molina A, Tomás-Barberán FA, Selma MV, Espín JC. **The gut microbiota urolithin metabotypes revisited: the human metabolism of ellagic acid is mainly determined by aging.** *Food Funct.* 2018 Aug 15;9(8):4100-4106. doi: 10.1039/c8fo00956b.

- Gómez de Cedrón M, Vargas T, Madrona A, Jiménez A, Pérez-Pérez MJ, Quintela JC, Reglero G, San-Félix A, Ramírez de Molina A. **Novel Polyphenols That Inhibit Colon Cancer Cell Growth Affecting Cancer Cell Metabolism.** *J Pharmacol Exp Ther.* 2018 Aug;366(2):377-389. doi: 10.1124/jpet.118.248278. Epub 2018 Jun 5.

- Marcos-Pasero H, Aguilar-Aguilar E, de la Iglesia R, Espinosa-Salinas I, Gómez-Patiño M, Colmenarejo G, Ramírez de Molina A, Reglero G, Loria-Kohen V. **Association of calcium and dairy product consumption with childhood obesity and the presence of a Brain Derived Neurotropic Factor-Antisense (BDNF-AS) polymorphism.** *Clin Nutr.* 2018 Nov 20. pii: S0261-5614(18)32536-6. doi: 10.1016/j.clnu.2018.11.005. [Epub ahead of print]

- Mendiola M, Redondo A, Heredia-Soto V, Herranz J, Berjón A, Hernández A, Miguel-Martín M, Crespo R, Barriuso J, Cruz P, Yébenes L, Peláez-García A, Castelo B, DE Molina AR, Feliu J, Hardisson D. **Predicting Response to Standard First-line Treatment in High-grade Serous Ovarian Carcinoma by Angiogenesis-related Genes.** *Anticancer Res.* 2018 Sep;38(9):5393-5400. doi: 10.21873/anticanres.12869.

main research grants

Principal Investigator: Ana Ramírez de Molina
Project Title: **Formulacion de productos alimentarios para la prevencion y el tratamiento Dirigido de enfermedades crónicas relacionadas con el metabolismo. (FORCHRONIC)**
Date: 2016-2019
Funded by: Ministerio de Economía y Competitividad.Programa Estatal de investigación, desarrollo e innovación orientada a los retos de la sociedad (AGL2016-76736-C3-3-R)

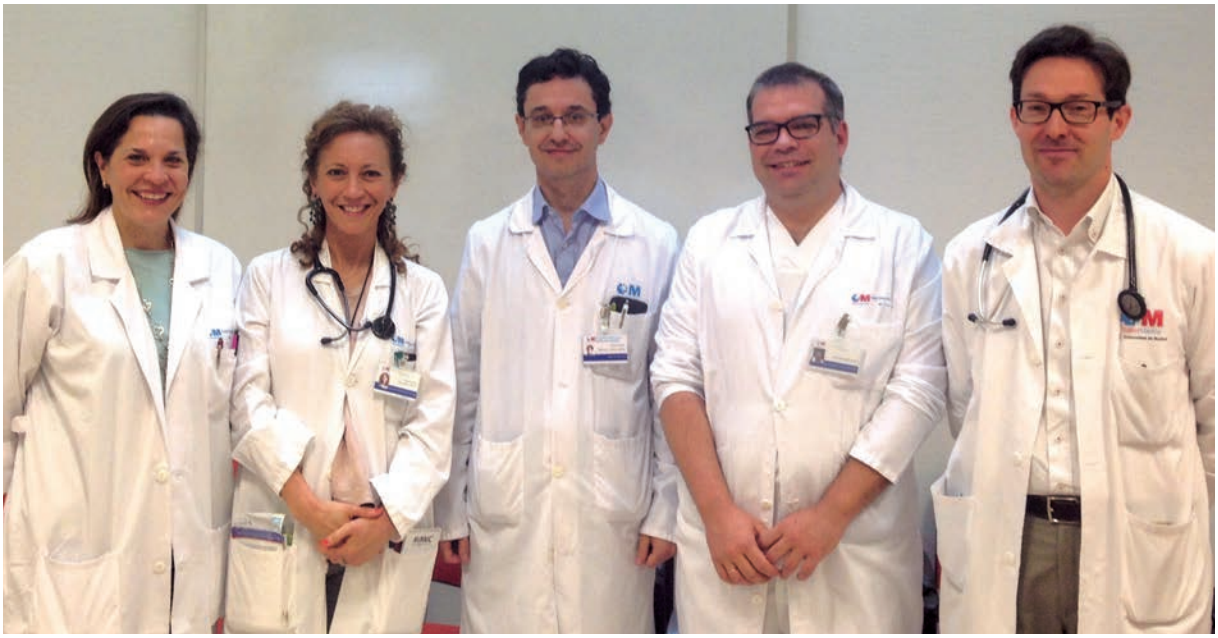
Principal Investigator: Ana Ramírez de Molina
Project Title: **Estrategias para promocionar la calidad de vida de pre-seniors y seniors basadas en la Nutrición de Precisión (NUTRIPRECISIÓN)**
Date: 2017-2020
Funded by: Centro para el Desarrollo Tecnológico Industrial (CDTI). Ministerio de Economía y Competitividad (CDTI IDI 20141213)

Principal Investigator: Ana Ramírez de Molina
Project Title: **Alimentos funcionales y estrategias nutricionales eficaces para la prevención y tratamiento de enfermedades crónicas (ALIBIRD III)**
Date: 2014-2018
Funded by: Consejería de Educación e Investigación. Comunidad de Madrid (ALIBIRD III P2013/ABI-2728)

group

Clinical Oncology

Group leaders: Dr. Enrique Casado Sánz and Dr. Jaime Feliú Batle



objectives

Cancer is a complex disease whose characteristics, prognosis and response to different treatments depend on several factors, which makes it imperative that cancer research must be done in a multidisciplinary way and with the joint effort of many researchers.

Under the premise that diet and lifestyle are key factors in both cancer prevention and treatment, our line of research focused on cancer-oriented nutrigenomics aims to deepen the knowledge of this pathology by studying highly efficient products and personalized strategies focused on the implementation of a Precision Nutrition that complements the individualized cancer treatments. To do this, we design and carry out clinical trials and nutritional studies that seek to find better ways to prevent, diagnose and treat cancer.

Our goal is to efficiently apply the knowledge of cellular, molecular, physiological, chemical or genetic processes to the search of more effective treatments or prevention and diagnostic techniques that improve the quality of life of the patients with whom we work.

Dr. Enrique Casado Sánz
Associate researcher, IMDEA Food. Group Leader of the Clinical Oncology Group

Dr. Enrique Casado Sánz: Enrique Casado finished his undergraduateb studies in Medicine and Surgery (1992) and Biohealth Sciences (1993) in Complutense University of Madrid (Universidad Complutense de Madrid) (UCM). He obtained the Degree of Doctor of Medicine (1994) with Extraordinary Prize granted by UCM. He did his medical residency in La Paz University Hospital (Hospital Universitario de la Paz) (1993-97) and Master's Degree in Palliative Care (1997) in Universidad Autónoma de Madrid (UAM), in combination with extended postdoctoral internships in University of Alabama (Birmingham) and University of California (San Francisco). He was the attending physician of Medical Oncology in gastrointestinal and thoracic cancer and laboratory coordinator for the Translational Oncology Group of Hospital Universitario de la Paz (Madrid), He is an associate professor of UAM and visiting professor of UCM. He is currently the Director of the Medical Oncology Department at the Hospital Universitario Infanta Sofía (HUIS) de Madrid, Coordinating Professor of Oncology in the Universidad Europea de Madrid and Precision Oncology Laboratory (HUIS) Director. He has received 7 awards in recognition of his research work from institutions as prestigious as the American Society of Clinical Oncology.

Dr. Jaime Feliú Batlle
Associate researcher, IMDEA Food. Group Leader of the Clinical Oncology Group

Dr. Jaime Feliú Batlle holds a Degree in Medicine and Surgery from Universidad Complutense de Madrid issued in 1982. He specialized in Medical Oncology in Hospital Universitario de la Paz, where he is currently the Director of Medical Oncology Department. He is a professor of Oncology in the Medicine Area of Universidad Autónoma de Madrid (UAM) and Director of Master's Degree in Palliative Care and Treatments for Cancer Patient Support of UAM. Furthermore, he is the current president of the Multidisciplinary Spanish Group of Digestive Cancer (GEMCAD).He has participated as a principal investigator or co-investigator in more than 70 phase I, II and III trials. He has written or co-written more than 200 articles for national and international journals, more than 60 book chapters and has presented a large number of communications in national and international congresses.

Dr. María Sereno Moyano
Associate researcher, IMDEA Food

María Sereno finished her undergraduate studies in Medicine and Surgery (1999) in Universidad Autónoma de Madrid (UAM). She did her medical residency in La Paz University Hospital (2000-2003) and a Master's Degree in Palliative Care (1997) in Universidad Autonoma de Madrid (UAM). She obtained the Degree of Doctor of Medicine (2005). She did a postdoctoral internship in Thoracic Program with Prof. S. Antonia in Moffit Comprenhensive Cancer Center in South Florida University (Tampa, Florida). She did a Master's Degree in Molecular Oncology in the Oncology Research National Cancer Institute (2007-2009) in Madrid and another Master's Degree in Immunooncology in Medical Department in Alcalá University (2017). She was the attending physician of Medical Oncology in Gastrointestinal and Thoracic Cancer unit from 2004-2008 and then, she moved to Infanta Sofía University Hospital (San Sebastian de Los Reyes, Madrid), where she is working in Thoracic and Genitourinary Tumors section. She is associate professor in European University of Madrid (UEM). She had published several papers and has participated in different traslational oncology projects, some of them with public support, as FIS and Plan Nacional. Currently his line of research focuses on lung cancer.

Dr. Ana María Jiménez Gordo
Associate researcher, IMDEA Food

Graduated in Surgery and Medicine at Universidad Autonoma Madrid (1994). Specialty in Medical Oncology at Hospital Universitario La Paz (1998). PhD in Medicine at Universidad Autonoma Madrid (2004). Master in Palliative Care of Neoplastic Patient at Hospital La Paz (1998). Master in Molecular Oncology at CNIO (2009). Associate Profesor in Oncology at Universidad Europea Madrid from 2013. She has worked as Medical Oncologist in Hospital La Paz (1990-2000), Hospital Alcorcon (2000-2005), Hospital Getafe (2005-2013) and Hospital Infanta Sofía from 2013. Pfeizer Fundation Prize of Clinical Investigation in 2012. She has more than 80 national and international publications, congress communications and book chapters. She is member of Spanish Society of Clinical Oncology and has collaborated in several work groups of long cancer survivors, translational investigation, geriatric Oncology and doing some Clinical Guideliness. Currently his line of research focuses on colorectal cancer, and collaborates in several clinical trials promoted by IMDEA Food.

Dr. César Gómez Raposo
Associate researcher, IMDEA Food

César Gómez Raposo obtained his Medicine Degree at Universidad Autónoma de Madrid in 2002 and later his Medical Oncology speciality at Hospital Universitario La Paz in 2007. He performed his doctoral thesis (Excellent Cum Laude) in 2012 focused on ovarian cancer. Since 2008 he worked as medical oncologist at Hospital Universitario Infanta Sofía in San Sebastián de los Reyes, mainly in breast and gynecological cancer. As a result of this activity has participated in more than 25 papers published in peer reviewed medical or scientifi c journals, and has taken part in in- ternational clinical trials in breast and gynecological cancer. Currently, her line of research focuses on breast cancer and gynecological cancer, and leads several clinical trials that relate diet with prognostic and predictive factors of response to cancer treatment.

Dr. Juan Moreno Rubio
Postdoctoral researcher, IMDEA Food

Senior researcher in the Clinical Oncology Group ("Precision Nutrition and Cancer" Program) of IMDEA food. Coordinator of the Laboratory of Precision Oncology (POL) of the Infanta Sofía University Hospital (HUIS). Degree in Molecular Biology and Biochemistry from the Autonomous University of Madrid in 2004, and Doctorate in Biochemistry, Molecular Biology and Biomedicine (Excellent Cum Laude) by the Autonomous University of Madrid in 2010 with award for the best doctoral thesis (IISFJD). Formerly coordinator of the Laboratory of Translational Oncology at the La Paz University Hospital (HULP, IdiPaz, group 32). Author or co-author in more than 27 articles in international journals, registered 3 patents and researcher in multiple studies and competitive clinical and translational projects. Currently focused on efficiently and quickly transform the knowledge obtained from basic research in clinical applications that result in health benefits.

main research grants

Principal Investigator: Enrique Casado Sáenz
Project Title: **Estudio de volátiles en el aliento para el diagnóstico precoz del cáncer colorrectal**
Date: 2014-2015
Funded by: Asociación Española contra el cáncer

Principal Investigator: Enrique Casado Sáenz
Project Title: **Validación de una firma génica predictiva de respuesta en cáncer de recto (FIS PI11/02695)**
Date: 2012-2015
Funded by: Instituto de Salud Carlos III

Principal Investigator: María Sereno Moyano
Project Title: **Identificación de marcadores genéticos predictivos de neurotoxicidad de oxaliplatino (FIS PI17-00087)**
Date: 2013-2016
Funded by: Instituto de Salud Carlos III

Principal Investigator: Jaime Feliu Batlle
Project Title: **Análisis de biomarcadores relacionados con la eficacia de las terapias dirigidas al cáncer colorectal (FIS PI13/01659)**
Date: 2014-2017
Funded by: Instituto de Salud Carlos III

Principal Investigator: Guillermo Reglero
Co-Participant Institutions: Hospital Universitario Infanta Sofía, Hospital Universitario La Paz
Project Title: **Fórmulas terapéuticas de nutrición de precisión para el cáncer (ALIBIRD2020-CM)**
Date: 2019-2022
Funded by: Consejería de Educación e Investigación. Comunidad de Madrid (ALIBIRD2020-CM P2018/BAA-4343)

group

Molecular Immunonutrition

Group leader: Dr. Moisés Laparra Llopis

Dr. Moisés Laparra Llopis
Group Leader of the Molecular Immunonutrition Group

José Moisés Laparra Llopis holds a PhD in Pharmacy gained during his stay at the High Research Council of the Spanish Government. His scientific career is focused on the field of intestinal homeostasis and the cross-talk within gut-liver axis. The novelty and scientific and social impact of his studies was used by the European Food Safety Authority to establish recommendations concerning staple foods. A continuous contact and interaction with internationally renowned research groups constitutes a constant in Dr. Laparra's career. He held a leading position on prebiotic research awarded by The Fulbright Commission to conduct postdoctoral research in the Food Science Department at Cornell University. Additionally, he participated in teaching activities that end up in a renowned honor thesis awarded by the professional organization for food science and technology professionals in the U.S. This experience favored his incorporation to the Institute of Translational Immunology at the University Medical Center of Mainz University as independent researcher. Dr. Laparra has published over 70 scientific articles and book chapters. He has overseen several precompetitive public funded projects. As senior researcher at IMDEA Food he develops immunonutritional-based precision strategies to tumor suppressioner.

objectives

Iimmunonutritional-based precision intervention strategies to selectively modulate innate immune responses preventing/treating the risk for severity of diseases affecting the gut-liver axis.

Understanding of how tolerance and immunity regulate antitumoral responses, among other, this project aims at elucidating innate cell biology as a path forward to develop durable, long-lasting immune responses.

To define the extent to which immunonutritional-based modulation can be translated into physiological benefits within the neuro-immunometabolic axis.

most relevant publications

- Fotschki B, Laparra JM, Sójka M. **Raspberry Polyphenolic Extract Regulates Obesogenic Signals in Hepatocytes.** *Molecules.* 2018, 23(9). pii: E2103.
- Laparra JM, Haros M. **Inclusion of Whole Flour from Latin-American Crops into Bread Formulations as Substitute of Wheat Delays Glucose Release and Uptake.** *Plant Foods Hum Nutr.* 2018, 73(1):13-17.
- Gimenez-Bastida JA, Martinez Carreras L, Moya-Pérez A, Laparra Llopis JM. **Pharmacological Efficacy/Toxicity of Drugs: A Comprehensive Update About the Dynamic Interplay of Microbes.** *J Pharm Sci.* 2018, 107(3):778-784.
- Giménez-Bastida JA; José Moisés Laparra Llopis; Baczek N; Zielinski H. **Buckwheat and buckwheat enriched products exert an anti-inflammatory effect on the myofibroblasts of colon CCD-18Co.** *Food Funct.* 2018;9(6): 3387 3397.

main research grants

Principal Investigator: Dra. Claudia Monika Haros
IMDEA Food participant investigator: Dr. José Moisés Laparra Llopis
Project Title: **Ia ValSe-Food. Desarrollo de ingredientes alimentarios a partir de cultivos ancestrales iberoamericanos**
Date: 2019-2022
Funded by: CYTED

group

Computational Biology

Group leader: Dr. Enrique Carrillo de Santa Pau

objectives

Our group aims to develop and apply integrative bioinformatic analyses to study complex molecular relationships between nutrition and chronic diseases. This will allow us to develop precision nutrition strategies to complement patient oriented treatments based on individual molecular background. Our research is focused on:

1. The study of the nutrition-disease interaction through epigenetics, transcriptional and interindividual variability.

2. The study of the relationships between microbiome and cancer cells and its potential as a modular system through nutrition for the prevention and treatment of complex diseases.

3. The development of bioinformatic tools to integrate large genomic, epigenomic and clinical datasets.

In addition, the group is active in the TransBioNet (Spanish National Bioinformatic Institute), FNS-Cloud networks and COST Action CA18131 (“Statistical and machine learning techniques in human microbiome studies”). The group members participate in innovation and education activities of EIT Food, like WeLead, AnnualFoodAgenda or MakeIT, being responsible for organizing the Madrid Summer School of the Global Food Venture Program -EIT Food for future food entrepreneurs.

Computational Biology

Dr. Enrique Carrillo de Santa Pau
Group Leader of the Computational Biology Group

Dr. Enrique Carrillo de Santa Pau, obtained his Bachelor's degree (BSc) at the "Complutense" University (Madrid) in 2002. He completed a PhD training program (2002-2007) in Biochemistry and Molecular Biology at "Ramón y Cajal" Hospital. In 2007, he moved at Primary Health Care Service in Madrid to study Diabetes Mellitus as part of MADIABETES. He got an MsC in Bioinformatics and Computational Biology (UCM, 2009). In 2010 he joined Dr. Stunnenberg's group at Nijmegen Centre for Molecular Life Sciences (The Netherlands) to study the role of 5hmC from a genome wide perspective. In 2011, he moved at Spanish National Cancer Research Centre (CNIO) where he was responsible for the bioinformatic analyses at the Carcinogenesis Epithelial Group lead by Dr. F.X. Real. In addition, he participated in the analysis of large-scale 'omic' datasets from the EU high impact initiative: "BLUEPRINT of Haematopoietic Epigenomes", within Dr. A. Valencia's group. From April 2018 he joined IMDEA Food Institute to lead the Computational Biology Group.

Teresa Laguna Lobo
Postdoctoral researcher

Dr. Teresa Laguna obtained her BSc in Biochemistry in 2005 and her PhD in Immunology in 2013 at the Complutense University of Madrid. In 2015 she finished a MSc in Omics Data Analysis at the University of Vic, when she carried out a project in finding relevant signatures in the different Neuroblastoma stages in the group of Dr. Manel Esteller at IDIBELL (Hospitalet de Llobregat). After finishing her MSc, she worked there in different projects in epigenomics analysis in cancer as a postdoctoral researcher. In 2016, she started as a postdoctoral bioinformatician at the Institute of Molecular Biology in Mainz (Germany) where she participated in proteomics pipeline development and data analysis, and leaded the bioinformatic efforts in gene annotation improvement in vertebrate species by integration of proteomics and RNA-seq data. In 2019, she moved to IMDEA where she is focused in applying human epi-genome inter-variability for effective personalized nutrition strategies.

Laura Judith Marcos Zambrano
Postdoctoral researcher

Dr. Laura Judith Marcos Zambrano obtained her BSc in Bioanalysis at the Central University of Venezuela (UCV). She has a master degree in Cellular Signalling, she obtained her Ph.D. at the Universidad Complutense de Madrid in 2017, her doctoral investigations were carried out in Hospital Gregorio Marañon (FIB-HGM), and her work was focused in the characterization of yeasts causing fungemia: identification of species and antifungal susceptibility, molecular epidemiology, and virulence factors. She has developed her scientific career in the field of molecular microbiology, mainly in lines related to the study of the epidemiology of fungal infections, molecular studies of resistance, antifungal susceptibility, biofilm formation, diagnostic improvements, pathogenicity, and molecular characterization of strains (genotyping). She has also worked in the invertebrate model of Galleria mellonella in a pre-doctoral stay at the Universitá degli Studi di Milano (Milan, Italy). She joined the Computational Biology group at IMDEA Food in 2018, and her work is focused to lead the area of microbiome modulation by bioactive compounds with 'in silico' developments.

Students

María Tarradas Alemany
Undergraduate -
Universitat de Lleida

most relevant publications

- Cobo, Isidoro; Martinelli, Paola; Flan-dez, Marta; Bakiri, Latifa; Zhang, Mingfeng; Carrillo-de-Santa-Pau, Enrique; Jia, Jinping; Sánchez-Arévalo Lobo, VJ; Megías, Diego; Felipe, Irene; **Transcriptional regulation by NR5A2 links differentiation and inflammation in the pancreas.** *Nature*, 554, 7693, 533, 2018, Nature Publishing Group.

- Sánchez-Arévalo Lobo, VJ; Fernández, Luis César; Carrillo-de-Santa-Pau, Enrique; Richart, Laia; Cobo, Isidoro; Cendrowski, Jaroslaw; Moreno, Ulisses; del Pozo, Natalia; Megías, Diego; Bréant, Bernardette. **c-Myc downregulation is required for preacinar to acinar maturation and pancreatic homeostasis.** *Gut,* 67, 4, 707-718, 2018, BMJ Publishing Group.

- Grassi, Luigi; Pourfarzad, Farzin; Ullrich, Sebastian; Merkel, Angelika; Were, Felipe; Carrillo-de-Santa-Pau, Enrique; Yi, Guoqiang; Hiemstra, Ida H; Tool, Anton TJ; Mul, Erik. **Dynamics of transcription regulation in human bone marrow myeloid differentiation to mature blood neutrophils.** *Cell reports*, 24, 10, 2784-2794, 2018, Cell Press.

- Salinero-Fort, Miguel Angel; Gómez-Campelo, P; San Andrés-Rebollo, F Javier; Cárdenas-Valladolid, Juan; Abánades-Herranz, Juan C; de Santa Pau, Enrique Carrillo; Chico-Moraleja, Rosa M; Beamud-Victoria, Domingo; de Miguel-Yanes, Jose M; Jimenez-Garcia, Rodrigo. **Prevalence of depression in patients with type 2 diabetes mellitus in Spain (the DIADEMA Study): results from the MADIABETES cohort.** *BMJ open*, 8, 9, e020768, 2018, British Medical Journal Publishing Group.

- Marcos-Zambrano, LJ; Gómez, A; Sánchez-Carrillo, C; Bouza, E; Muñoz, P; Escribano, P; Guinea, J. **Isavuconazole is highly active inávitro against Candida species isolates but shows trailing effect**. *Clinical Microbiology and Infection,* 22, 12, 1343. e1-1343. e4, 2018, Elsevier.

main research grants

Participant Investigator: Enrique Carrillo de Santa Pau
Project Tilte: **Fórmulas terapéuticas de nutrición de precisión para el cáncer - ALIBIRD2020-CM**
Date: 2019-2022
Funded by: Comunidad de Madrid (P2018/BAA-4343)

Participant Investigator: Enrique Carrillo de Santa Pau
Project Title: **Nutritional strategies and bioactive compounds to target lipid metabolism alterations in cancer: Platform of Patient derived Paired Organoids for Precision Nutrition**
Date: 2019-2021
Funded by: Fundación Ramón Areces

Participant Investigator: Enrique Carrillo de Santa Pau
Project Title: **COST Action CA18131 ("Statistical and machine learning techniques in human microbiome studies")**
Date: 2018-2022
Funded by: The European Cooperation in Science and Technology (COST)

Participant Investigator: Enrique Carrillo de Santa Pau
Project Title: **Estudio de cohortes sobre la morbilidad cardiovascular y mortalidad de sujetos con diabetes T2 conocida y no conocida, prediabetes y normoglucemia**
Date: 2015-2019
Funded by: Ministerio de Sanidad y Con-sumo. Fondo de Investigación Sanitaria (PI1500259)

Participant Investigator: Enrique Carrillo de Santa Pau
Project Title: **BLUEPRINT – A BLUEPRINT of Haematopoietic Epigenomes**
Date: 2011-2016
Funded by: 7th Framework Programme for Research and Technological Develop-ment of the European Commission (FP7/ No282510)

Participant Investigator: Enrique Carrillo de Santa Pau
Project Title: **COST Action CA18131 ("Statistical and machine learning techniques in human microbiome studies")**
Date: 2018-2022
Funded by: The European Cooperation in Science and Technology (COST)

Participant Investigator: Enrique Carrillo de Santa Pau
Project Title: **Estudio de cohortes sobre la morbilidad cardiovascular y mortalidad de sujetos con diabetes T2 conocida y no conocida, prediabetes y normoglucemia**
Date: 2015-2019
Funded by: Ministerio de Sanidad y Con-sumo. Fondo de Investigación Sanitaria (PI1500259)

unit

Biostatistics and Bioinformatics

Unit Supervisor: Dr. Enrique Carrillo de Santa Pau

objectives

The Unit provides resources and personnel specialized in the analysis of phenotype-genotype associations and clinical trials data through statistical modeling, as well as the bioinformatic analysis of massive gene expression data (expression arrays, RNA-Seq, miRNA-Seq) and real time PCR data for the identification of biomarkers. The Unit also provides support for results interpretation using approaches such as functional analysis of gene lists (based on pathways and gene ontologies), interaction networks, and data integration from distinct sources. Expertise includes Design of Experiments, Multivariate Analisis, Survival Analysis, Longitudinal Data Analysis, size and power calculations, Metanalysis, resampling methods, Bayesian methods, Machine Learning and Deep Learning. It has also a wide expertise in the areas of Chemoinformatics and Computational Chemistry.

In addition, the unit develops its own research lines in Cheminformatics of food compounds for its design and optimization, as well as for computational tools in nutrigenomics, aimed at identifying the molecular mechanisms by which certain foods and bioactive compounds confer beneficial and protective effects against multiple chronic diseases.

The Unit organizes specialized training courses and collaborates with the postgraduate program of the Universidad Autónoma de Madrid.

Gonzalo Colmenarejo Sánchez
Biostatistician, senior researcher

Gonzalo Colmenarejo got his PhD in the Biophysics area in the Complutense University of Madrid. Then was a postdoctoral researcher in the Chemistry Department of University of California at Berkeley. He joined GlaxoWellcome (later GlaxoSmithKline) R&D center in Tres Cantos, Spain, where he stayed more than 17 years. There he developed multiple statistical and machine learning models to predict biological activity form molecular structure, and was a statistical and data analysis support for a multidisciplinary and international group of biologists, biochemists, medicinal chemists and pharmacologists. He specialized in the massive data analysis of cellular and biochemical high-throughput screens (HTS), and processed more than 100 campaigns of multiple target classes, screening technologies and therapeutic areas, were he increased the number and quality of hits there obtained. He developed new theoretical methods for the prioritization of compounds in HTS campaigns, as well as automated chemical pattern extraction from sets of molecules. He co-leaded the Screening Analytics Investment Area of GlaxoSmithKline, an international team devoted to finding new approaches to the analysis of HTS. He is (co)author of > 30 scientific publications in peer-reviewed journals and book chapters.

Roberto Martín Hernández
Bioinformatics scientist

Roberto Martín Hernández obtained his Master's Degree of Science in Biochemistry and Biotechnologies at the Université Paul Sabatier (Toulouse, France). He worked as a trainee scientist at Bayer CropScience division (Lyon, France) developing enzymatic assays for high throughput applications. In March 2008 he joined the Computers Architecture Department at Universidad Complutense de Madrid (Spain) and started to work in the statistical analysis of biological data generated with high throughput technologies. Afterwards he joined the R&D Department at the bioinformatics company Integromics S.L. (Madrid, Spain), where he continued working on massive data analysis generated by transcriptomics and genomics platforms. In addition, he further contributed to the development of professional software packages for bioinformatics which are still commercialized. He joined the IMDEA Food research Institute on May 2012. With a 10 years' experience in bioinformatics and computational biology, he has co-authored more than 25 original research articles published in international journals. His scientific interests focus on data mining, data integration and deep learning. In addition he is completing the UAM University (Madrid) PhD program in Nutrition science as a part-time student.

Students

Irem Kaya
Visitor Researcher
Yıldız Technical University
(Istanbul, Turkey)

Biostatistics and Bioinformatics

most relevant publications

- Colmenarejo, G.; Lozano-Arias, S.; González-Cortés, C.; Calvo, D.; Sánchez-García, J.; Presa-Matilla, J.L.; Leroy, D.; Rodrigues, J. **Predicting transmission blocking potential of anti-malarial compounds in the mosquito feeding assay using Plasmodium falciparum male gamete inhibition assay**. (2018) *Sci. Rep.* 8, 7764. DOI: 10.1038/s41598-018-26125-w

- Norcliffe, J.L..; Mina, J.G.; Alvarez-Ruiz, E.; Cantizani-Perez, J.; de Dios-Anton, F.; Colmenarejo, G.; Gonzalez del-Valle, S.; Marco, M.; Fiandor, J.; Martín, J.; Steel, P.; Denny, P. **Identifying inhibitors of the Leishmania inositol phosphorylceramide synthase with antiprotozoal activity using a yeast-based assay and ultra-high throughput screening platform**. (2018) *Sci. Rep.* 8, 3938. DOI: 10.1038/s41598-018-22063-9

- Martín-Hernández R, Reglero G, Dávalos A. **Data mining of nutrigenomics experiments: Identification of a cancer protective gene signature.** *Journal of Functional Foods* (2018), 42, 380-386. doi: 10.1016/j.jff.2018.01.021

- Costa-Machado LF, Martín-Hernández R, Sánchez-Luengo MA, Hess K, Vales-Villamarin C, Barradas M, Lynch C, de la Nava D, Diaz-Ruiz A, de Cabo R, Cañamero M, Martinez L, Sánchez-Carbayo M, Herranz D, Serrano M, Fernández-Marcos PJ. **Sirt1 protects from K-Ras-driven lung carcinogénesis.** *EMBO reports* (2018)19:e43879. DOI: 10.15252/embr.201643879

- Fernandez LP, Ramos-Ruiz R, Herranz J, Martín-Hernández R, Vargas T, Mendiola M, Guerra L, Reglero G, Feliu J and Ramírez de Molina A (2018) **The transcriptional and mutational landscapes of lipid metabolism-related genes in colon cancer.** *Oncotarget* 9, 5919–5930. DOI: 10.18632/oncotarget.23592

tools developed

NutrigenomeDB
http://www.nutrigenomedb.org/

NutriGenomeDB is a web-based application that hosts manually curated gene sets, defined from gene expression signatures of 61 nutrigenomics studies performed on microarray platforms and publicly available in GEO database. The application is based on two main modules: 1) a data browse module allowing the exploration of gene expression data across experiments through interactive visualizations, and 2) a phenotype-centered analysis module allowing the comparison of external gene expression signatures, aimed at finding potential connections among phenotypes and food compounds. NutrigenomeDB tool can be helpful to generate new research hypothesis with the aim of contributing to the field of precision nutrition, improving future functional foods formulations and further investigate the molecular mechanisms that confer healthy properties to specific dietary components.

program highlight

The aim of the Precision Nutrition and Cancer Program consists on including Precision Nutrition based on scientific evidence as an efficient complementary therapeutic approach for cancer patients.

Molecular Oncology

This Group closely collaborates with the Clinical Oncology Group to identify biomarkers and analyze from a molecular and clinical point of view the effect of bioactive compounds and personalized strategies focused on the implementation of a Precision Nutrition that potentiates cancer treatments and promotes the quality of life of cancer patients. In this area we are currently conducting two different clinical trials, one in colon cancer patients taking a specific supplement with potencial therapeutic activity and the other one included in a multicentric study analyzing the clinical relevance of nutritional habits in breast cancer patients.

Molecular Immunonutrition

In the last few years immunotherapy has become an important part of cancer treat- ment. Immunotherapy is treatment that uses certain parts of a person's immune system to fight cancer, i.e. stimulating your own immune system to efficiently attack cancer cells. This Group aims at developing immunonutritional-based precision intervention strate- gies to selectively modulate innate immune responses. This research group has contributed to establish physiologically-based new tools to model human diseases evaluating food safety aspects. Additionally, there were provided significant patents and contributions demonstrating the potential selective modulation of innate im-munity's amplitude of signaling within the neuro-immunometabolic axis.

Computational Biology

Cancer requires a multidisciplinary research including applied mathematics, sta- tistics and computer sciences to integrate the the biological data that has been generated. Genome wide techniques have made essential to create research groups with high-specialized professionals that develop complex analytical strategies to make sense of this large amount of data. The nutrition field is not stranger to these advances and new comprehensive models with a high computational load are being required to understand the complexity of the relationships between food, genes and health. Therefore, Computational Biology is essential for the future of precision and personalized nutrition strategies based on individual molecular characteristics improving the wellbeing of the inhabitants and increasing the life expectancy.

highlight

research program

Precision Nutrition and Obesity

Prof. José María Ordovás Muñoz
Director of the Nutrition and Genomics Laboratory at the USDA-HNRCA at Tufts in Boston. Director of the Precision Nutrition and Obesity Program of IMDEA Food. Group Leader of the Nutritional Genomics and Epigenomics Group

Dr. José M. Ordovás is graduated from the University of Zaragoza and did postdoctoral work at the MIT, Harvard and Tufts. He has published over 820 scientific articles in peer review journals (h-index 125) and written numerous reviews and books. In this regard, he is considered a founder of nutrigenomics and one of the most distinguished world experts in gene-diet interactions related to cardiovascular traits. Throughout his career, Dr. Ordováshas received multiple international awards for his scientific achievements, including an honorary degree in Medicine from the University of Córdoba in Spain and he is Member of the Royal Academies of Sciences, Medicine, Nutrition and Pharmacy. He is a member of numerous national and international scientific committees including the "Comision Cientifico Tecnica" of the "Agencia Estatal de Investigacion" in Spain.

objectives

The aim of this Program is to generate new knowledge at the molecular level, using the tools provided by genetics and epigenetics as well as other omics, such as metabolomics, in order to understand an individual susceptibility to becoming obese and their responsiveness to weight loss interventions.

There is a dramatic interindividual variability in the response to any therapeutic diet or physical regime aimed to prevent obesity and/or return to a healthy body weight. The comorbidities of obesity (i.e., diabetes, cardiovascular diseases and cancer) seriously affect the aging population. The developments of Precision Nutrition provide the means to prevent those diseases we need to develop better measures to improve the quality of life in the elderly category. Therefore, nutritional and omic determinants of frailty and functional status in the older adult are objective of this program, as well as diet and physical activity as determinants of obesity and cardiovascular risk in the elderly.

group

Nutritional Genomics and Epigenomics

Group leader: Prof. José María Ordovás Muñoz

objectives

Our group aims to provide genomic tools and knowledge to manage obesity and related comorbidities at the individual level through:

1. The identification of genetic variants predisposing to obesity.
2. The definition of how these variants interact with the diet to modulate such predisposition.
3. The understanding of the dietary modulation of the how diet is able to modulate the obesogenic epigenome.

Nutritional Genomics and Epigenomics

Dr. Ruth Blanco Rojo
Postdoctoral researcher

Dr. Ruth Blanco Rojo holds a PhD in Nutritional Sciences (2012), a B.Sc. in Food Science and Technology (2007), and a Diploma in Human Nutrition and Dietetics (2005) by Universidad Complutense de Madrid. She worked as Postdoctoral Researcher in the department of Nutrition and Metabolism in the ICTAN-CSIC from 2012 to 2013, and then she joined the group of Nutrigenomics and Metabolic Syndrome in the IMIBIC (Córdoba) with a Sara Borrell Contract from 2014 to 2017. During this period, she has also done a Postdoctoral Research Stay in the Nutrition and Genomics Laboratory of the USDA-HNRCA at Tufts University in Boston (USA), from 2015 to 2016. Her scientific career has been focused on the study of the role of the diet in the prevention of chronic diseases, as well as on the identification of diet-gene interaction that could be also implicated in the modulation of these diseases risk. She has participated in diverse National and International Research Projects (e.g. CORDIOPREV, NUTRITECH) and her research experience is substantiated by the publication of numerous scientific articles in high-impact factor journals (h-index 11). Additionally, she carries out teaching activities as Associate Professor at Universidad Isabel I. She joined IMDEA Food in June 2017 as a Postdoctoral Researcher in the Precision Nutrition and Obesity Research Program.

Students

Alba Cano Bustos
Universidad Autónoma de Madrid

Irene Aparicio
Universidad Autónoma de Madrid

Sara Díaz Albaízar
Universidad Nacional
de Educación a Distancia

María Hernando Fernández
Universidad Autónoma de Madrid

María Bravo Garrido
Universidad Autónoma de Madrid

most relevant publications

- Jiménez-Lucena R, Rangel-Zúñiga OA, Alcalá-Díaz JF, López-Moreno J, Roncero-Ramos I, Molina-Abril H, Yubero-Serrano EM, Caballero-Villarraso J, Delgado-Lista J, Castaño JP, Ordovás JM, Pérez-Martinez P, Camargo A, López-Miranda J. **Circulating miRNAs as Predictive Biomarkers of Type 2 Diabetes Mellitus Development in Coronary Heart Disease Patients from the CORDIOPREV Study.** *Mol Ther Nucleic Acids.* 2018 Sep 7;12:146-157. doi:10.1016/j.omtn.2018.05.002. IF: 5.66, Q1 (Medicine, Research & Experimental)

- Rosique-Esteban, N; Papandreou, C; Romaguera, D; Warnberg, J; Corella, D; Martinez-Gonzalez, MA; Diaz-Lopez, A; Estruch, R; Vioque, J; Aros, F; Garcia-Rios, A; Bueno-Cavanillas, A; Vidal, J; Serra-Majem, L; Sibai, AA; Tinahones, FJ; Martinez, A; Ordovas, JM; Tur, JA; Ellacuria, MT; Sanllorente, A; Pinto, X; Buil-Cosiales, P; Fernandez-Carrion, R; Castaner, O; Bullo, M; Ruiz-Canela, M; Garcia-de la Hera, M; Perez-Farinos, N; Baron-Lopez, FJ; Colom, A; Abete, I; Ros, E; Salas-Salvado, J. **Cross-sectional associations of objectively-measured sleep characteristics with obesity and type 2 diabetes in the PREDIMED-Plus trial.** *SLEEP.* Dec. 2018. Volumen: 41 Número: 12. Número de artículo: UNSP zsy190. DOI: 10.1093/sleep/zsy190.

- Si H; Wang X; Zhang L; Parnell LD; Admed B; LeRoith T; Ansah TA; Zhang L; Li J; Ordovás JM; Si H; Liu D; Lai CQ. **Dietary epicatechin improves survival and delays skeletal muscle degeneration in aged mice.** *FASEB J.* 2018 Aug 10:fj201800554RR. doi: 10.1096/fj.201800554RR. IF: 5.595, Q1 (Biochemistry & Molecular Biology)

- Corina A, Rangel-Zúñiga OA, Jiménez-Lucena R, Alcalá-Díaz JF, Quintana-Navarro G, Yubero-Serrano EM, López-Moreno J, Delgado-Lista J, Tinahones F, Ordovás JM, López-Miranda J, Pérez-Martínez P. **Low intake of vitamin E accelerates cellular aging in patients with established cardiovascular disease: The CORDIOPREV study.** *J Gerontol A Biol Sci Med Sci.* 2018 Aug 27. doi: 10.1093/gerona/gly195. IF: 4.902. D1 (Geriatrics & Gerontology).

main research grants

Principal Investigator: Lidia Daimiel Ruiz
Project Title: **PREDIMED+DM: Effect of a hypocaloric Mediterranean diet and physical activity promotion on the prevention of type 2 diabetes mellitus in subjects with the Metabolic Syndrome**
Date: 2018-2020
Funded by: Instituto de Salud Carlos III (PI17/000508)

Participant Investigator: Jose María Ordovás Muñoz
Project Title: **Interindividual variation in response to consumption of plant food bioactives and determinants involved (COST Action-POSITIVe)**
Date: 2014-2018
Funded by: European Union 7th Framework Program. European Cooperation in Science and Technology (COST Action FA 1403)

Participant Investigator: Jose María Ordovás Muñoz
Project Title: **Application of new technologies and tools to nutrition research-the example of phenotypic flexibility (NUTRITECH)**
Date: 2011-2016
Funded by: European Union 7th Framework Program. (FP7-KBBE-2011-5)

Principal Investigator: Jose María Ordovás Muñoz
Project Title: **Effect of extra virgin olive oil on plasma miRNA levels in healthy subjects: a postprandial study. Association with the cardiovascular benefits associate to olive oil intake. Detection of exogenous miRNAs**
Date: 2013-2015
Funded by: Fundación Salud 2000

Principal Investigator: Jose María Ordovás Muñoz
Project Title: **Effect of beer consumption on circulating levels of microRNAs in relation to cardiovascular disease. Beer exogenous microRNAs as cardiovascular health effectors (micRoBeer)**
Date: 2014-2015
Funded by: Fundación Cerveza y Salud

group

Cardiovascular and Nutritional Epidemiology

Group leader: Prof. Fernando Rodríguez Artalejo

Prof. Fernando Rodríguez Artalejo
Associate researcher,
IMDEA Food. Group Leader
of the Cardiovascular and
Nutritional Epidemiology
Group

Fernando Rodríguez Artalejo, MD, PhD, is Professor of Preventive Medicine and Public Health at the Medical School of the Universidad Autónoma de Madrid. Dr. Rodríguez Artalejo graduated from the Universidad Autónoma de Madrid and received postgraduate training in the La Paz University Hospital, the Institute of Health Carlos III and the Spanish Ministry of Health in Madrid, as well as in the London School of Hygiene and Tropical Medicine and the Johns Hopkins Bloomberg of Public Health in Baltimore. He has published over 400 scientific articles in peer-reviewed journals (h-index 51) and contributed to many policy documents on health planning and evaluation and on prevention and control of obesity and cardiovascular disease. He has received the Carles Martí Henneberg award to a scientific career on Nutrition Research, the Ciril Rozman award of the Spanish Society of Internal Medicine, the Silver Medal of the National Plan on Drug Addiction, and the Encomienda de la Orden Civil de Sanidad. Dr. Rodríguez Artalejo has been a member of the Scientific Committee of the Spanish Agency of Foods Safety and Nutrition, and currently serves in the European Advisory Committee of Health Research of the World Health Organization and in the Expert Panel of the European Joint Action on Prevention of Frailty (ADVANTAGE).

objectives

Our strategic objective is to produce relevant information to support clinical and population-based policies aimed at controlling cardiovascular diseases and their functional adverse outcomes. Specifically we work on the following research areas:

1. Nutritional and omic determinants of frailty and functional status in the older adult.

2. Diet and physical activity as determinants of obesity and cardiovascular risk in the elderly.

3. The results of our studies have been incorporated into the National Strategy for Ischemic Heart Disease Control, the National Strategy for Obesity Prevention and Control, and the National Strategy on Disease Prevention and Health Promotion, elaborated by the Ministry of Health of Spain.

Cardiovascular and Nutritional Epidemiology

Dr. Pilar Guallar-Castillón
Associate researcher,
IMDEA Food

Dr. Pilar Guallar-Castillon MD, MPH, PhD is an associate professor in the Department of Preventive Medicine and Public Health in the Universidad Autónoma de Madrid. An specialist in Preventive Medicine and Public Health via MIR (La Paz Hospital). Has spent more than 20 years teaching Public Health by participating in graduate and postgraduate programs. She is also responsible for courses on nutritional epidemiology. Her research activity has focused on the study of healthy behaviours and habits (HBH) especially in the field of cardiovascular and nutritional epidemiology. The author of more than 180 publications that are mainly in the first quartile of impact factor in their categories. Currently interested in the influence of cooking methods and chronobiology in the process of suffering from cardiometabolic diseases. Research collaborator in IMDEA Food Institute.

Esther López-García
Associate researcher,
IMDEA Food

Esther Lopez-Garcia, PhD, MPH, MhPharm is an Associate Professor of Epidemiology at the Department of Preventive Medicine and Public Health, in the Universidad Autónoma de Madrid. She has been a Fulbright fellow in the Department of Nutrition at the Harvard T. Chan School of Public Health and a Ramón y Cajal researcher at the Universidad Autónoma de Madrid. Dr Lopez-Garcia research interests include: Epidemiology and prevention of obesity and cardiovascular disease through diet and lifestyle; diet and the risk of physical function impairment, frailty and disability in the older population; metabolomics in frailty and disability. Dr Lopez-Garcia has assessed in detail the effect of the Mediterranean dietary patterns, coffee, meat and dairy consumption, in the risk of CVD and disability, using data from large population studies in the USA, UK and Spain. She has also examined the biological mechanisms that may explain these associations, including inflammation and endothelial dysfunction, markers of glucose metabolism and leptin, and more recently metabolomics profiles of physical impairment and functional disability.

David Martínez Gómez
Posdoctoral researcher

David Martinez-Gomez graduated in Physical Education (2004) and Sports Sciences (2006), and then he completed a PhD thesis in Sport Sciences (2011) when joined to the Institute of Food Science, Technology and Nutrition (ICTAN), Spanish National Research Council. After the PhD, MSc specialization in Epidemiology was obtained in 2012 and a postdoc training was done in the Departments of Preventive Medicine and Public Health, and Physical Educacion, Sport and Human Movement (University Autonomous of Madrid). He has had national major research grants from the Spanish research career during his undergraduate, predoctoral and postdoctoral. He has stays at Iowa State University (USA, 2008), Karolinska Institutet (Sweden, 2009), Michigan State University (USA, 2010), WHO Center for Epidemiological Research (Brazil, 2013), Research Center in Physical Activity, Health and Leisure (Portugal, 2014) and the Geriatric Epidemiology Unit in the Health Tuscany Center (Italy, 2016). David has published 4 books, 4 chapters of books, and a total of 120 scientific JCR articles (H-index =35). Dr Martinez-Gomez research interests are related to physical activity epidemiology, including: 1) Assessment and monitoring of physical activity in clinic and epidemiological studies; 2) Determining the role of physical activity on health outcomes, especially obesity, cardiovascular disease and mortality; and 3) Promotion of physical activity across the life span.

most relevant publications

- Cabanas-Sánchez V, Guallar-Castillón P, Higueras-Fresnillo S, Rodríguez-Artalejo F, Martínez-Gómez D. **Changes in Sitting Time and Cardiovascular Mortality in Older Adults.** *Am J Prev Med.* 2018 Mar;54(3):419-42. doi: 10.1016/j.amepre.2017.10.010. Epub 2018 Jan 2

- Pérez-Hernández B, Lopez-García E, Graciani A, Ayuso-Mateos JL, Rodríguez-Artalejo F, García-Esquinas E. **Housing conditions and risk of physical function limitations: a prospective study of community-dwelling older adults.** *J Public Health* (Oxf). 2018 Jan 17. doi: 10.1093/pubmed/fdy004.

- Borghi C, Rodriguez-Artalejo F, De Backer G, Dallongeville J, Medina J, Nuevo J, Guallar E, Perk J, Banegas JR, Tubach F, Roy C, Halcox JP. **Serum uric acid levels are associated with cardiovascular risk score: A post hoc analysis of the EURIKA study.** *Int J Cardiol.* 2018 Feb 15;253:167-173. doi: 10.1016/j.ijcard.2017

- Cabanas-Sánchez, V., Guallar-Castillón, P., Higueras-Fresnillo, S., Rodríguez-Artalejo, F., & Martínez-Gómez, D. **Changes in sitting time and cardiovascular mortality in older adults.** *American Journal of Preventive Medicine.* DOI: 10.1016/j.amepre.2017.10.010.

- Machado-Fragua MD, Struijk EA, Graciani A, Guallar-Castillon P, Rodriguez-Artalejo F, Lopez-Garcia E. **Coffee consumption and risk of physical function impairment, frailty and disability in older adults.** *European Journal of Nutrition.* DOI: 10.1007/s00394-018-1664-7

- Banegas JR, Ruilope LM, Sierra A, Vinyoles E, Gorostidi M, Cruz JJ, Ruiz-Hurtado G, Segura J, Rodríguez-Artalejo F, Williams B. **Relationship between clinic and ambulatory blood pressure and mortality.** *N Engl J Med.* April 19, 2018: 378:1509-1520 DOI: 10.1056/NEJMoa1712231

- Martinez-Gomez D, Guallar-Castillon P, Higueras-Fresnillo S, Garcia-Esquinas E, Lopez-Garcia E, Bandinelli S, Rodríguez-Artalejo F. **Physical Activity Attenuates Total and Cardiovascular Mortality Associated With Physical Disability: A National Cohort of Older Adults.** *J Gerontol A Biol Sci Med Sci.* Doi: 10.1093/gerona/glx117

- Laclaustra M, Rodriguez-Artalejo F, Guallar-Castillon P, Banegas JR, Graciani A, Garcia-Esquinas E, Ordovas J, Lopez-Garcia E. **Prospective association between added sugars and frailty in older adults.** *Am J Clin Nutr.* 2018 May1;107(5):772-779. doi: 10.1093/ajcn/nqy028.

- Dos Santos TJ, Martos-Moreno GÁ, Muñoz-Calvo MT, Pozo J, Rodríguez-Artalejo F, Argente J. **Clinical management of childhood hyperthyroidism with and without Down syndrome: a longitudinal study at a single center.** *J Pediatr Endocrinol Metab.* 2018 Jul 26;31(7):743-750. doi: 10.1515/jpem-2018-0132. PMID: 29953411

- Higueras-Fresnillo, S ; Cabanas-Sanchez, V ; Garcia-Esquinas, E ; Rodriguez-Artalejo, F ; Martinez-Gomez, D. **Physical activity attenuates the impact of poor physical, mental, and social health on total and cardiovascular mortality in older adults: a population-based prospective cohort study.** *Quality of Life Research.* Dec. 2018. Volumen: 27 Número: 12 Páginas: 3293-3302. DOI: 10.1007/s11136-018-1974-5.

- Balboa-Castillo, T; Struijk, EA; Lopez-Garcia, E ; Banegas, JR; Rodriguez-Artalejo, F; Guallar-Castillon, P. **Low vitamin intake is associated with risk of frailty in older adults.** *Age and Ageing.* Nov. 2018. Volumen: 47 Número: 6 Páginas: 872-879. DOI: 10.1093/ageing/afy105.

- Lana, A; Banegas, JR; Guallar-Castillon, P ; Rodriguez-Artalejo, F; Lopez-Garcia, E. **Association of Dairy Consumption and 24-Hour Mood Pressure in Older Adults with Hypertension.** *American Journal Of Medicine.* Oct 2018 Volumen: 131 Número: 10 Páginas: 1238-1249. DOI: 10.1016/j.amjmed.2018.04.039. PMID: 29807002

group

Nutritional Control of the Epigenome

Group leader: Dr. Lidia Daimiel Ruiz

objectives

This group aims to describe the epigenetic mechanisms modulated by diet and the impact of such modulation on cellular physiology. These are our main lines of research:

- The description of the effect of nutrients and dietary patterns of circulating microRNA profiles and cellular methylation marks: based on nutritional intervention trials, this research lines aims to identify circulating microRNA profiles and DNA methylation marks with potential to be biomarker of nutritional response. By clustering analysis according to the change in circulating levels of key microRNAs and methylation status, we aim to predict individual response to diet. With this knowledge as start line, we then study the mechanisms underlying the dietary-mediated modification of microRNAs expression and methylation marks.
- The description of the effect of nutrients on macrophage physiology: macrophages are key players in atherosclerosis progression, endothelial function, cardiovascular health and aging. We base our studies on human nutritional intervention trials and macrophages derived from participant's monocytes. We are devoted to clarify how different nutrients and dietary patterns modulate macrophage function and to define the molecular mechanisms underlying the impact of diet on macrophage function.
- Study of the effect of TMAO, a metabolite derived from red meat, on hepatic and macrophage physiology. TMAO (Trimethylamine N-Oxide) is a metabolite derived from choline, betaine and L-carnitine provided by seafood, red meat and eggs and has been related to cardiovascular disease and inflammation. We analyse the effect of TMAO on human hepatocytes and macrophages function using cell lines, organoids and primary cells.

Lidia Daimiel Ruiz

Postdoctoral researcher and Group Leader of the Nutritional Control of the Epigenome Group

Dr. Lidia Daimiel Ruiz graduated in Biology at Universidad Autónoma de Madrid where she carried out post-graduate studies about the genetic and epigenetics alterations associated with colorectal cancer onset and progression, under the supervision of Prof. Juan José González Aguilera and Prof. Mª Antonia Fernandez. She started her PhD in 2006 at Hospital Ramón y Cajal and were focused in the study of cholesterol-mediated gene regulation, under the supervision of Dr. Javier Martínez-Botas. She joined IMDEA Food in 2011 as postdoctoral researcher to study the dietary modulation of microRNAs under the supervision of Dr. Alberto Dávalos and Prof. José Mª Ordovás. In 2015, she was promoted to Junior Investigation and started to build her own research group to study how diet modulate the epigenome with a focus on microRNAs and methylation marks. She specialized in human nutrition intervention trials and joined to the prestigious consortium PREDIMED-PLUS as Principal Investigator, where she conducts her epigenetic studies. In 2016, she stayed at Carlos Fernández-Hernando's laboratory at Vascular Biology and Therapeutics program at Yale University for 6 months. She was recently promoted to Group Leader within the Precision Nutrition and Obesity Program directed by Prof. José Mª Ordovás. Along her career, she has published her results in international peer-review journals of the first quartile and high impact. She is also actively participating in communication and education programs within the frame of EIT-Food and IMDEA Food.

Víctor Micó Moreno

Predoctoral researcher

Victor Micó Moreno completed his degree in Human Nutrition and Dietetics (2010) at Complutense University of Madrid, the Nutrigenomics and Personalized Nutrition Master (2011) at Balearic Islands University, and a degree in Food Science and Technology (2013) at Autónoma University of Madrid. In 2018, Víctor made an internship in the department of Nutritional Sciences of School of Life Course Sciences of Faculty of Life Sciences and Medicine at King´s College of London. In 2014, Víctor was awarded the XIV Manuel de Oya scholarship for the project: "Influence of beer consumption on circulating microRNAs related to cardiovascular health. "Exogenous beer microRNAs as health-promoting agents". He recently gained his PhD in Biology at Autónoma University of Madrid studying the effect of Caloric restriction on epigenetic mechanism and their influence on cardiovascular health and healthy aging at IMDEA Food Institute under the supervision of Dr. Lidia Daimiel.

Laura Díez Ricote

Predoctoral researcher

Laura Díez Ricote started her undergraduate studies in Biology at the Autónoma University of Madrid, where she specialized in Food Science and obtained her degree in 2013. Later on she completed an internship at APPLUS Agrifood. In 2014, she was awarded with a scholarship from the Autónoma University of Madrid, where she completed a Master of Science in Agricultural Chemistry and Novel Foods (2015) and presented her final project "TMAO effect in microRNAs expression related to cardiovascular disease and inflammation" which she carried on at IMDEA Food in the Nutritional Genomics and Epigenomics group. In 2015, she was awarded with a Fulbright Fellowship to pursue a Master of Science in Food Science and Human Nutrition from the University of Florida (2017), focusing on molecular nutrition, where she presented her final project "Iron-related proteins and their regulation by renal iron overload". In May 2017 she was invited to give an oral presentation at the BioIron Meeting, held in Los Angeles, about her master thesis. In March 2018 she joined IMDEA Food Institute's in the Nutritional Genomics and Epigenomics group, where she started her doctoral studies the effect of caloric restriction on epigenetic mechanism and their influence on cardiovascular health and healthy aging.

Laura Berninches Pintado
Technician

Bacherlor's Degree of Science in Physical Activity and Sports and bachelor's degree in Human Nutrition and Dietetics granted in the Universidad Autónoma de Madrid. Expert in diagnosis, treatment and management of obesity by the UNECertified ISAK (International Society for the Advancement of Kinanthropometry). Throughout his academic and professional career she has carried out various activities related to nutrition, physical activity, sport and health. She has collaborated with various public and private entities. As well she has participated as a member of the research team on the project "Evaluation of physical activity, fitness, anthropometry and body composition, and its relationship with diseases related to sedentary lifestyles" awarded by the Spanish institution Ministerio de Educación y Ciencia. She is the author with other professionals of the published guide economic and healthy food, the NGO. (Nutrición Sin Fronteras).In 2015 she joined IMDEA Food as a nutritionist in the Nutritional Genomics and Epigenomics Group. Her work focuses on the study PREDIMEDPLUS "Effect of study of life based on a traditional Mediterranean diet with energy restriction, physical activity and behavioral therapy for the prevention of cardiovascular disease".

Javier Tapia Belloso
Technician

Diploma in Human Nutrition and Dietetics from the University of Zaragoza. Currently Graduated in Physiotherapy from the Universidad Europea de Madrid. Expert in Sports Nutrition and High Performance by the School of Sports Medicine of the Universidad Complutense de Madrid. Certified as Cineanthropometrist by ISAK (International Society for the Ad- vancement of Kinanthropometry). Director and Coordinator of Leisure Time Educational Activities and Expert in School Dining, has participated in the planning of menus and nutrition education programs aimed at children. He has collaborated in A.D. Alcorcón SAD, coordinating the Nutrition Area of the base football. Likewise, he has worked as Dietician-Nutritionist in the private clinic. In 2016 he joined IMDEA Food as a nutritionist in the Nutritional Genomics and Epigenomics Group. His work focuses on the study PREDIMED-PLUS "Effect of an intensive lifestyle intervention based on a traditional Mediterranean diet with energy restriction, physical activity and behavioral treatment on the prevention of cardiovascular disease".

Paloma Ruiz Valderrey
Laboratory technician

Paloma Ruiz Valderrey completed her studies of Pathology and Cytology Technician in 2015. She did an internship at the HCD Gómez Ulla where she was in charge of sample processing, performing histological, cytological and immunohistochemistry techniques. Later, she obtained the Clinical and Biomedical Laboratory Technician qualification (2017) at IES Benjamín Rua. She did an internship at CIBALAB EOD (Bulgaria), where she processed hematological, immunological, biochemical, microbiological and genetic sample of patients. She has worked as an animal caretaker at the Spanish National Cancer Research Centre and at the Centre of Molecular Biology Severo Ochoa for specific periods of time (2016-2018). Paloma joined IMDEA Food as a lab technician, in March 2018, where she supports Nutritional Control of the Epigenome group and various projects.

Students

María Tanarro García
Universidad Autónoma de Madrid

Cristina Jaén Calvo
Universidad Autónoma de Madrid

María Díaz Cortés
Universidad San Pablo CEU

Vincent Peeters
Universidad San Pablo CEU

Ana Sánchez Randulfe
Universidad San Pablo CEU

Víctor Ferrer Sánchez
Universidad San Pablo CEU

most relevant publications

- Martínez-González MA, Buil-Cosiales P, Corella D, Bulló M, Fitó M, Vioque J, Romaguera D, Martínez JA, Wärnberg J, López-Miranda J, Estruch R, Bueno-Cavanillas A, Arós F, Tur JA, Tinahones F, Serra-Majem L, Martín V, Lapetra J, Vázquez C, Pintó X, Vidal J, Daimiel L, Delgado-Rodríguez M, Matía P, Ros E, Fernández-Aranda F, Botella C, Portillo MP, Lamuela-Raventós RM, Marcos A, Sáez G, Gómez-Gracia E, Ruiz-Canela M, Toledo E, Alvarez-Alvarez I, Díez-Espino J, Sorlí JV, Basora J, Castañer O, Schröder H, Navarrete-Muñoz EM, Zulet MA, García-Rios A, Salas-Salvadó J; PREDIMED-Plus Investigators. **Cohort Profile: Design and methods of the PREDIMED-Plus randomized trial.** *Int J Epidemiol.* 2018 Nov 22. doi: 10.1093/ije/dyy225.

- Schröder H, Cárdenas-Fuentes G, Martínez-González MA, Corella D, Vioque J, Romaguera D, Alfredo Martínez J, Tinahones FJ, Miranda JL, Estruch R, Bueno-Cavanillas A, Arós F, Marcos A, Tur JA, Warnberg J, Serra-Majem L, Martín V, Vázquez C, Lapetra J, Pintó X, Vidal J, Daimiel L, Gaforio JJ, Matía-Martín P, Ros E, Castañer O, Lassale C, Ruiz-Canela M, Asensio EM, Basora J, Torres-Collado L, Garcia-Rios A, Abete I, Toledo E, Buil-Cosiales P, Bullo M, Goday A, Fitó M, Salas-Salvadó J; PREDIMED-Plus investigators. **Effectiveness of the physical activity intervention program in the PREDIMED-Plus study: a randomized controlled trial.** *Int J Behav Nutr Phys Act.* 2018 Nov 13;15(1):110. doi: 10.1186/s12966-018-0741-x.

- Álvarez-Álvarez I, Martínez-González MÁ, Sánchez-Tainta A, Corella D, Díaz-López A, Fitó M, Vioque J, Romaguera D, Martínez JA, Wärnberg J, López-Miranda J, Estruch R, Bueno-Cavanillas A, Arós F, Tur JA, Tinahones FJ, Serra-Majem L, Martín V, Lapetra J, Más Fontao S, Pintó X, Vidal J, Daimiel L, Gaforio JJ, Matía P, Ros E, Ruiz-Canela M, Sorlí JV, Becerra-Tomás N, Castañer O, Schröder H, Navarrete-Muñoz EM, Zulet MÁ, García-Ríos A, Salas-Salvadó J, Díez-Espino J, Toledo E. **Adherence to an Energy-restricted Mediterranean Diet Score and Prevalence of Cardiovascular Risk Factors in the PREDIMED-Plus: A Cross-sectional Study.** *Rev Esp Cardiol* (Engl Ed). 2018 Oct 1. pii: S1885-5857(18)30362-1. doi: 10.1016/j.rec.2018.08.010.

main research grants

Principal Investigator: Guillermo Reglero (coordinador) / Lidia Daimiel Ruiz (IP de grupo)
Project Title: **ALIBIRD III-CM**
Date: 2014-2018
Funded by: Comunidad de Madrid (S2013/ABI-2728)

Principal Investigator: David Reher
Project Title: **GEPS-CM**
Date: 2016-2019
Funded by: Comunidad de Madrid (S2015/HUM-3321)

Principal Investigator: Lidia Daimiel Ruiz
Project Title: **PREDIMED+DM**
Date: 2018-2020
Funded by: Instituto de Salud Carlos III (PI17/00508)

Principal Investigator: Jordana Bell (coordinadora) / José Mª Ordovás (IP de grupo)
Project Title: **DIMENSION**
Date: 2019-2021
Funded by: European Research Council (DIMENSION)

program highlight

highlight

Ultra-processed food in the spotlight

Food processing has been associated with several chronic diseases. Mechanisms that explain such associations include the production of harmful intermediate metabolites or the addition of additives with potentially deleterious effects. However, the precise impact of ultra-processed foods on human physiology is poorly understood. Our program has demonstrated that ultra-processed food consumption, according to NOVA classification, is associated with higher mortality and frailty in the ENRICA cohort involving elderly Spanish subjects.

Sleep duration and quality are strongly associated with cardiovascular disease and related traits

Recent studies have highlighted the association between sleep duration and quality and cardiovascular risk. An investigation, carried out in PESA study by Prof. José M Ordovás and collaborators, has shown that very short sleep duration is associated with atherosclerosis progression. Moreover, sleep fragmentation is also related to higher atherosclerosis (Domínguez F. et al., 2019). Another study using cross-sectional data from the PREDIMED-Plus study has shown that a 1-hour increase in sleep time associated with lower body mass index, adiposity, obesity and diabetes and with lower concentrations of uric acid in the serum.

Foods and the Mediterranean diet modify the expression of circulating and macrophage microRNAs

microRNAs are small non-coding RNA molecules with a critical role in the regulation of gene expression. They have been associated with disorders such as cancer and cardiovascular disease. The enormous impact of microRNAs in cellular physiology comes from the fact that most genes are regulated by several microRNAs, and each microRNA can potentially modulate hundreds of genes. Our program has demonstrated that the Mediterranean diet, beer, and extra virgin olive oil modulate the levels of microRNAs in blood and macrophages. Interestingly, phenolic content of the extra virgin olive oil leads to different circulating microRNA profiles. Moreover, beer and non-alcoholic beer lead to opposite effects on the expression of several microRNAs. These results have been found in human interventional trials.

research program

Precision Nutrition and Cardiometabolic Health

Prof. Alfredo Martínez Hernández
Professor of Nutrition, Faculty of Pharmacy at University of Navarra. Associate researcher of IMDEA Food. Director of the Precision Nutrition and Cardiometabolic Health Program. Group Leader of the Cardiometabolic Nutrition Group

Dr. J. Alfredo Martínez holds a PhD Nutrition being also PharmD and MD. He has been involved in several landmark intervention trials such as DIOGENES, SEAFOODplus, NUGENOB, FOOD4ME, PREDIMED and PREVIEW, whose results have been published in the most relevant medical and nutritional journals including NEJM, Lancet, Nature, BMJ, AJCN, Obesity, IJO, JCEM, Diabetology, Trends in Immunology, TIPS, IJO, Cell Metabolism Circulation, producing so far more than 20.000 citations. Dr. Martínez has supervised more than seventy PhD students and published more than 600 peer review papers in the areas of Obesity and Nutrition, including precision nutritional omics. He has been president of FESNAD and is currently president of ISNN as well as president elect of the International Union of Nutritional Sciences (IUNS) and has been recipient of several important awards including Hipocrates and Dupont prizes. During his scientific career, Prof. J. Alfredo Martínez has enjoyed training or invited stays at Nothingham, Berkeley, MIT, Harvard, Oxford and King College London as well as being reviewer for different EU Committees and Spanish Organizations such as AECOSAN.

objectives

This program is focused on the study of personalized energomics and metabolomics involved in cardiometabolic adverse traits.

Integration of nutriomics and metagenomics approaches is essential to understand the phenotipical responses of specific nutrients and diets triggering common physiopathological pathways among obesity, cardiovascular, metabolic, liver disease or cancer. The program is also addressed to analyze and implement newer biomarkers with diagnostic, prognostic and therapeutical potential value, including the design and definition of Precision Nutrition guidelines.

group

Cardiometabolic Nutrition

Group leader: Prof. Alfredo Martínez Hernández

objectives

Observational, cross-sectional and longitudinal studies have evidenced that obesity rates and associated complications such as type 2 diabetes, dyslipidemia, liver steatosis and cardiovascular events are continuously rising as a health burden with increasing costs. In this context, subjects elicit variable responses to the dietary intake depending on phenotypical and genotypic factors whose understanding is helping to provide Precision Nutrition management. Nutriomics offer a huge prospect to feature and assess the variety in the reactions to diverse nutritional therapies as well as for medical applications.

The group aims to determine new markers for the integration of nutritional, phenotypic and genetic data based on the analysis of large cohort databases through advanced statistical tools, such as multivariate analysis and machine learning techniques, to facilitate the evaluation of patient's metabolic dysfunctions and unhealthy conditions involved in the development of obesity and associated cardiometabolic complications. The definition of these markers will help the translation and transmission of information from scientific evidence in progress for its application in clinical practice of precision nutrition and to discriminate responders to a given nutritional prescription, that allows an action directed to each person through individual characterization. Furthermore, the role of chrononutrition on the individualized nutritional advice is another focus of the group. Also, meta-genomics researches have demonstrated that lifestyle factors such as diet or physical activity can impact intestinal microbiota composition, with possible influence in body weight homeostasis/maintenance, type 2 diabetes, cardiovascular or liver diseases. Integration in the near future of omics data into Precision Nutrition will allow the implementation of personalised nutritional treatments to prevent and manage chronic diseases and to monitor the individual's response to novel therapeutical interventions.

Prof. Alfredo Martínez Hernández
Director of the Nutrition Research Center, University of Navarra and Professor of Nutrition, Faculty of Pharmacy, University of Navarra.
Associate researcher, IMDEA Food. Director of the Precision Nutrition and Cardiometabolic Health Program and Group Leader of the Cardiometabolic Nutrition Group.

Prof J. Alfredo Martínez holds a PhD Nutrition being also PharmD and MD. He is co- IP and has been involved in several landmark intervention trials such as DIOGENES, SEAFOODplus, NUGENOB, Food4Me, PREDIMED and PREVIEW, whose results have been published in the most relevant medical and nutritional journals including NEJM, Lancet, Nature, BMJ, AJCN, Obesity, IJO, JCEM, Diabetology, Trends in Immunology, TIPS, IJO, Cell Metabolism Circulation, etc producing so far more than 25.000 citations. Prof. Martínez has supervised more than seventy PhD students and published more than 600 peer review papers in the areas of Obesity and Nutrition, including precision nutritional omics (H Factor > 65); He has been president of FESNAD and the International Society of Nutrigenetics and Nutrigenomics (ISNN) and he is currently president of International Union of Nutritional Sciences (IUNS) being recipient of several important awards including Hipocrates and Dupont prizes. During his scientific career, Prof. J. Alfredo Martínez has enjoyed training or invited stays at Nothingham, Berkeley, MIT, Harvard, Oxford and King College London as well as being reviewer for different EU Committees and Spanish Organizations such as AESAN.

Rodrigo San Cristóbal
Postdoctoral researcher

Rodrigo San Cristóbal has developed his research focus on the efficacy of different aspects concerning Precision Nutrition. He carried out his PhD in Food Science, Physiology and Health at the University of Navarra, framed within the Food4Me project and the PREVIEW study, both funded by the 7th European Research Framework. The Food4Me aimed to explore challenges and opportunities of personalised nutrition in order to deliver new scientific tools for the exploitation of dietary, phenotypic and genotypic data in the delivery of personalized nutrition through an online intervention in seven European countries. The PREVIEW study, has focused on Type2 Diabetes prevention through 4 interventional groups based on food and physical activity quantity and quality. His research includes articles with reference to the impact of dietary patterns on weight status, the development of a questionnaire towards self-reported perception of healthy eating behaviour, the association between the genetic background and dietary habits, and epigenetic marks related to obesity, among others.

most relevant publications

- Martínez-González MA, Buil-Cosiales P, Corella D, Bulló M, Fitó M, Vioque J, Romaguera D, Martínez JA, Wärnberg J, López-Miranda J, Estruch R, Bueno-Cavanillas A, Arós F, Tur JA, Tinahones F, Serra-Majem L, Martín V, Lapetra J, Vázquez C, Pintó X, Vidal J, Daimiel L, Delgado-Rodríguez M, Matía P, Ros E, Fernández-Aranda F, Botella C, Portillo MP, Lamuela-Raventós RM, Marcos A, Sáez G, Gómez-Gracia E, Ruiz-Canela M, Toledo E, Alvarez-Alvarez I, Díez-Espino J, Sorlí JV, Basora J, Castañer O, Schröder H, Navarrete-Muñoz EM, Zulet MA, García-Rios A, Salas-Salvadó J; PREDIMED-Plus Investigators. Cohort Profile: **Design and methods of the PREDIMED-Plus randomized trial.** *Int J Epidemiol.* 2018 Nov 22. doi: 10.1093/ije/dyy225. PMID: 30476123

main research grants

Principal Investigator: Imperial College of Science Technology And Medicine
Investigator: Jose Alfredo Martínez Hernández
Project Title: **STOP (Science and Technology in childhood Obesity Policy)**
Date: 2018-2022
Funded by: H2020-EU

Principal Investigator: The University of Liverpool
Investigator: Jose Alfredo Martínez Hernández
Project Title: **SWEET (Sweeteners and sweetness enhancers: Impact on health, obesity, safety and sustainability).**
Date: 2018-2023
Funded by: H2020-EU

Principal Investigator: Anne Raben
Participating Investigator: Jose Alfredo Martínez Hernández
Project Title: **PREVIEW: Prevention of Diabetes through Lifestyle Intervention and Population Studies in Europe and around the World.**
Date: 2013-2018
Funded by: FP7-EU

Principal Investigator: AMC Innova Juice and Drinks, Iberfruta Muerza, Hijo de José Martínez Somalo, Grupo ICA, Congelados de Navarra, Galletas Gullón and Europastry
Participating Investigator: Jose Alfredo Martínez Hernández
Project Title: **Nutriprecisión**
Date: 2016-2020
Funded by: Programa Estratégico de Consorcios de Investigación Empresarial Nacional (CIEN), Centro para el Desarrollo Tecnológico e Industrial (CDTI)

Principal Investigator: Universitat Rovira i Virgili (URV)
Participating Investigator: Jose Alfredo Martínez Hernández
Project Title: **Predimed-Plus**
Date: 2013-2020
Funded by: Instituto de Salud Carlos III (ISCIII) and MINECO

group

Bioactive Ingredients Food

Group leader: Prof. Francesco Visioli

objectives

The Bioactive Ingredients Food Group investigates the molecular, cellular and in vivo actions of food-derived micronutrients by:

1. Employing in vitro techniques to foster the formulation of evidence-based nutraceuticals and functional foods.
2. Performing in vivo (including human) studies to create strong and solid scientific data that lead to evidence-based health claims.
3. Collaborating with food and nutraceutical companies to co-develop innovative products.

Prof. Francesco Visioli
Group Leader of the Bioactive Ingredients Food Group

Francesco Visioli earned a degree in Pharmacy and Pharmaceutical Chemistry from the University of Milan and a PhD in Biotechnology from the University of Brescia (based on work performed at the Louisiana State University Neuroscience Center). After being Full Professor of physiopathology at the Université Paris 6 "Pierre et Marie Curie", where he directed the "Micronutrients and cardiovascular disease" unit, he is now Professor of human nutrition at the University of Padua, Italy and Senior Investigator at the Madrid Institute for Advanced Studies (IMDEA)-Food. Formerly involved in neurochemistry, Dr. Visioli's research currently concerns essential fatty acids, namely those of the omega 3 series, and natural antioxidants, as related to atherosclerosis and cardiovascular disease. In particular, Dr. Visioli's group discovered the biological and pharmacological properties of olive oil phenolics, including hydroxytyrosol. In addition, Dr. Visioli is being studying some bioactive components of plant foods, including lycopene from tomato and biophenols from wild greens. His research ranges from *in vitro* studies of bioactivity (test tubes, cell cultures) to *in vivo* tests, performed on laboratory animals and/or humans. Dr Visioli has a publication record of approximately 250 papers and book chapters, which have been cited over 10,000 times. He gave invited lectures in over 100 meetings. Dr. Visioli was member of the Board of Directors of the International Society for the Study of Fatty Acids and Lipids (ISSFAL). Currently, Dr. Visioli is the Editor-in-Chief of *PharmaNutrition*, Associate Editor of *Prostaglandins, Leukotrienes and Essential Fatty Acids*, in addition to being a member of the Editorial Board of several other journals. Presently, Dr. Visioli is Leader of the "Fats and Human Health" division of Eurofed Lipid and member of the EFSA GMO Panel.

Dr. João Tiago Estevao Tomé Carneiro
Postdoctoral researcher

The research carried out by Dr. João Tiago Estevão Tomé Carneiro has been focusing on the biological activity of food constituents in chronic pathologies. He has a degree in biochemistry, a master's degree in Biotechnology, and he completed his PhD in CEBAS-CSIC (University of Murcia, 2013). He is the co-author of more than 20 peer-reviewed papers in relevant international journals. In 2014, he joined the Bioactive Ingredients Food at IMDEA-Food, where he contributes to the assessment of the potential health effects of bioactive food components (ex. hydroxytyrosol) against cardiovascular and neurodegenerative diseases. The group carries out in vitro (ex. organoids) and in vivo research, and also randomized clinical trials.

Dr. Carmen Crespo Lorenzo
Postdoctoral researcher

Mª del Carmen Crespo Lorenzo has a first degree in Molecular and Cellular Biology from the IE University of Segovia (2010). In 2013 she obtained a master's degree in Pharmacological Research from the Universidad Autónoma de Madrid (UAM). As part of her research activity, she researched Gorham-Stout Disease and General Lymphatic Anomalies with Dr. Pablo Lapunzina's group at the Hospital Universitario La Paz. In 2017, she finished her Ph.D. at IMDEA-Food's Bioactive Ingredients Group (Supervisors: Prof. Francesco Visioli and Dr. Alberto Dávalos). Her thesis was focused on studying the protective function of specific micronutrients play on cardiovascular and neurodegenerative diseases, in vitro, in vivo and placebo-controlled, randomized trials. Currently, her research focuses on studying whether bioactive polar lipids, as part of a nutritional supplement, contribute to the improvement or delaying of mild cognitive impairment. Her publication record shows 14 papers.

Students

Raquel Aguado Puertas
Universidad Autónoma de Madrid
Elena Garicano Vilar
Universidad Autónoma de Madrid
Carlos Rodríguez
Universidad Autónoma de Madrid

most relevant publications

- Tomé-Carneiro J., Carmen Crespo, M.C., Emma Burgos-Ramos, E., Tomas-Zapico, C. García-Serrano, A., Castro-Gómez, P., Venero, C., Pereda-Pérez, I., Baliyan, S., Valencia, A., Fontecha, J., Dávalos, A., and Visioli F. **Buttermilk and krill oil phospholipids improve hippocampal insulin resistance and synaptic signaling in aged rats.** *Molecular Neurobiology* (2018) 55:7285-7296.

- Visioli F, Franco M, Toledo E, Luchsinger J, Willett WC, Hu FB, Martinez-Gonzalez MA. **Olive oil and prevention of chronic diseases: Summary of an International conference.** *Nutr Metab Cardiovasc Dis.* (2018) 28:649-656.

- Crespo MC, Tomé-Carneiro J, Gómez-Coronado D, Burgos-Ramos E, García-Serrano A, Martín-Hernández R, Baliyan S, Fontecha J, Venero C, Dávalos A, Visioli F. **Modulation of miRNA expression in aged rat hippocampus by buttermilk and krill oil.** *Sci Rep.* (2018) 8:3993.

main research grants

Principal Investigator: Carla Mucignat
Participant investigator: Francesco Visioli
Project Title: **How to improve chemical senses during ageing (CHEMAGE)**
Date: 2017-2018
Funded by: Ajinomoto

Principal Investigator: Alberto Dávalos Herrera
Participant investigator: Francesco Visioli
Project Title: **Exosomas: la comunicación intercelular como arma terapéutica (ExoRNAs)**
Date: 2017-2020
Funded by: Fundación Ramón Areces

Principal Investigator: Francesco Visioli
Project Title: **Survey of the prevalence of eating disorders among medical students**
Date: 2019-2021

Principal Investigator: Javier Fontecha, Antonio Pérez
Participant investigator: Francesco Visioli
Project Title: **Efectos sinérgicos de la membrana del gróbulo graso y xantofilas en la promoción del desarrollo cerebral del recién nacido y en la prevención del deterioro cognitivio en el envejecimiento**
Date: 2018-2020
Funded by: Agencia Estatal de Investigación. Ministerio de Economía, Industria y Competitividad

group

Epigenetics of Lipid Metabolism

Group leader: Dr. Alberto Dávalos Herrera

objectives

Our group interest is focused on two research topics.

1. To understand how different noncoding RNAs regulate lipid metabolism during states of health and disease, in order to develop novel tools and new strategies, both pharmacological and dietetic, to modulate their function.

2. To search therapeutic alternatives to control the microbiota through ncRNAs activity, both from the host and exogenous (dietary). Specifically, we aimed to:

- Generate new basic knowledge of how non-coding RNAs regulate the metabolism of lipids under physiological and pathological conditions.
- Find and evaluate minor dietary components for their ability to modulate the activity of non-coding RNAs associated with the metabolism of lipids.
- Incorporate the use non-coding RNAs data to develop Precision Nutrition.
- Focus on understanding of lifestyle modification of the epigenome in order to try to personalize the health of individuals using epigenetics for the development of Precision Nutrition.
- Test ncRNAs as therapeutic alternative to target the
- Microbiota, both from the host and exogenous (dietary).
- Generate new basic knowledge of how small Open Reading Frames (smORFs) regulate the metabolism of lipids under physiological and pathological conditions.

Dr. Alberto Dávalos Herrera
Group Leader of the Epigenetics of Lipid Metabolism Group

Dr. Alberto Dávalos holds a degree in Pharmacy and Biochemistry by San Marcos University (Lima) and a PhD in Pharmacy by Universidad Complutense de Madrid (Madrid). He has conducted postdoctoral research at the Hospital Ramón y Cajal (Madrid), at Yale University School of Medicine, (New Haven), and at New York University School of Medicine (New York). Dr. Dávalos´s research program focuses in identifying and characterizing new noncoding RNAs (miRNAs, lncRNAs and other type of regulatory RNAs) that regulate lipid metabolism and the effects of minor dietary components (micronutrients) on their expression. Noncoding RNAs have been recognized as critical modulators of cardiovascular system in health and disease. He hopes to: (i) identify new therapeutic strategies through modulating noncoding RNAs levels by the diet or other lifestyle factors to treat dyslipidemia and to prevent NAFLD/NASH and cardiovascular diseases; and (ii) understand lifestyle modification of the epigenome and personalize the health of individuals using epigenetics (particularly noncoding RNAs) for the development of Precision Nutrition.

Dr. María del Carmen López de las Hazas
Postdoctoral researcher

Her career began at the research institute CIAL (Food Sciences). During this stage her research was focused on the extraction and characterization of food bioactive compounds followed by the evaluation of their biological activity. After that, he joined the group of Antioxidants of the University of Lleida led by Dr. Maria José Motilva. Where did her doctoral thesis entitled “Advances in the knowledge of phenolic compounds of olive oil, from biotransformations after their intake to their metabolic fate for exerting biological activities.” Currently, her research is focus on the study and characterization of circulating exosomes. In addition, she studies the exosomic content of non-coding RNAs, and evaluates the transported compounds, biodistribution and cellular uptake. In addition, she studies the biological function of modulated miRNAs under pathophysiological conditions and their involvement in lipid metabolism.

Judit Gil Zamorano
Predoctoral researcher

Judit Gil Zamorano has a degree in Biotechnology from the Universidad Complutense de Madrid (2011). In 2012 was fellow of the program Starts from IMDEA Food, taking part in the study of the mechanism by which the consumption of DHA reduces the risk of cardiovascular disease, and the analysis of miR- NAs that modulate this effect. In 2014 she made a practical stay at the National Center for Microbiology (ISCIII) in Spirochetes and special Pathogens Laboratory, carrying out techniques of extraction, purification and sequencing of DNA, as well as PCR and Reverse Line Blotting for determination of pathogens in human blood samples. Now Judit forms part of the team of Dr. Alberto Dávalos as predoctoral researcher, where she is developing a project based on the screening and characterization of miRNAs that regulates the metabolism of cholesterol and lipoproteins in the enterocyte, and the effect of minor components of the diet on its expression.

Diana Carolina Mantilla Escalante
Predoctoral researcher

Diana Carolina Mantilla Escalante is a PhD student in Food Sciences at the Universidad Autónoma de Madrid (Spain) in Food Sciences. In 2013 she obtained her degree in Food Engineering from the Universidad de Cartagena (Colombia). Since 2016 she has been part of the international postgraduate studies program of the CEIBA Foundation (Bogotá, Colombia), through which she obtained her Master Degree in Novel Foods from the Universidad Autónoma de Madrid and is now part of the laboratory of epigenetics of lipid metabolism led by Dr. Alberto Dávalos. She is currently carrying out her research work at the Madrid Institute for Advanced Studies IMDEA Food, which seeks to identify and characterize non-coding RNAs modulated by the components of the diet to fi nd new therapeutic strategies to help prevent or treat disorders associated with lipid metabolism and thus, promote the development of precision nutrition and specific food uses for health.

Lorena del Pozo Acebo
Predoctoral researcher

Lorena del Pozo Acebo has an undergraduate degree in Biotechnology from CEU-San Pablo University (Madrid), where she carried out her Final Degree Project by studying the effect of a fatty acid diet in the fetus lipid profile. During her studies, she also worked in BioAssays S.L. (located in "Parque Científico", Madrid) applying Molecular Biology techniques. She continued her studies obtaining a Master degree in Biomolecules and Cell Dynamics at the "Universidad Autónoma de Madrid", completing her Final Master Project in Virology and Microbiology areas at the "Centro de Biología Molecular Severo Ochoa", where she studied different mutations introduced in HIV retrotranscriptase and their effect on DNA-polymerase activity. Later she completed a Lab Placement at the University of Birmingham (UK) where she worked in areas such as Biorremediation and Enviromental Genomics. She has recently joined the IMDEA-Food Institute as pre-doctoral researcher to work in Epigenetics of Lipid Metabolism Group evaluating the influence that the diet has on the modulation of non-coding RNAs and their effect on the gut microbiota for the development of new therapeutic strategies, both pharmacological and dietetic.

María Belén Ruiz Roso
Postdoctoral researcher

Dr. María Belén Ruiz-Roso holds a Pharmacy degree by Complutense University of Madrid (UCM) and has been collaborating in the research group of the Department of Nutrition, Faculty of Pharmacy, UCM. She has obtained her PhD from the Faculty of Medicine, UCM, with the highest qualification. Her Thesis research was focused on the study of neuroprotective effects of omega-3 fatty acids in cognitive function and neurodegenerative processes in ApoE-/- mice. In addition, during this period she has also studied different types of functional foods and their bioactive compounds and cardioprotective effects in rats. During her post-doctoral period, she has conducted a clinical trial in patients to determine the effects of probiotics on Obesity, Insulin Resistance Syndrome, Type 2 Diabetes and Non-Alcoholic Fatty Liver Disease, at the Department of Endocrinology, La Princesa Hospital of Madrid. She joined IMDEA Food in 2019 to carry out her postdoctoral research under the supervision of Dr. Alberto Dávalos (Epigenetics of Lipid Metabolism Group). Her research at IMDEA Food focuses on microRNAs involved in lipid metabolism. Additionally, she carries out teaching activities as Honorary Lecturer in Nutrition, UCM. Her scientific activity has been reflected in original research supported by national and international publications, research projects and conferences to national and international congresses.

Students

Paula Fernández Ordoñez
Nutrición Humana y dietética.
Universidad Autónoma de Madrid

Cristina Muñoz
Estudiante de Máster Universitario en Biotecnología Industrial y Ambiental.
Universidad Complutense de Madrid

Isabel Castaño
Nutrición Humana y dietética.
Universidad Autónoma de Madrid

independent researchers

Dr. Aida Serra
Senior researcher

Dr. Aida Serra joined IMDEA Food Institute as senior researcher in June 2019 through the Talents Attraction plan of the Autonomous Community of Madrid. Dr. Serra has been researcher and fellow scholar at the Nanyang Technological University of Singapore from 2013 to 2019. Her research is based on the application of mass spectrometry technologies to clinical proteomics and at IMDEA Food her research lines focus on the investigation of extracellular vesicles from foods and lipids of the diet to fight dementia and neurodegenerative conditions.

Ongoing research projects:

Principal Investigator: Dr. Aida Serra
Project Title: Food derived extracellular vesicles as optimal, safe and editable nanocarriers for the biotechnology and food industries
Date: 2019-2022
Funded by: Autonomous Community of Madrid (2018-T1/BIO-10633)

Dr. Almudena García-Ruiz
Postdoctoral researcher

Dr. Almudena García-Ruiz holds a Biology degree and a Food Science and Technology degree by University of Seville and University of Cordoba, respectively. She received her PhD in Food Science and Technology and Chemical Engineering from Autonomous University of Madrid. Her pre-doctoral research was focused on the study of the effect of polyphenols on the growth and metabolism of oenological lactic acid bacteria (LAB) and its potential application as antimicrobial additives in oenology. In addition, during this period she has also worked in the degradation of biogenic amines by enological BAL and vineyard ecosystem fungi enzymatic extracts. During her post-doctoral period, first, she evaluated of probiotic and immunomodulatory activity of enological LAB and the application in the wine industry of new antimicrobial agent such as silver nanoparticles. Then, her research was focused on obtaining functional ingredients from quinoa, and fruits native Ecuador as well as on the analysis of phenolic fraction and antioxidant activity of new varieties of Ecuadorian cocoa. Currently, she is working in IMDEA Food Institute (Epigenetic of Lipid Metabolism Lab) evaluating the potential of "small open reading frames (smORF)" as new modulators of disorders of dietary excess, focusing mainly on those that influence lipid metabolism.

most relevant publications

- Crespo MC, Tomé-Carneiro J, Gómez-Coronado D, Burgos-Ramos E, García-Serrano A, Martín-Hernández R, Baliyan S, Fontecha J, Venero C, Dávalos A, Visioli F. **Modulation of miRNA expression in aged rat hippocampus by buttermilk and krill oil.** *Sci Rep.* 2018 Mar 5;8(1):3993.

- Spreafico F, Sales RC, Gil-Zamorano J, Medeiros PDC, Latasa MJ, Lima MR, de Souza SAL, Martin-Hernández R, Gómez- Coronado D, Iglesias-Gutierrez E, Mantilla-Escalante DC, das Graças Tavares do Carmo M, Dávalos A. **Dietary supplementation with hybrid palm oil alters liver function in the common Marmoset.** *Sci Rep.* 2018 Feb 9;8(1):2765.

- Tomé-Carneiro J, Fernández-Alonso N, Tomás-Zapico C, Visioli F, Iglesias-Gutierrez E, Dávalos A. **Breast milk microRNAs harsh journey towards potential effects in infant development and maturation. Lipid encapsulation can help.** *Pharmacol Res.* 2018 Apr 5;132:21-32.

- Martín-Hernández R, Reglero G, Dávalos A. **Data mining of nutrigenomics experiments: identification of a cancer protective gene signature.** *J Funct Foods.* 2018;42:380-386.

- de Gonzalo-Calvo D, Dávalos A, Fernández-Sanjurjo M, Amado-Rodríguez L, Díaz-Coto S, Tomás-Zapico C, Montero A, García-González Á, Llorente-Cortés V, Heras ME, Boraita Pérez A, Díaz-Martínez ÁE, Úbeda N, Iglesias-Gutiérrez E. **Circulating microRNAs as emerging cardiac biomarkers responsive to acute exercise.** *Int J Cardiol.* 2018 Aug 1;264:130-136.

- Aganzo M, Montojo MT, López de Las Hazas MC, Martínez-Descals A, Ricote-Vila M, Sanz R, González-Peralta I, Martín-Hernández R, de Dios O, Garcés C, Galdón A, Lorenzo Ó, Tomás-Zapico C, Dávalos A, Vázquez C, González N. **Customized Dietary Intervention Avoids Unintentional Weight Loss and Modulates Circulating miRNAs Footprint in Huntington's Disease.** *Mol Nutr Food Res.* 2018 Dec;62(23):e1800619.

main research grants

Principal Investigator: Alberto Dávalos
Project Title: **Precision nutrition and physical exercise as modulators of human epigenome in disorders of dietary excess (Nutri-Epigen)**
Date: 2018-2019
Funded by: Agencia Estatal de Investigación. Ministerio de Economía, Industria y Competitividad (AGL2017-90623-REDT)

Principal Investigator: Alberto Dávalos
Project Title: **Modulation of exosomes that transport miRNAs and lncRNAs for intercelular communication as therapeutic tool to treat dyslipidemia (ExoRNAs)**
Date: 2017-2020
Funded by: Fundación Ramón Areces (CIVP18A38889)

Principal Investigator: Alberto Dávalos
Project Title: **Therapeutic modulation of noncoding RNAs through dietary food bioactive compounds: impact on the physiophatological regulation of intestinal lipid metabolism (Intesti-nAhRuNg)**
Date: 2017-2019
Funded by: Agencia Estatal de Investigación. Ministerio de Economía, Industria y Competitividad (AGL2016-78922-R)

Principal Investigator: Alberto Dávalos
Project Title: **Search for new biomarkers for diagnosis and stratification of NAFLD/NASH: can circulating exosomal miRNAs play a role? (ExomiRNAsh)**
Date: 2019-2021
Funded by: Gilead Sciences (GLD18/00143)

Principal Investigator: Anna P. Pierucci (INJC, UFRJ)
Participant Investigator: Alberto Dávalos
Project Title: **"Programa Institucional de Internacionalização CAPES/PRINT"**
Date: 2019-2022
Funded by: Fundação CAPES, Ministry of Education, Brazil. (Edital N.º 41/2017)

Principal Investigator: Almudena García Ruiz
Project Title: **Small open reading frames (smORF) as novel modulators of disorders of dietary excess (LIPMETIN-sURFing)**
Date: 2018-2021
Funded by: European Commission Research Executive Agency (REA) (746435-H2020-MSCA-IF-2016)

program highlight

highlight

This Nutrition Precision Program has a mayor focus on the analysis of different features that allow of Personalised Nutrition interventions to be more efficient. These analyses have allowed to determine some specific clusters of population that predict higher benefits from the personalised dietary advice; to define the beneficial role of vegetable proteins in the weight management: the importance of a higher frequency nutritional feedback to achieve better results on body weight intervention and the identification of some specific methylation marks located at genes related with longevity-regulating pathways which were associated with obesity and metabolic syndrome traits.

miRNAs related to metabolic function are dysregulated in Huntington Disease patients

microRNAs (miRNAs) are small non-coding RNAs (ncRNAs) that govern complex biological processes with potential interest for therapeutic and diagnostics. miRNAs are found in all biological fluids. Compelling evidence suggest that miRNAs can be modulated by diet, but whether circulating miRNAs can be therapeutically targeted by the personalization of diet is unknown.

Some circulating miRNAs related to metabolic function are dysregulated in Huntington Disease (HD) patients. Unintentional weight loss (UWL) is a major clinical feature of symptomatic HD subjects. In a collaborative study with the Fundación Jiménez Díaz (Madrid) and ATG Medical (Madrid) we performed a pilot study to prevent UWL and to target metabolic circulating miRNAs through a dietary intervention. We found that a 12-month customized HD diet managed the UWL and modulated the dysregulated circulating miRNAs. Our results show that circulating miRNA can be therapeutically modulated through the personalization of diet and open up novel nutritional strategies to alleviate the devastating consequences of HD.

Neuroprotective activities of food products

The Bioactive Ingredients group discovered the potential neuroprotective activities of buttermilk and krill oil concentrates, in a model of aging. The two concentrates were tested in vivo. The molecular results indicate that these two preparations ameliorate several parameters associated with cognitive decline.


BD
Rosolwy

Precision nutrition and obesity

Dr. Jesús Argente Oliver
Full Professor and Director of the Department of Pediatrics at the Universidad Autónoma de Madrid, Director of the Department of Pediatrics and Chairman of the Department of Pediatrics and Pediatric Endocrinology and Director of the Laboratory of Research at the Niño Jesús University Children's Hospital. Associate researcher of IMDEA Food. Director of the Childhood Precision Nutrition Program

Dr. Argente is IP in the CIBER of Obesity and Nutrition, being the leader of the childhood obesity program. He obtained his medical degree at the University of Zaragoza and completed his pediatric residency at the Hospital Ramón y Cajal in Madrid and has worked at the Hospital Saint Vincent de Paul in Paris, France, the University of Virginia in Charlottesville, VA, USA and at the University of Washington in Seattle, WA, USA. His main research interests include childhood obesity, pathophysiology of human growth, puberty, eating disorders and diabetes. He has published more than 300 original articles and has lectured in more than 30 countries. He is past president of the European Society for Pediatric Endocrinology (ESPE) and past president of the Spanish Society for Pediatric Endocrinology (SEEP). He has obtained multiple national and international awards for his research.

Dr. Julie Chowen
Investigator of the Community of Madrid Category A in the Department of Pediatrics and laboratory of Research at the Niño Jesús University Children's Hospital in Madrid. Associate researcher of IMDEA Food. Co-Director of the Childhood Precision Nutrition Program

Dr. Chowen received her PhD in Physiology and Biophysics at the University of Washington in Seattle, Washington, USA. She obtained a postdoctoral position and later as a research associate at the Cajal Institute, CSIC, Madrid, Spain. She is currently President of the Scientific Committee of the Foundation for Biomedical Investigation of the Niño Jesús University Children's Hospital in Madrid. Co-IP in the CIBER of Obesity and Nutrition. Her main interests include the neuroendocrine control of metabolism and appetite, with a special emphasis on the participation of astrocytes in the physiological and pathophysiological control of metabolism and the development of comorbidities associated to obesity. Her research also includes the neuroendocrine response to specific nutrients, long-term effects of the early nutritional environment and sex differences in response to nutritional/metabolic challenges. She has published over 200 original articles and has given lectures at the most important international meetings of endocrinology, neuroendocrinology and obesity.

group

Chilhood Obesity

Group leaders: Dr. Jesús Argente | Dr. Julie Chowen

objectives

The focus of this Program is on childhood obesity and the study of the molecular basis of this disease and its comorbidities in order to promote precision therapies, including nutritional approaches and new treatments for monogenic obesity.

It is essential to know the causes of childhood obesities, including epigenetics, genetics, genomics and diet and to investigate their influence on long-term health outcomes. Special attention is placed on understanding and predicting the development of comorbidities in children with severe early onset obesity, including metabolomics and microbiota analysis. Preclinical studies to understand the effects of early nutrition and hormonal changes on long-term metabolic health and how the brain, especially glial cells, responds to specific nutrients that affect metabolism and neuroinflammation are also a major focus of this program.

most relevant publications

- Aguado-Llera D, Canelles S, Frago LM, Chowen JA, Argente J, Arilla E, Barrios V. **The Protective Effects of IGF-I against b-Amyloid related Downregulation of Hippocampal Somatostatinergic System Involve Ac- tivation of Akt and Protein Kinase A.** *Neuroscience.* 2018 Mar 15;374:104- 118. DOI: 10.1016/j.neuroscience.2018.01.041. Epub 2018 Feb 3.

- Chowen Ja, Argente-Arizón P, Freire-Regatillo A, Argente J. **Sex differences in the neuroendocrine control of metabolism and the implications of astrocytes.** *Front Neuroendocrinol* 2018; 48:3-12. DOI: 10.1016/j. yfrne.2017.05.003.

- Travieso-Suárez L, Pereda A, Pozo-Román J, Pérez De Nanclares G, Argente J. **Brachydactyly Type C due to a nonsense mutation in the GDF5 gene.** *An Pediatr* 2018; 88:107-109. DOI: 10.1016/j.anpedi.2017.03.001.

- Argente-Arizón P, Díaz F, Ros P, Barrios V, Tena-Sempere M, García- Sefura Lm, Argente J, Chowen Ja. **The hypothalamic inflammatory/gliosis response to neonatal overnutrition is sex and age dependent.** *Endocrinology* 2018; 159(1):368-387. DOI: 10.1210/en.2017-00539.

- Corredor-Andrés B, Muñoz-Calvo Mt, Calero O, Argente J, Calero M. **Nephrotic syndrome associated with severe hypertriglyceridemia in a pediatric patient: Answers.** *Pediatr Nephrol* 2018. DOI: 10.1007/s00467- 018-3894-6.

annual report 2018

www.food.imdea.org

5.

technological platforms and technology transfer

1. **Innovation, Education & Communication unit [96]**

EIT Food Innovation [99]

EIT Food Education [102]

EIT Food Communication [103]

2. **GENYAL platform [108]**

Nutrition and Clinical Trials Unit [110]

Genomics Laboratory (GENYALLab) [113]

3. **Precision for Health. P4H [116]**

Innovation, Education & Communication Unit

Director: Guillermo Reglero Rada
Deputy Director: Ana Ramírez de Molina

Prof. Guillermo Reglero Rada

IMDEA Food Director and Director of the Innovation and Communication Unit

Guillermo J. Reglero Rada, PhD in Chemistry (1985). Full Professor of Food Sciences at the University Autonoma de Madrid (1999) and Senior Researcher of Consejo Superior de Investigaciones Científicas, CSIC (on leave). Between 1993 and 1994 he worked as Specialist Technician of Industrial Projects for Centro para el Desarrollo Tecnológico Industrial (CDTI). Between 2002 and 2006 he was the Manager of the Food Science and Technology Program of the National Plan of R&D and between 2005 and 2010 he was a member of the Steering Committee of the UAM-CSIC Research Institute in Food Sciences, CIAL. Currently, he is the Director of IMDEA Food Institute and member of the Council of Science and Technology of the Community of Madrid. His line of research is focused on the relationship between food and health. He has directed projects of the EU Framework Program, as well as Consolider and Cenit Ingenio 2010, Cien, National Plan of R&D, projects of industrial R&D Innpacto and projects in collaboration with companies. Since 2005 he has coordinated a Program of Activities in Technology funded by the Comunidad de Madrid which is composed of groups of 10 research centers and hospitals. He has authored over 300 original research articles and 4 licensed patents in exploitation. In 2001 he received the Award of the American Oil Chemists Society, in 2008 the Prize of the Spanish Society of Gastrononía as Best Spanish Researcher in Food Science and in 2015 the Fundación García Cabrerizo Award to the Invention.

objectives

The aim of this unit is to boost innovation from a communication perspective. Currently, there is a low flow of information between scientists, industry and end-users which delays knowledge transfer. This recently created unit has been implemented in IMDEA Food to catalyze the interaction between the IMDEA Food research community and relevant stakeholders. On the other hand, we aim to search and facilitate the transfer of knowledge generated through applied and basic research into applications for precision nutrition, and from whose use Society and Industry can equally profit. This unit brings Science to both Industry and Society through four strategic pillars:

- Innovation
- Education
- Communication
- Business creation

The EIT Food's Innovation, Education and Communication Groups address and connect three of the EIT Food's pillars, to develop world-class solutions to make the food system more sustainable, healthy and trusted by consumers, and to catalyze food entrepreneurship and innovation. EIT Food is a Knowledge and Innovation Community (KIC) established by the European Institute for Innovation & Technology (EIT), an independent EU body set up in 2008 to drive innovation and entrepreneurship across Europe. EIT Food is Europe's leading food innovation initiative made up a unique network of diverse partners that provide a holistic view of food value chain, including key industry players, agri-food start-ups, research centers and universities from across Europe, all working together to deliver an innovative and entrepreneurial food system.

Within EIT Food IMDEA Food is a Linked Third Party of the Universidad Autónoma de Madrid and one of the 6 Spanish entities that are part of the EIT Food. IMDEA Food is integrated into the Campus de Excelencia UAM-CSIC, which is well known for the training it offers in the food and nutrition sciences, bestowing its own and official awards. IMDEA Food is a research centre specialised in nutrition for health, with the necessary structures for transferring advances in this area to industry and society and to implement, in association with the Universidad Autónoma de Madrid, effective structures for innovation and the transfer of technology, with special attention paid to the promotion and fostering of technology start-ups.

In 2018 three main projects have been funded as well as a strong network with partners has been stablished in order to participate and success in 14 projects during 2019.

2018 Main Projects

Food System Master of Science Program

In 2018, EIT Food begins the initial phase of the development of EIT Food's flagship Food System Master Program, an integrated graduate degree program organized by 8 academic institutions and industrial partners from across EIT Foods pan-European partner network to prepare students to

drive a future transformation of the food system and increase the competitiveness of their future employing companies. It promotes an integration of the food system by providing students with the opportunity to study consecutively at three institutions which provide distinctly different semester blocks focusing on different parts of the food system. This is coupled with a partner-mentored project/thesis work and non/academic activities offered by industrial partners.

Global Food Venture Program

The Global Food Venture Program enables 30 highly qualified Ph.D. students from across Europe to turn their innovative ideas into successful business propositions. The program strives to raise awareness of the issues and challenges in the Agri-Food sector, cultivate an entrepreneurial mindset and educate in the area of entrepreneurship and business creation. Young innovators broaden their thinking and gain essential entrepreneurial skills & knowledge through an intensive program of seminars/workshops, one-to-one meetings with technology experts and corporate site visits. Finally, Ph.D. students profit greatly from a tailored mentorship program and have the unique chance to gain insight into key international entrepreneurship ecosystems and innovation cultures in Israel and the Silicon Valley.

FOODIO – Food Solutions Master Class

The FOODIO objective is to develop a multidisciplinary, challenge-based learning program for bachelor-, master and doctoral students, young researchers, and professionals. The FOODIO serves as a co-creation platform for sustainable, hands-on solutions to real-life product development challenges: use of plant-based side streams from juice manufacturing, sugar or pectin extraction, and olive oil manufacturing in dairy products (yogurt, cheese, ice cream), from technological, consumer, and health perspectives. Product formulation, marketing, consumer aspects, and business model development will be done in student teams. Around 40 students from five academic organizations, academic advisors, as well as mentors from three business partner organizations formed multidisciplinary, multi-stakeholder teams. The FOODIO educates future professionals in an international and inspirational environment, connect business and academia, and stimulate new food solutions for future innovation.

EIT Food Innovation

Ana Ramírez de Molina | **Head of R&D&I Programmes**

1. Mission

EIT Food fosters collaboration across the entire food system to develop innovative technologies, products and services. By bringing all players together, EIT Food partners want to build a shared vision for the future of food and a shared agenda to transform it and make it better.

2. Objectives

IMDEA Food role within EIT Food is to guide and accelerate the innovation process that will transform the food system. We are committed to overcoming low consumer trust, creating consumer-valued food for healthier nutrition, building a consumer-centric connected food system and enhancing sustainability through promoting a circular Bioeconomy.

We collaborate in building an inclusive and innovative community where the consumer is actively involved, by empowering consumers to take an active part in the transformation of the food system, as well as building and shaping the innovators of tomorrow.

EIT Food approach puts the needs and concerns of consumers at the heart of the food value chain, co-creating ideas to drive a more resource-efficient, secure, trusted and transparent food system. IMDEA Food is specially involved with projects focused on healthier nutrition.

Healthier nutrition

Our innovation activities are helping to reduce the prevalence and diet-related risk of developing metabolic diseases through personalised nutrition services, including non-invasive tools, online information services and novel technologies, enabling people to make healthier decisions.

3. Projects

CYTED PROGRAMA IBEROAMERICANO DE CIENCIA Y TECNOLOGÍA PARA EL DESARROLLO

IberoAmerican network for the integral use of underutilized indigenous foods.

ILSI International Life Sciences Institute

Expert group for a holistic approach to develop alternative strategies that do not rely on additional animal testing.

Madrid Industry PhD Programme

Adrián Bouzas, Marina Reguero and Sonia Wagner.

InnoLink 012018/INNOLINK5352 | Comunidad de Madrid | FEDER Fondo Europeo de Desarrollo Regional UNIÓN EUROPEA "Una manera de hacer Europa"

IMDEA Food functions as the nexus to a Food Technological Innovation Hub within Madrid region.

EIT Food Innovation

María Tabernero Urbieta
Head of Innovation
Programmes EIT Food
UAM-IMDEA Food

Dr. María Tabernero holds a Biology degree by the University of Salamanca and a PhD in Biochemistry and Molecular Biology by the Universidad Complutense of Madrid. Her professional career combines multidisciplinary research experience in some of the leading global Food Companies (Unilever Research –The Netherlands- and Kraft, currently Mondelèz–France) and public research centers (ICTAN-CSIC and the Hospital La Paz Institute for Health Research). She has been awarded with two Marie Curie Fellowships which have allowed her to develop her research in the validation of bioactive ingredients and functional foods using in vitro and in vivo models and human studies. She is currently part of an ILSI-Europe taskforce group of experts and is actively involved in the European Project EIT-Food. She joined IMDEA Food in September 2016 as a postdoctoral researcher applying precision nutrition in the development of food products for the promotion of health. Maria Tabernero has been very actively involved in the development of EIT Food projects, mostly related to the Innovation area, as well.

Marina Reguero
Predoctoral researcher
Industrial doctorate project

Marina Reguero Simón obtained her Biochemistry Degree at the Complutense University of Madrid in 2014, when she joined the Health and Veterinary Surveillance Center to study the detection and molecular and serological identification of pathogenic microorganisms in free lagomorphs. After this, in 2015 she continued her career by coursing a Master´s degree in Food engineering and Health at the Polytechnic University of Madrid. Meanwhile, she joined the Institute of Food Science Technology and Nutrition (CSIC), developing a project about the role of bioactive antioxidant compounds against UV light damage in retinal cells in the department of Metabolism and Nutrition. Later, she continued her career by collaborating in the Cajal Institute (CSIC) in Madrid within a project about the influence of specific diets in obesity and Alzheimer´s disease. In March 2016 she moved to England as a volunteer and there, in 2017, she joined the department of Food Sciences at the University of Central Lancashire in Preston as a research assistant. In February 2018 she came back to Spain with a Madrid Community Grant to develop her PhD in between IMDEA Food Institute and Natac Biotech, focused on precision nutrition studying the molecular effect of bioactive compounds for the development of nutritional supplements to achieve a healthy aging, in the department of Innovation.

Adrián Bouzas Muñoz
Predoctoral researcher
Industrial doctorate project

Adrian Bouzas Muñoz obtained his Chemistry Bachelor at Complutense University of Madrid in 2013. During the last year of his degree he worked with the Physical Chemistry Department at Chemistry School in Complutense University of Madrid over Raman Spectroscopy. Then, he decided to move into Medicinal Chemistry obtaining a Master in Drug Discovery carried out in the UCM, UAH and SP-CEU. During the master, he performed a research about elucidate the active site of proteins by NMR. In the same direction, in September 2015, he got an internship in Janssen Cilag, where he developed research in the field of Neuroscience by synthesizing potentially active compounds in different neurodegenerative diseases. In April 2017, he moved to The Netherlands (Groningen) where he worked for Syncom B.V. specialized in Organic Chemistry and with projects in various fields in the industry. After passing abroad, in 2018 he joined the Innovation Group at IMDEA Food, beginning his PhD in bioactives against cancer.

Sonia Wagner Reguero
Laboratory technician

She was graduated in Biochemistry in 2014 at Complutense University in Madrid, where she performed Extracurricular internships at the Spanish National Center for Cardiovascular Research (CNIC) in magnetic resonance. Her Final Degree Project was focused on intestinal expression genes associated with Celiac disease, at Inmunology and Genetic Department, Hospital San Carlos. In 2015 she obtained a Master degree of Microbiology at the Universidad Autonoma de Madrid. Her Master's Research Project was performed in the Department of Preventive Medicine, Public Health and Microbiology, in the development of herpes virus (HSV-1 y PRV) vectors for vaccines and gene therapy, under the supervision of Enrique Tabarés, Emeritus Professor of this University. She continues collaborating in this laboratory for 2 years until her incorporation at IMDEA Food Institute in February 2017 where she is working as a research assistant.

Carolina Rodríguez
Innovation and Communication Assistant of Innolink Project

In 2017, Carolina obtained a Journalism Bachelor in the Complutense University of Madrid. Presently, she has more than two years of experience in journalism, communication and community manager tasks. In the beginning, she started to work in several media as a journalist. After that, she joined to a startup where she developed a tactical and strategic sense to manage the social community and to evaluate the KPI's, customer experience and corporate communication under the Communications Head supervision. Also, she powered her innovative and disruptive instinct working in an entrepreneurial environment of startups and new business lines, being a part of sectorial events and carrying new communication proposals out. Finally, her last job has been in a PR agency as a client executive, where she carried out daily clippings and coverage reports. Nowadays, she is developing different skills in scientific dissemination and food stakeholder's innovation in IMDEA Food Institute.

EIT Food Education

1. Mission

EIT Food is attracting, developing and empowering talent to lead the transformation of the food system into an innovative sector that produces healthy and sustainable food, and is trusted by society. From summer schools and online courses to dedicated Master and PhD programmes, IMDEA Food is involved in the development of a range of activities for anyone who wants to learn about food.

2. Objectives

IMDEA Food collaborates with leading higher education institutions and food companies to develop and offer exciting programmes to help individuals with their career in the food system.

EIT Food programmes are aimed at current and future students as well as professionals either wanting to work or already working in the sector. They are designed together with industry professionals and entrepreneurs and are tailored to fit around busy schedules.

EIT Food programmes have something for everyone:

- **Advance your career** by taking part in a range of courses for professional development to keep up-to-date and develop new skills.
- **Solve global challenges** by co-creating new solutions to transform the food system and have real impact in the world.
- **Grow your business** with our courses for entrepreneurs and SME owners, helping you to transform towards a more sustainable future.
- **Learn with us** by joining one of our online courses about the food system and how future trends will change how we produce and consume food! Everyone is welcome, these online opportunities are open to all.

3. Projects

FOODIO (Food Solutions)
Global Food Venture Programme
Master in Food Systems

Maria Jesús Latasa Sada
Head of Education Programmes EIT Food
UAM-IMDEA Food

Dr. Maria-Jesús Latasa holds a Pharmacy degree by the University of Navarra and a Ph.D. in Pharmacy, specialized in Biochemistry and Molecular Biology, by the University of Alcalá. Throughout all her professional career, her research expertise has always been the regulation of gene expression on different tissues and systems, as well as in diverse physiopathological conditions. Thus, her work covers several topics, going from the regulation of the APP gene (implicated in Alzheimer's disease) by various hormones and growth factors (IIBM-CSIC-Spain), to gene expression regulation during nervous system development by epigenetic factors (IC and IIBM-CSIC-Spain), and research on the effect of the nutritional state on the regulation of FAS, the central enzyme in lipid synthesis (UCBerkeley-USA). Since her arrival to IMDEA Food, her scientific interests have focused on the effect of diet on the regulation of microRNA and other non-coding RNAs expression. For the last two years, she has also been involved in R&D&I activities within the EIT Food, with a special focus on the Education pillar.

EIT Food Education

EIT Food Communication

1. Mission

EIT food believes that we are all responsible for, and connected to, the food that we eat, so we all need to work together to improve it. Their activities are designed to engage with people so that they can become agents of change in the food system.

IMDEA Food aims to disseminate the Institute research results, leading to changes in society's behavior and attitudes towards a healthier and more sustainable food system.

2. Objectives

EIT Food is building an inclusive and innovative community where you can be actively involved so together we can deliver an innovative agrifood sector that produces both healthy and sustainable food and is trusted by society. Their public engagement activities can be grouped into the following areas:

- **Dialogue and engagement via events & digital platforms** (e.g. The Annual Food Agenda project led by IMDEA Food and the FoodUnfolded web site).

- **Offering guidance by providing targeted information** (e.g. SEE & EAT Project that aims to Communicate the benefits of visual familiarity as a strategy for introducing healthy foods into children's diets).

- **School programmes The EIT Food School Network:** Integrating solutions to improve eating habits and reduce food wastage.

To achieve its mission IMDEA Food develop a wide range of communication activities aligned and supported by EIT Food Public Engagement programs and by the Nutrigenomic Interactive Center (CIN), located within the Institute.

cin centro interactivo de nutrigenómica

CIN is an interactive museum that currently presents the exhibition entitled "Health and Personalized Nutrition" aiming:

- To familiarize society, both at the school and family levels, of the aims of research into nutritional genomics.

- To transmit the idea of the importance of nutrition in human health and the relationship between genetics and the effects of food on health.

The exhibition allows visitors to understand their degree of adherence to the Mediterranean Diet, their chronotype, and the involvement of their emotions in their food choices, at the same time that they acquire knowledge about themselves, their biology and their current habits with the final goal of engaging society to follow a more healthy lifestyle.

It has great success among the children and adolescents that come to visit our institute. Many schools from Spain and from other countries come to visit this center during the year, mostly during special events such as the European Researchers' Night, the Science Week, the Women and Girls in Science Day and others.

Sara Castillo Alonso
Head of Communication Programmes EIT Food UAM-IMDEA Food

Sara Castillo Alonso holds a bachelor degree in Economics from the University Carlos III in Madrid, she has obtained a Master's degree in Commercial Management and Marketing at Instituto de Empresa, as well as a Superior Program in Digital Marketing at ESIC Business & Marketing School. She has extensive professional experience in the areas of communication and marketing that she has carried out both in multinational companies operating in the field of consulting as well as in the industrial sector, and in public institutions. In 2014, she joined the IMDEA Food Institute as Communication and Institutional Relations coordinator being responsible for the Interactive Nutrigenomic Center development. In 2017 she became part of the newly created Innovation & Communication unit, being in charge of the Institute outreaching activities and the communications projects linked to EIT Food.

Lorena Carrilo
Communication Programs Manager EIT Food UAM-IMDEA Food

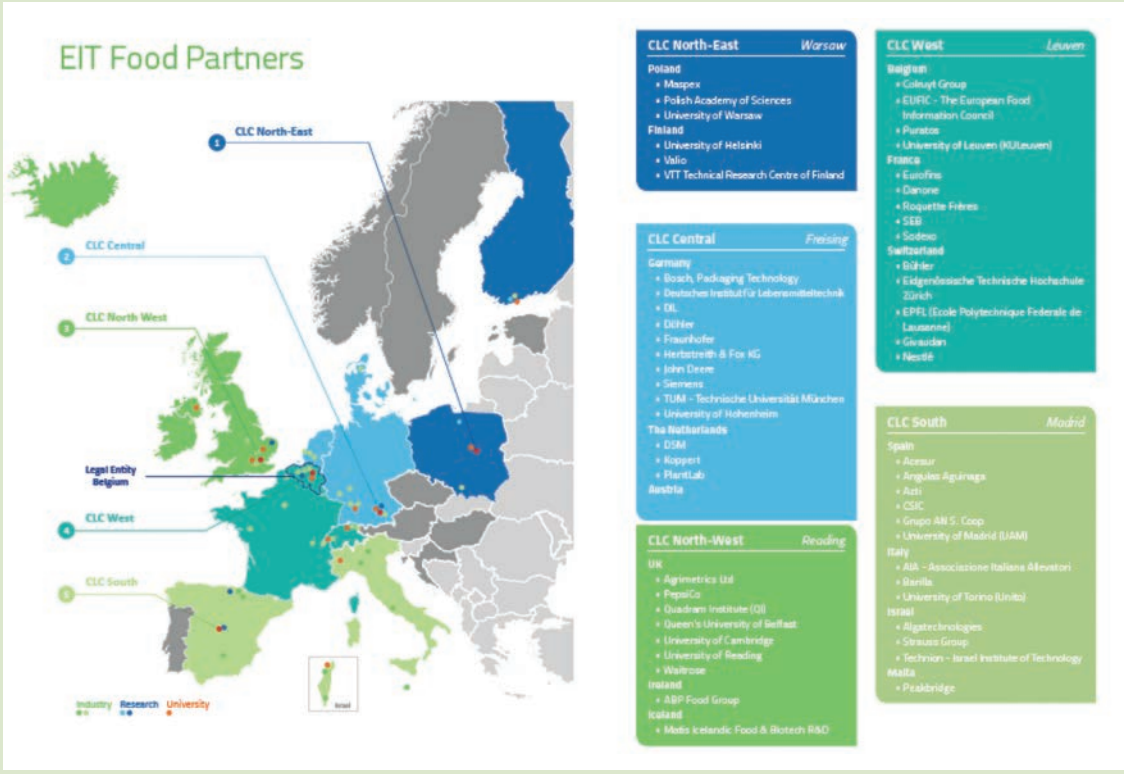
Lorena Carrillo holds a bachelor´s degree in Journalism by the University Rey Juan Carlos as well as a postgraduate in Health information by the University Complutense of Madrid. Her professional career combines an extensive experience as a journalist in media such as Prisa Radio (Cadena Ser), Atresmedia (La Sexta), Unidad Editorial, Cope Group. Since 2010 she focused on Health Innovation & Scientific Communication projects working as communication manager at Innovation Unit (Clinic San Carlos Hospital), Plataforma ITEMAS and also as freelance consultant developing marketing strategies and technical reports for big companies such us everis NTT Data, Bankinter, Carlos III Health Institute and also coordinating dissemination tasks for european projects under Horizon 2020 framework. She joined IMDEA Food in 2018, as Communication Programs Manager EIT Food UAM-IMDEA Food to support the EIT Food projects in the public engagement role with scientific dissemination.

EIT Food Communication

unit highlight

EIT Food's Ambition

European Institute of Innovation and Technology (EIT) Food is a pan-European consortium with the aim to create a sustainable and future-proof food sector. The members of the EIT Food community are world-class players in the international food domain: over 50 partners from leading businesses, research centers and universities across 13 countries. EIT Food officially started in November 2016, making it the youngest operating KIC of the EIT community.



highlight

highlight

EIT Food's vision is to put Europe at the center of a global revolution in food innovation and production. It will engage consumers in the change process and make sure that consumers can enjoy food that is tasty, healthy, sustainable and fair.

This will be achieved by:

- **Developing new talents:** attract and engage new talent through EIT Food education programs with curricula designed to overcome the 'silos' of knowledge and skills in specific areas of the food system. We will introduce new learning methods, entrepreneurial tools, and business practices that empower students, professionals and executives at all career stages to become entrepreneurial champions in Europe's food sector.

- **Delivering business creation and acceleration support:** boost the competitiveness of the EU food sector and ensure that Europe remains the number one global exporter of food and drink. EIT Food will proactively support entrepreneurs in transforming their ideas into businesses through the entire startup cycle. It will generate future entrepreneurial champions in the food sector who will fulfil their ambitions to improve nutrition, achieve food security and promote resource-efficient food systems.

- **Creating consumer-valued food for healthier nutrition:** develop innovative tools and technologies that support personalized consumer nutrition. These will deliver customized diets that consumers can monitor themselves through non-invasive mobile devices and individual online coaching. This will help to narrow the current gap between people's intentions and actual behavior towards healthier foods and lead to an improvement of people's health across Europe.

highlight

As part of the activities that EIT Food will carry out in 2019, 14 projects participated by IMDEA Food and the Universidad Autónoma de Madrid have been granted:

1. (18249-19) Food System Master of Science
2. (18250-19) Global Food Venture Program
3. (18268-19) Human Capital
4. (19029) The FutureKitchen Virtual Reality and Eating-Healthy Video Infotainment Series
5. (19071) How to effectively change food habits: innovative techniques and personalized nutrition approaches
6. (19097) FOODMIO
7. (19123) Food of the future: engineering solutions
8. (19150) An Introduction to Food Systems: Scientific, Technical and Socioeconomic Principles to Facilitate the Creation of Food Value network
9. (19152) IValueFood
10. (19163) EcoPack: Finding solutions to enable consumers and retailers to pack on-the-go items in grocery stores ecologically
11. (19169) The #AnnualFoodAgenda (Led by IMDEA Food and the Universidad Autónoma de Madrid)
12. (19180) MAKE-IT! An infrastructure to hack simpler and smarter food value chains3.73.
13. (19186) WE Lead
14. (19206) From waste to worth – Use of Plants Residues

Platform for Clinical Trials in Nutrition and Health

GENYAL Platform

General Director: Prof. Guillermo Reglero Rada
Scientific Director: Dr. Ana Ramírez de Molina
Administrative Director: Inmaculada Galindo Fernández

The Platform for Clinical Trials in Nutrition and Health (GENYAL) constitutes a high-throughput genomic tool with high scientific level useful to investigate how individual human genomes interact with diet constituents and these in turn with the genome. The results of the research provide information about the benefits and harms of specific nutrients and food ingredients on the human health. The application includes both basic and applied research related to gene-diet interactions at the two fields, Nutrigenetic and Nutrigenomic.

GENYAL caters Spanish and foreign research groups working on nutritional genomics, as well as food industry companies, interested in:

- Nutritional intervention studies required for product development or for obtaining official approval of the nutritional and health claims made for products.

- The generation of the information needed to provide added value to new and existing products (e.g., the identification of new indications).
- The identification of (mainly) genetic or metabolic markers involved in the response to product consumption.

The Platform focuses its activity on two areas:

1. Nutritional intervention studies to validate the effect of functional foods and food supplements on the general population and by genotypes

To date more than twenty five nutritional intervention studies have been performed to evaluate effectiveness of:

- Prepared dishes enriched with artichoke, olive and grape on overweight and obese people.
- Functional drink enriched with antioxidants on healthy people.
- Functional biscuits enriched with an olive extract on overweight and obese people.
- Olive, apple and grape extracts on people suffering the metabolic syndrome.
- Daily intake of a functional jam enriched with a pomegranate extract on postmenopausal healthy women.
- Daily intake of a functional Mediterranean drink on healthy subjects presenting risk factors for chronic diseases development.
- Formulation of products for personalized nutrition of patients with gastric cancer.
- Interactions between gut microbiota, genotype and dietary polyphenols, in normalweight, overweight and obese healthy adults.
- Genotypic and phenotypic characterization of patients suffering multiple chemical sensitivity syndrome (MCS) and associated chronic fatigue syndrome (SFC).

2. Permanent recruitment of volunteers

GENYAL also has a program for characterising the phenotypes and genotypes within populations, allowing a cohort Platform to be constructed for use in clinical trials on nutrition and health. The main objective is to identify and characterize gene variants associated with different responses to nutrients and studying the effects of foods and food constituents on gene expression. Phenotype characterisation includes the gathering of socio-health data, physical activity profiles, anthropometric information and the results of biochemical analyses; genotype characterisation involves the identification of variants (nucleotide polymorphims and SNPs) of genes involved in nutrient metabolism and nutrition-linked disease. Volunteers are being permanently recruited and as of now more than 1.500 people have been genotypically and phenotphenotypically characterized.

The Platform has its own ethics committee and provides advanced scientific services to researchers and companies via three IMDEA research Units:

- The Nutrition and Clinical Trials Unit
- The Biostatistics and Bioinformatics Unit
- And the Genomics Laboratory

In addition, GENYAL performs functions of specialized training and provide support in the transfer of results, dissemination, communication and outreach.

most relevant publications

- Marcos-Pasero H, Aguilar-Aguilar E, de la Iglesia R, Espinosa-Salinas I, Gómez-Patiño M, Colmenarejo G, Ramirez de Molina A, Reglero G, Loria-Kohen V. **Association of calcium and dairy product consumption with childhood obesity and the presence of a Brain Derived Neurotropic Factor-Antisense (BDNF-AS) polymorphism.** *Clin Nutr.* 2018 Nov 20. pii: S0261-5614(18)32536-6.

- Aguilar-Aguilar E, Marcos-Pasero H, de la Iglesia R, Espinosa-Salinas I, Ramirez de Molina A, Reglero G, Loria-Kohen V. **Characteristics and determinants of dietary intake and physical activity in a group of patients with multiple chemical sensitivity.** *Endocrinol Diabetes Nutr.* 2018;65(10):564-570.

- Romo-Vaquero M, Cortés-Martín A, Loria-Kohen V, Ramírez-de-Molina A, García-Mantrana I, Collado MC, Espín JC, Selma MV. **Deciphering the Human Gut Microbiome of Urolithin Metabotypes: Association with Enterotypes and Potential Cardiometabolic Health Implications.** *Mol Nutr Food Res.* 2019 Feb;63(4):e1800958.

- Cortés-Martín A, García-Villalba R, González-Sarrías A, Romo-Vaquero M, Loria-Kohen V, Ramírez-de-Molina A, Tomás-Barberán FA, Selma MV, Espín JC. **The gut microbiota urolithin metabotypes revisited: the human metabolism of ellagic acid is mainly determined by aging.** *Food Funct.* 2018 Aug 15;9(8):4100-4106.

- Gómez-Candela C, Palma Milla S, Miján-de-la-Torre A, Rodríguez Ortega P, Matía Martín P, Loria Kohen V, Campos Del Portillo R, Martín-Palmero Á, Virgili Casas MªN, Martínez Olmos MÁ, Mories Álvarez MªT, Castro Alija MªJ, Martín-Palmero Á. **Consensus document about the nutritional evaluation and management of eating disorders: anorexia nervosa.** *Nutr Hosp.* 2018 Mar 7;35(Spec No1):11-48.

- Crespo MC, Tomé-Carneiro J, Dávalos A, Visioli F. **Pharma-Nutritional Properties of Olive Oil Phenols. Transfer of New Findings to Human Nutrition.** *Foods.* 2018 Jun 11;7(6). pii: E90.

main research grants

Principal Investigator: Dr Viviana Loria Kohen and Dr. Ana Ramírez de Molina
Project Title: **Detection of genetic polymorphisms associated with obesity and its complications, in schoolchildren of the Community of Madrid and assessment of health actions aimed at reducing risk**
Date: 2017-2022
Funded by: IMDEA Food

Principal Investigator: Dr. Francisco Javier Fontecha Alonso
Project Title: **Design and evaluation of a nutritional complement enriched with polar lipids of fat globule membrane (bioactives dairy phospholipids) aimed at preventing of mild cognitive impairment associated with aging**
Date: 2018
Funded by: Plan Estatal AGL2014-56464-C3-1-R y AGL2014-56464-C3-2-R

Principal Investigator: Dr Viviana Loria Kohen and Dr. Ana Ramírez de Molina
Project Title: **Nutritional intervention study on the effectiveness of the dairy intake of a functional drink enriched on pre-senior and senior people**
Date: 2018
Funded by: Programa Estratégico de Consorcios de Investigación Empresarial Nacional (CIEN)

Principal Investigator: Dr Viviana Loria Kohen and Dr. Ana Ramírez de Molina
Project Title: **Nutritional intervention study on the effectiveness of the intake of functional biscuits enriched with pinitol on pre-senior and senior people**
Date: 2018
Funded by: Programa Estratégico de Consorcios de Investigación Empresarial Nacional (CIEN)

1.1. Nutrition and Clinical Trials Unit

Group leader: Dr. Viviana Loria Kohen

The Nutritional and Clinical Trials Unit undertakes nutritional intervention studies designed to assess the biological activity and health properties of functional foods/bioactive compounds and diets in humans. Both observational and clinical intervention studies involving healthy subjects and those with pathologies can be performed.

The Unit has an intervention/extraction room, two nutritional consultation offices, a room for short-term monitoring, and a room for discussions and conferences on nutritional education.

An independent ethics committee ensures that the rights, safety and wellbeing of trial participants are upheld, by taking into account the methodology of proposed trials, their ethical and legal aspects, and the balance between risks and benefits. This committee is formed by professionals of recognized prestige and experience in research.

Students

María Carrillo Ruiz. Universidad Autónoma de Madrid
Alejandro Ávila García. Universidad Alfonso X el Sabio
Miguel López Moreno. Universidad Complutense de Madrid
Mikael S. Handalian Pailos. Universidad Autónoma de Madrid

Dr. Viviana Loria Kohen
Nutritionist, senior researcher and Group leader of the Nutrition and Clinical Trials Unit

Dr. Viviana Loria Kohen obtained her Bachelor's degree in Nutrition at Universidad de Buenos Aires, UBA (1996) and completed a Postgraduate Program in Nutrition (1996-1999) (training program similar to MIR in Spain). While living in Spain, she earned a Master's degree in Clinical Nutrition at Universidad Autónoma de Madrid, UAM (2001). Thereafter, she obtained her PhD in Medicine at UAM in 2010. In 2004 she joined the Fundación Biomédica of the Hospital Universitario La Paz (FIHULP) staff, taking part of the Research Group in Nutrition and Functional Food, IDi-paz. In March 2012, she joined IMDEA Food and currently, she is Group leader of the Nutrition and Clinical Trials Unit at IMDEA Food. She has authored nutrition education books and has co-authored 27 books. Moreover, she has published more than 50 papers in scientific journals and has presented 85 communications and papers in national and international conferences. She has been professor in Human Nutrition and Dietetics at Escuela de Nutricionistas UBA and participated in teaching activities for the Universidad Nacional de Educación a Distancia (UNED). She is nowadays tutor of practices in UAM and UCM.

Dr. Rocío de la Iglesia González
Senior nutritionist

Dr. Rocío de la Iglesia is BsC in Human Nutrition and Dietetics (UAM, 2008), MsC in Nutrition and metabolism (UNAV, 2009) and PhD in Food Science, Physiology and Health (UNAV, 2014). She received the Final Master of Higher Scientific Quality Award for her work in the field of a new generation of food for weight management and obesity prevention (CENIT PRONAOS project). During the PhD studies, she specialized in the implementation of clinical trials examining the health effects of different dietary components. This PhD included a period in the HS Nutrition Unit at the University of Reading (U.K) which lead her to obtain the International Doctor Mention. Moreover, she has university teaching experience in the degrees of Pharmacy and Human Nutrition and Dietetics (positive evaluation from ANECA as assistant professor). She has worked on 20 R&D projects, she has co-authored 19 publications and 2 book chapters. She has also presented different communications in national and international congresses. In September 2015 she joined IMDEA Food Institute as a senior nutritionist.

Dr. Elena Aguilar Aguilar
Senior nutritionist

Dr. Elena Aguilar Aguilar has a degree in Human Nutrition and Dietetics (2006), a bachelor's degree in Food Science and Technology (2008) and PhD in Nutrition (2017) obtained at Universidad Complutense de Madrid (UCM). Her work activity has been developed both in research and in the healthcare field and teaching. She was a member of the Research Group in Nutrition and Functional Foods (NUTRINVEST) of Research Institute of University Hospital La Paz (IdiPAZ). The development and implementation of clinical trials in nutritional field were part of her tasks. She joined University Hospital Santa Cristina in Madrid as a Dietitian-Nutritionist, where she had an extensive experience in clinical care and she specialized in nutritional treatment for those affected by Eating Disorders. She had a placement as a teacher and a tutor in some courses and masters. Likewise, she has written some book chapters and contents for subjects of a degree and postgraduate courses. Furthermore, she has co-authored several publications and communications in national and international congresses. She has joined IMDEA Food Research Institute on September 2015 as a Senior Nutritionist, where she has participated as an investigator in development and nutritional intervention of almost 20 clinical trials.

Dr. Isabel Espinosa Salinas
Senior nutritionist

Dr. Mª Isabel Espinosa Salinas holds a PhD in Biology and Food Sciences, a Human Nutrition and Diet degree and a Food Science and Technology degree, by Universidad Autónoma de Madrid. She has been involved in Endocrinology and Nutrition Department of "La Paz" and "Puerta de Hierro" Hospitals. She collaborated with Mahou-San Miguel Group for the development of a health and nutrition program in several cities around Spain. In 2010, she joined IMDEA Food and worked on the set up and development of the Food and Nutritional Genomics Platform GENYAL. At present, she has more than 9 years of experience as nutritionist in the development of more than 25 clinical trials funded by National Projects grantee and in nutritional intervention studies for companies as Biosearch Life or Capsa Food among others. She is currently part of the H2020 European project Food Nutrition Security Cloud (FNS-Cloud) to study the relationship between food and drugs and she has also specialized in the selection of SNPs and the implementation of nutrigenetic reports. Likewise, she has teaching experience in nutrition courses and workshops. She has co-authored several publications, classroom books for Fundación Universitaria Iberoamericana and she has also presented different communications in national and international congresses.

Helena Marcos Pasero
Nutritionist, predoctoral researcher

Helena Marcos Pasero has a degree in Human Nutrition and Dietetics from the Universidad Autónoma de Madrid (2010-2014). She completed the interuniversity Master's Degree "NUTRENVIGEN-G + D Factors" in Genetic, Nutritional and Environmental Conditions of Growth and Development from the Universidad de Granada (2015-2016). In 2014 she joined Platform of Food and Nutritional Genomics GENYAL at IMDEA Food Institute as a Nutritionist, where she collaborates on the development of several clinical trials related to nutrition and genetics. Currently she´s studying her PhD in Food Sciences from Universidad Autónoma de Madrid, following the Nutrition Genomics line of research. Likewise, she is participating as an investigator in the development of GENYAL study for children obesity prevention.

In 2018, she obtained "Young investigator award for oral communication" from Nutrients, MDPI.

AWARD "Young investigator award for oral communication" por Nutrients, MDPI. Marcos-Pasero H, Aguilar-Aguilar E, Espinosa-Salinas I, Colmenarejo G, Ramírez De Molina A, Reglero G, Loria-Kohen V. Associations between nutritional status and environmental and genetic factors: GENYAL study to childhood obesity prevention NUTRIMAD Congress 2018, Madrid.

Elena Borregón Rivilla
Nutritionist, predoctoral researcher

Elena Borregón Rivilla has a degree in Human Nutrition and Dietetics at the Universidad Autónoma de Madrid (2010-2014) and she was awarded for the best academic record. She obtained a Santander CRUE-CEPYME scholarship (2016). Thereafter, worked at Centros de Investigación en Nutrición y Salud (CINUSA) developing nutrition research studies. Later, she continued her training by obtaining the interuniversity Master's Degree "NUTRENVIGEN-G + D Factors" in Genetic, Nutritional and Environmental Conditions of Growth and Development from the Universidad de Santiago de Compostela (2016 – 2017). After this, she was an Assistant Nutritionist at the Unidad de Nutrición Infantil y Enfermedades Metabólicas del Hospital Universitario La Paz in Madrid (2017-2018), where she acquired skills in the assessment of nutritional status in children, body composition analysis, dietary calibration and diet therapy in different situations. In 2017, she obtained a scholarship as a predoctoral researcher co-funded by the European Social Fund through the Youth Employment Operative Program and the Youth Employment Initiative (YEI), through which she joined Platform for Clinical Trials in Nutrition and Health GENYAL at IMDEA Food Institute, where she collaborates in the design and development of clinical and nutrigenetic trials.

1.2. Genomics Laboratory (GENYALLab)

Lab manager: Dr. Susana Molina Arranz

The Genomic Laboratory GENYALLab is member of REDLAB, the laboratories network of the Community of Madrid, under the registration number 440.

GENYALLab and their members are included in the ALIBIRD2020-CM project. "Precision nutrition therapeutic formulas for cancer". Call for R&D Technology Programs of 2018 of the Community of Madrid and co-financed with Structural Funds of the European Union.
Web: http://alibird.org/2020-CM/

The Genomics Laboratory has the necessary infrastructure for providing genetic and genomic services, as well as metabolomic analysis, providing technical and scientific support to researchers and private companies.

This Laboratory is equiped with appropriate devices for sample processing and nucleic acid extraction and quantification, as well as the latest hardware for gene expression and high performance genotyping analysis, such as the latest generation QuantStudioTM apparatus. These devices have different applications, such as digital PCR, DNA fragment analysis, expression/gene quantification analysis, allele discrimination using TaqMan probes, and the detection of SNPs and mutations, etc. In addition, the laboratory has specific equipment for analyzing metabolites (HPLC, Seahorse, Magpix), a high value added tool in nutrigenomic and nutrigenetic studies, to achieve effective Precision Nutrition".

Dr. Susana Molina Arranz
Lab Manager and Technical responsible of the Genomic Laboratory

Susana Molina Arranz, performed her PhD studies in the group of Prof. Luis Carrasco at the "Centro de Biología Molecular Severo Ochoa" (CSIC-UAM). In 2007 she joined Dr. Juan M. Torres group at "Centro de Investigación en Sa- nidad Animal" (INIA), a research group about prion diseases and its strain barriers. Between 2008 and 2009 she joined the group of Fernando Valdivieso at the "Centro de Biología Molecular Severo Ochoa" (CSIC-UAM), working as a tech- nician generating biological tools for the therapeutic investigation of Alzheimer Disease. During all the- se years she acquired experience in cell culture, as well as different techniques in molecular biology as western blotting, cloning, and nucleic acid and protein purifications. In 2009 started in IMDEA Food as the Technical responsible of the Genomic Laboratory, working both in the investigation line about nutritional genomics of cancer, as well as in GENYAL Nutrigenomic Laboratory. Her work in the GENYAL Platform includes processing and analyzing samples from the different intervention studies that are developing in IMDEA Food, but also from external companies and research centers interested in genotyping studies.

Mónica Gómez Patiño
Head of the Biosafety Senior Lab Technician Responsible for Prevention of Occupational Risks

Monica Gómez Patiño is Expert in Biosafety in laboratories and is a Senior Lab Technician Specialist in Chemical and Microbiological Analysis. In addition, she holds a certificate of higher education in Instrumental Analysis Techniques. She has professional experience in the field of pharmaceutics working in private companies gaining experience in the field of biochemistry by applying a wide range of techniques to identify, quantify and detect specific proteins. Moreover, she worked in Public Research Organizations such as INIA, CIB-CSIC acquiring wide experience in Chromatographic techniques and in Genomic and Molecular biology area. Now, in IMDEA Food Institute, she is the Head of the Biosecurity and Biohazardous, Chemical and Cytotoxic waste Management and supports the management of the laboratories. She is also responsible of the Biosafety Laboratory Level P2, processes and manages the international Import and Export of biological samples and is in charge of managing the official accreditations and permits for the laboratories and she is the Responsible of the Occupational Risks Prevention. Finally, she is a senior Scientific Technician at the GENYAL Platform applying both genomic and lipidomic techniques in human samples and she works a Scientific Technician in the Group of Molecular and Nutritional Genomics of Cancer leaded by Dr. Ana Ramírez de Molina where she collaborates with researchers in several projects

Beatriz Martínez Blanco
Laboratory technician

Beatriz Martínez Blanco obtained her advanced training as a Quality Control Technician in 2006. In 2010, she obtained her diploma related with the Discovery of New Drugs using the HTS technique at the Juan Carlos University in association with GlaxoSmith-Kline Basic Research Center. During the period 2007-2009 she worked as a Quality Control Inspector at Lilly. During the period between 2010 and 2015, she worked as a Laboratory Manager at the Parque Cientifico of Madrid, in collaboration with Antonio Díaz and Alejandro Arranz. In 2016, she joined CBMSO-CSIC Center as a Microbiology Laboratory Technician under the supervision of Mercedes Dávila. In 2017 she had the opportunity to work as Industrial Developer Technician at Rovi Research Center. During her career path, Beatriz had acquired deep knowledge in GLP, GMP, ISO rules, being part of 6 Sigma projects and working in audit programs. She also has experience in analytical and molecular biology techniques. She joined IMDEA Food in 2017 as a Laboratory Technician for the GENYAL Platform.

Dr. Carmen Crespo Lorenzo
Technician Doctor of the laboratory

Mª del Carmen Crespo Lorenzo has a first degree in Molecular and Cellular Biology from the IE University of Segovia (2010). In 2013 she obtained a Master degree in Pharmacological Research from the Universidad Autónoma de Madrid (UAM). As part of her research activity, she joined the research project team "Genetic and genomic analysis in patients affected by Gorham-Stout Disease and General Lymphatic Anomalies" at the Hospital Universitario La Paz (Supervisor: Dr. Pablo Lapunzina).In June 2014, she started her Ph.D. program at IMDEA's Bioactive Ingredients Food Group (Supervisors: Prof. Francesco Visioli and Dr. Alberto Dávalos). Her thesis is focused on the protective function of specific micronutrients (soy isoflavones, hydroxytyrosol, and bioactive polar lipids) performing in vitro, in vivo and placebo-controlled, randomized trials in healthy volunteers to evaluate the possible beneficial effect that these molecules play on cardiovascular and neurodegenerative diseases. Currently, her research focuses on bioactive polar lipids, as part of a nutritional supplement, studying whether these compounds contribute to the improvement or delaying of mild cognitive impairment and collaborates as a laboratory technician of the Platform GENYAL (Genomics and Nutrition). Her publication record shows 15 papers.

GENYAL Platform highlight

highlight

The GENYAL study to childhood obesity prevention is a longitudinal, prospective study lasting five years that began in January 2017 under the auspices of the Dirección General de Centros de Educación Infantil, Primaria y Especial (General Directorate for Infant, Primary and Special Schools). It involves six schools in different parts of the Madrid Region (north, central and south), and a total of 221 children in their first and second years of primary education.

The main goal of the project is to design and validate a predictive model able to identify children likely to benefit most from actions aimed at reducing the risk of obesity and its complications, taking into account the genetic and environmental factors of influence at this time of life. All the children have been studied from a nutrigenetic point of view (measuring, anthropometric, dietetic, and health and social variables, and taking into account single nucleotide polymorphisms associated with childhood obesity), and all will undergo annual checks and assessments until the end of the study period. The participating schools were assigned to either the treatment or control arm, and those in the former received material designed by nutritionists for delivery to the children, their teachers, and their parents. Information is also provided to teachers and parents via talks, and to the children via workshops. The latter try to teach healthy food habits through play.

The second evaluation of schoolchildren was carried out during 2018. We have collected new valuable information about the evolution of children nutritional status as well as dietetic and physical activity habits. This data will allow to develop new nutrigenetic studies. Besides, schoolchildren, their parents and teachers have received new educative tools to improve their nutritional knowledge to prevent child obesity.

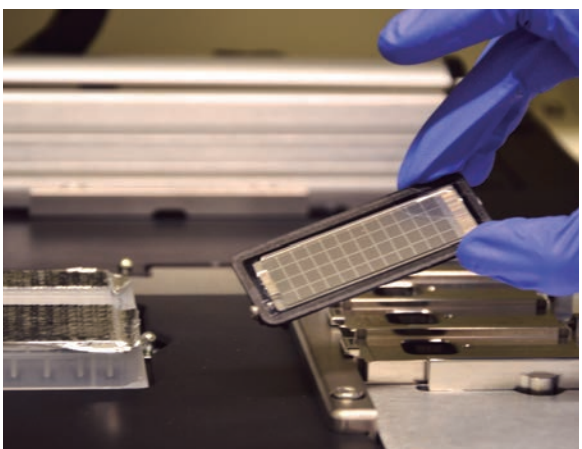
Precision for Health

Technology Based Company of IMDEA Food Institute and Knowledge Based Company of Autonoma University of Madrid

Precision Forhealth (P4H) is a tecnology based company of IMDEA Food and the Autonoma University of Madrid (UAM), formally integrated into Technology Based Companies (EBT) Program of Comunidad de Madrid and the Knowledge Based Businesses (EBC) Program of the University Autónoma of Madrid. It was established on January 9, 2018 to market products and precision health advice, based on the "ForHealth" chip.

P4H markets actions and strategies for precision advice in the health area. P4H produces customized reports, based on genetic analysis, using validated chips, which predict, with a high degree of reliability, the response of individuals to different physiological situations such as obesity, aging and sports performance.

In addition to being tests scientifically validated at a functional level and integrating genetic susceptibility with nutritional recommendations, what differentiates P4H products is the analysis of genetic variants associated to chronobiology, allowing to provide information about the biological clock performance and its association with nutritional and physiological responses.



Further to precision advice reports in nutrition and health, a second pipeline of P4H is focused on the analysis and recommendation of specific nutritional products modulating the molecular pathways and genes previously analysed in the genetic tests (products for precision nutrition with scientific molecular validation).

P4H arises to economically profit from the scientific knowledge accumulated over the years in IMDEA Food and UAM, already available for commercialization, bringing to society the latest scientific advances in the field of food and health. P4H takes advantage of IMDEA and UAM's world class research into food, nutrition and health, technology so that the society can benefit of it at competitive prices.

P4H shareholders: IMDEA Food, UAM, Prof. Guillermo Reglero, Dr. Ana Ramirez de Molina, Alas Venture S.L. and Beta to Research S.L.


Idea alimentación

annual report 2018

www.food.imdea.org

6. research projects, grants and contracts

1. National R&D projects [120]
2. Regional R&D projects [127]
3. International R&D projects and consortia [129]
4. R&D grants [133]
5. Contracts with companies [137]

1. National R&D projects

PREDIMED+DM

Effect of a hypocaloric Mediterranean diet and physical activity promotion on the prevention of type 2 diabetes mellitus in subjects with the Metabolic Syndrome

Principal researcher: Dr. Lidia Daimiel Ruiz
Funded by: Instituto de Salud de Carlos III
Duration: 2018 - 2020

The aim of this project is to evaluate the effect on the incidence of T2DM of an intensive weight loss intervention based on a traditional hypocaloric Mediterranean Diet, physical activity and behavioral therapy, as compared to dietary advice based on a Mediterranean Dietary in the context of usual health care.

The PREDIMED+DM study is impinged in the PREDIMED-PLUS study, a randomized clinical trial evaluating the effect of same therapeutic strategies used in our study but on primary prevention of cardiovascular disease in overweight/obese subjects with the metabolic syndrome.

PHOSPHOLIPIDS4COGNITION

Evaluation of a nutritional supplement enriched with bioactive phospholipids designed to prevent age-associate mild cognitive impairment

Principal researcher: Dr. Javier Fontecha Alonso (CIAL, CSIC-UAM)
IMDEA Food participant researcher: Dr. Francesco Visioli
Funded by: Ministerio de Economía y Competitividad
Duration: 2015 - 2018

Cognitive impairment (IC) associate with age (Age-related cognitive decline -ARCD) is one of the great challenges of our society today due to the aging population, which is a serious social and family problem, as well as a great difficulty for national health systems. Since currently available pharmacological treatments are not effective in preventing IC, are been promoted multidisciplinary strategies related to the prevention of chronic diseases associate with aging. Both the R+D+I and the H2020 include multidisciplinary lines in order to improve the understanding, prevention, early diagnosis and treatment of mental conditions and disorders of the elderly. PHOSPHOLIPIDS4COGNITION raises the approach of a coordinated multidisciplinary project, whose overall objective is to investigate the effect of the intake of PLs bio actives (of dairy and marine origin) in the prevention and treatment of cognitive impairment associate with aging, using a preclinical study with aged rats and a clinical study in a cohort of older adults previously diagnosed with mild cognitive impairment.

EPIC Spain

Chrono-diet, regulatory polymorphisms of the circadian clock, weight change and obesity in the European Prospective Study on Nutrition and Cancer (PI15/01658)

Principal researcher: José Ramón Quirós García (Fundación Fomento en Asturias de la Investigación Científica Aplicada y la Tecnología)
IMDEA Food participant researcher: Dr. José Mª Ordovás Muñoz
Funded by: Instituto de Salud de Carlos III
Duration: 2016 - 2018

The European Prospective Investigation into Cancer and Nutrition (EPIC) is a prospective cohort with more than 521 000 study participants enrolled from 23 centres in 10 western European countries. Detailed information on diet, lifestyle characteristics, anthropometric measurements, and medical history was collected at recruitment (1992-1999).

Biological samples including plasma, serum, leukocytes, and erythrocytes were also collected at baseline from 387.889 individuals and are stored at the International Agency for Research on Cancer – World Health Organization (IARC-WHO) and mirrored at EPIC collaborating centres. The EPIC study is being conducted in five Spanish regions: Asturias, the Basque Country, Navarra, Murcia, and Andalucía (Granada). The coordinating centre is in Barcelona. Recruitment began in 1992—1993, and it was finished in 1996. The cohort in Spain consists of 41.438 participants with interviews on diet, and 39.880 participants with blood samples available. Follow-up measures of lifestyle exposures have been collected and will be centralized at IARC in 2014. Follow-up consists of a computerized version of a follow-up questionnaire. Follow-up for the identification of cancer cases is based on a computerized record linkage program that links EPIC files with the population cancer registries of Asturias, Basque Country, Granada, Murcia, and Navarra.

FORCHRONIC

Formulation of food products for the prevention and targeted treatment of chronic diseases related to metabolism (AGL2016-76736-C3-3-R)

Principal researcher: Dr. Ana Ramírez de Molina
Funded by: Ministerio de Economía y Competitividad
Duration: 2016 - 2019

The objective of the project FORCHRONIC is to design, develop and validate the effect and safety of new formulas for humans, effective in regulating the molecular mechanisms of cellular cholesterol transport and the activation of fatty acid synthesis, fundamental routes in the development of colorectal cancer, obesity and metabolic syndrome, in order to achieve food products with high added value, highly effective as nutritional supplements aimed at preventing and improving the treatment of these diseases.

The project is based on two hypotheses resulting from the previous project carried out by the research team within the State Program of R+D+I, Challenging the Society; The regulation of

ABCA1 metabolism genes and the ACSL / SCD pathway allows the control of cholesterol transport pathways and the activation of fatty acid synthesis, associated with the development of chronic diseases such as colon cancer and the metabolic syndrome; Formulas based on the combination of polar lipids and bioactive principles of natural origin can provide for efficient regulation of metabolism genes due to potentiation of bioavailability and synergistic biological activity.

Intesti-nAhRuNg

Therapeutic modulation of non-coding RNAs through bioactive components of the diet: impact on pathophysiological regulation of lipid metabolism (AGL2016-78922-R)

Principal researcher: Dr. Alberto Dávalos Herrera
Funded by: Ministerio de Economía y Competitividad
Duration: 2016 - 2019

Despite advances in the prevention and the success of many widely prescribed drugs for the management of dyslipidemia, cardiovascular disease remains a leading cause of mortality. This highlights the need for deeper insight into disease mechanism and innovative therapeutic strategies. A large amount of novel transcripts from our genome are transcribed into different types of noncoding RNAs (ncRNAs) including microRNAs (miRNAs) and long noncoding RNAs (lncRNAs). Several novel ncRNAs are being identified as regulators of different biological processes and associated with different complex human diseases. Moreover, recent evidence suggests that the expression of certain miRNAs and lncRNAs can be modulated by food bioactive components. The emerging function of ncRNAs in cholesterol and lipid metabolism and their possible modulation by diet, open up new therapeutic possibilities. “Intesti-NahRuNg” aims to characterize the role of novel miRNAs and lncRNAs in both the physiological and pathological processes of intestinal lipid metabolism and test their therapeutic modulation through dietary bioactive compounds.

NUPROBED

Formulation of food products for the prevention and targeted treatment of chronic diseases related to metabolism (AGL2016-76736-C3-3-R)

Principal researcher: Dr. Pablo Fernández Marcos
Funded by: Fundación BBVA
Duration: 2016 - 2018

Obesity and the pathologies derived, encompassed under the term Metabolic Syndrome, are considered one of the main health challenges of the 21st century. Many naturally occurring extracts have been used against obesity and diabetes for centuries, in many cases with beneficial effects and few side effects, and almost always without a thorough knowledge of their mechanisms of action. The NUPROBED project, which is being carried out by IMDEA Food in collaboration with the Institute of Food Science Research (CIAL) and the National Cancer Research Center (CNIO), aims to find new bioactive products derived from foods with potential against Obesity, thanks to

its effects on the main metabolic signaling pathways involved in this pathology. This project contemplates conducting a bioactive product search through high performance biological research platforms (HTS) testing four crucial metabolic pathways for obesity and diabetes: Insulin pathway, mitochondrial potential, pentoses phosphate pathway and adipogenesis.

ExoRNAs

Modulation of exosomes transporters of miRNAs and lncRNAs for intercellular communication as a therapeutic tool against dyslipidemia (CIVP18A3888)

Principal researcher: Dr. Alberto Dávalos Herrera
Funded by: Fundación Ramón Areces
Duration: 2017-2020

Exosomes are nanovesicles secreted to the extracellular space and involved in intercellular communication, and that are associated with different physiological and pathological processes. Therefore, their modulation has tremendous therapeutic potential as well as for diagnosis purposes. Dietary excess is the main cause of dyslipidemia and cardiovascular disease (CVD). Postprandial lipemia is a residual risk factor that contributes to CVD. The role of exosomes in postprandial lipemia is completely unknown. Moreover, recent studies suggest that some dietary bioactive components may modify the secretion of exosomes. As exosomes contain a lipid bilayer originated from the cell membranes, and these lipids are influenced by the lipids in our diet, we hypothesized that through our diet we could modulate the secretion of exosomes and/or modulate their cargo for therapeutic purposes against dyslipidemia. Thus, the major aim of this proposal is to validate and characterize exosomes that transport miRNAs and lncRNAs in conditions of postprandial lipemia and characterize their mechanisms of action in the context of lipid metabolism. In addition, as proof of concept, we will determine the therapeutic modulation of exosomes through a nutritional intervention aimed to change the composition of the lipids of their membrane and thus alter their cargo and/or secretion. Our experimental approaches will provide therapeutic alternatives for the modulation of exosome secretion and thus contribute to regulate intercellular communication as a therapeutic tool against dyslipidemia and CVD.

DIOBIO

New bioactive products against obesity and diabetes (CIVP18A3891)

Principal researcher: Dr. Pablo. Fernández Marcos
Funded by: Fundación Ramón Areces
Duration: 2017-2020

The project studies the potential of food-derived bioactive products (FDBPs) for the prevention and treatment of metabolic syndrome, a poorly developed and very promising field of research. The project has 5 steps, which are not strictly interdependent, with preliminary data and contingency plans to ensure a successful outcome: (1) Setting up biological assays in high throughput format

to screen for products impinging on some important metabolic pathways of high relevance for obesity and diabetes. (2) Screening two sets of FDBPs: 1000 pure natural compounds from commercially available libraries; and a library of extracts from medicinal plants of unknown molecular mechanisms of action. We will test these products on our screening systems, to determine their basic metabolic potential. (3) Developing clean, safe and effective preparation methods to obtain extracts from food sources enriched in the active natural compounds. (4) Performing a thorough molecular characterization of the mechanisms of action of the selected food-derived bioactive products using different molecular readouts. (5) Testing these products on mouse models to determine in vivo parameters of the bioactive products of interest, such as safety, effectiveness against metabolic syndrome, etc.

All these data will pave the way to further development of the bioactive products for tests on humans. We anticipate relevant discoveries in the field of food development and global human health, given the alarming increase of metabolic syndrome incidence and the scarcity of ambitious studies on food-derived bioactive products and their potential against this condition.

PREDIMED+DM

Effect of weight loss with a hypocaloric Mediterranean diet and physical activity promotion in the prevention of type 2 diabetes in people with metabolic syndrome (PI17/00508)

Principal researcher: Dr. Lidia Daimiel Ruiz
Funded by: Instituto de Salud de Carlos III
Granting date: 11/12/2017

The aim of this project is to evaluate the effect on the incidence of T2DM of an intensive weight loss intervention based on a traditional hypocaloric Mediterranean Diet, physical activity and behavioral therapy, as compared to dietary advice based on a Mediterranean Dietary in the context of usual health care.

The PREDIMED+DM study is impinged in the PREDIMED-PLUS study, a randomized clinical trial evaluating the effect of same therapeutic strategies used in our study but on primary prevention of cardiovascular disease in overweight/obese subjects with the metabolic syndrome.

SIRTBIO

Sirtuins as biomarkers and targets in cancer: Sirt1 and Sirt3 in lung and liver carcinogenesis

Principal researcher: Dr. Pablo Fernández Marcos
Funded by: AECC
Granting date: 01/10/2018-30/09/2020

The present Project proposes the characterization of two of the best known sirtuin members, namely Sirt1 and Sirt3, in their roles in cancer development. More precisely, previous data from our group show that Sirt1 acts as a tumor suppressor in lung carcinogenesis; and that Sirt3 is also

a tumor suppressor in hepatocellular carcinoma. Our project is divided in three different research lines: (1) Study of the roles of Sirt1 in lung adenocarcinoma (LAC) development: previous research from our laboratory has identified several differentially expressed genes in Sirt1-overexpressing, LAC-resistant neumocytes. We want to study further this list of genes, validate them in human samples, and explore possible therapeutical implications. (2) Study the mechanisms by which Sirt3 inhibits the formation of hepatocellular carcinoma in female mice: previous data from our group show that Sirt3-deficient female mice lose their resistance to hepatocarcinoma (HC) formation, pointing to a protective role of Sirt3 in females. We want to explore the mechanisms by which Sirt3 exerts this protective function. In particular, previous reports have shown that the transcription factor Stat5B is the main responsible of this sexual dimorphism in mice and humans, and we want to explore the relationship between Stat5B and Sirt3. These two lines of research follow the results that we have previously developed thanks to a Postdoctoral Fellowship from the aecc. (3) Finally, we want to develop a high-throughput screening to find novel natural bioactive products that can activate Sirtuins by increasing the NAD+/NADH ratio. These discovered natural boosters of NAD+ levels and sirtuins activity can be used as nutritional additives or complements in the diet, which makes them specially suitable for cancer preventive approaches as the one presented in this proposal. These products will increase the activity of all sirtuins, that have been reported to have beneficial properties in general in the bibliography. We want to test the ability of the identified products to delay the development of LAC or HC, as happens with the mouse models described in Objetives 1 and 2.

In all, our proposal constitutes a feasible, ambitious and highly relevant project for human health, with strong implications in the field of cancer prevention. The obtained results will allow to dissect the molecular and physiological mechanisms by which Sirt1 and Sirt3 protect from LAC and HC development, two of the most aggressive tumors in humans; and to develop bioactive products that, by activating these enzymes, can be used to protect from LAC and HC.

AGL2017-90623-REDT

Nutrición de precisión y ejercicio físico como moduladores del epigenoma en patologías de los excesos alimenticios

Principal researcher: Dr. Alberto Dávalos Herrera
Funded by: Ministerio de Ciencia Innovación y Universidades- AGI
Granting date: 01/07/2018-30/06/2020

Epigenetics is implicated in both, normal cell functioning and disease. Environmental factors like diet, physical activity, stress, microbiota or others, can change the activity of genes without alteration the genetic code, through epigenetic mechanisms. “NutriEpiGen” thematic network aims to synergize the work of those Spanish research groups that search for novel modulators of our epigenome –through precision nutrition and/or physical exercise– to prevent or treat diseases associated to dietary excess. The 10 join-teams provide internationally recognized cross-disciplinary expertise in food bioactive, nutrition, epigenetics, exercise, experimental biology, and clinical medicine, a combination of skills that will help to translate findings from bench to bedside.

SAF2017-85766-R

Caracterización de los mecanismos moleculares del ayuno de corta duración como potenciador de la quimioterapia.

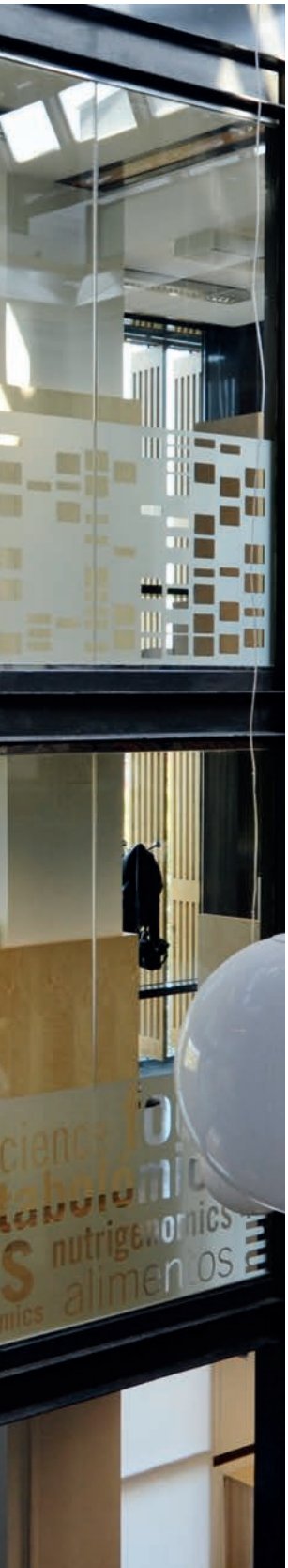
Principal researcher: Dr. Pablo Fernández Marcos
Funded by: Ministerio de Ciencia Innovación y Universidades- AGI
Granting date: 01/01/2018-31/12/2020
R.- concesión: 14/06/2018

The present Project proposes the characterization of fasting as a nutritional intervention potentiating chemotherapy. Short-term fasting has been consistently shown to improve metabolic, neurological and cardiovascular status in mice and humans. During the last years, short-term fasting has also been reported to enhance anti-tumor chemotherapy treatments in two ways: (a) fasting protects from chemotherapy toxicity in different organs; and (b) fasting enhances the anti-tumor immune response after chemotherapy treatment. Previously, our laboratory has shown that fasting strongly induces the expression of the cell cycle inhibitor p21 (also called Cip1 or CDKN1A) in several tissues, including blood cells.

Our project is based on three hypothesis: (1) short-term fasting induces a strong molecular and physiological response, not yet fully characterized, responsible for its chemotherapy-enhancing effects. (2) p21 induction during short-term fasting is important for its chemotherapy-enhancing effects (reduction of toxicity and improved antitumoral immune response). (3) It is possible to reproduce the chemotherapy-enhancing effects of fasting through treatment with a precise combination of bioactive products reproducing certain molecular and physiological aspects of fasting.

Based on these hypothesis, our project addresses the following 3 objectives: study the role of p21 in (1) the protection from chemotherapy toxicity and in (2) the enhancement of chemotherapy-activated anti-tumor immune response; and (3) define a bioactive products cocktail that can reproduce the fasting-mediated chemotherapy enhancement (decreased toxicity and improved immune response). To these aims, we will use in vitro systems, mouse models and samples from human patients of cancer subjected to short-term fasting during chemotherapy interventions.

In all, our proposal constitutes a feasible, ambitious and highly relevant project for human health, directed to the Societal Challenge 1, “Health, demographic change and wellbeing” of the Spanish Science, Technology and Innovation Strategy and the H2020. The obtained results will allow to dissect the molecular and physiological mechanisms driving a potent, well-validated and safe method for chemotherapy enhancement, as is fasting, and its outcomes can have strong practical implications in the clinical management of chemotherapy.



2. Regional R&D projects

ALIBIRD-CM

Functional Foods and nutritional strategies for the prevention and treatment of chronic diseases. (ALIBIRD III S2013/ABI-2728)

Principal researchers: Dr. Ana Ramírez de Molina (ONCOGENOM) and Dr. Francesco Visioli (GENECO)
Funded by: Consejería de Educación e Investigación. Comunidad de Madrid
Duration: 2014 - 2018

A total of 9 research groups of the Community of Madrid are involved in this consortium that aims to advance forward scientific aspects of knowledge needed for the development of high efficacy and security functional foods to contribute to the improvement of the health of populations, and reducing obesity and improving the life of cancer patients.

It also pretends to contribute to the competitiveness of European industry in the food and nutrition area.

GEPS - CM

Population, family and aging in the contemporary world: dimensions of an ongoing process (S2015/HUM-3321)

Principal researcher: Dr. David Sven Reher Sullivan (UCM)
IMDEA Food participant researcher: Dr. Lidia Daimiel Ruiz
Funded by: Consejería de Educación e Investigación. Comunidad de Madrid
Duration: 2016 - 2018

The Project GEPS: "Population, family and aging in the contemporary world: different dimensions of an ongoing process" is root in the Social Sciences sphere but with the purpose of gathering professionals from the Health Sciences and the Social Sciences to study different aspects of the aging process. In the frame of this project, different studies will be carried out that focus on:

- Fertility and reproduction
- International migrations and demographic shift
- Family
- Economic challenges associated with the aging society
- Active life in elder people
- Nutrition and quality of live in the aging process

This project offers a multidisciplinary study of aging process from a historical, demographic, sociological, economical and biological point of view. As a result, this project will allow to gain a deeper understanding of the effect of aging on the society that will pave the way to the development of new programs and policies to face the challenge of the aging society.

CIFRA2-CM

Consortium for the study of acute renal failure: physiopathology, new therapies, biomarkers and experimental models (B2017 / BMD - 3686)

Principal researcher: Lisardo Bosca Gomar (UCM)
IMDEA Food participant researcher: Dr. Moises Laparra Llopis
Funded by: Consejería de Educación e Investigación. Comunidad de Madrid
Granting date: December 2017

The changes described in the gut microbiota composition favor lower glycolytic versatility and greater transport of simple sugars derived from dietary carbohydrates and the production of uremic toxins and activation of the NRLP3-inflammasome, associated with immunometabolic processes of inflammation that aggravate renal failure. Here CIFRA2 aims to elucidate the role of gut microbiota as well as their metabolites in the onset of acute kidney failure disease. To this end, concerted and multidisciplinar research efforts are performed to arm clinicians and, finally, society with translation strategies to clinical practice.

ALIBIRD2020-CM

Therapeutic formulas of precision nutrition for cancer (S2018/BAA-4343)

Principal researchers: Dr. Guillermo Reglero, Functional Foods Ingredients, INGREEN (UAM) Research Group Leader
Funded by: Program call of R & D Activities among Research Groups of the Community of Madrid (Technologies 2018) and co-financed with European Union Structural Funds.
Duration: 01/01/2019 - 31/12/2022

The ALIBIRD2020-CM Scientific Program is focused to design and validate products together with precision nutrition strategies aimed at improving the prognosis of cancer patients. The aim is to provide new approaches to the design of new therapeutic nutritional supplements through the formulation of self-emulsifying and bioactive lipid carriers, combined with natural extracts from food sources and through synergies in bioavailability and bioactivity, leading to effective products when targeting Metabolic agents involved in processes of tumor proliferation, metastasis or resistance to chemotherapy.

The validation of the nutritional supplements developed within the framework of ALIBIRD2020-CM, that is to say, the demonstration of its effectiveness will be carried out in nutrigenetic clinical trials where the genetic profiles that respond better to the treatments with the therapeutic nutritional complements will be identified. Clinical trials will include the analysis of the relationship between diet and the composition and metabolism of the gut microbiota of patients, to associate the microbiota with cancer. In the use by the patients of the treatments derived from the studies of ALIBIRD2020-CM it is essential to have an ICT tool (an App) that empowers the users in the self-management of the prescribed strategies and that motivates them to adequately comply with

the necessary guidelines to achieve the set health goals, in addition to sending doctors useful data for clinical follow-up.

ALIBIRD2020-CM brings together more than 40 researchers in a multidisciplinary consortium, composed of experts in different areas such us of Life Sciences, Food Technology, Nutrition, Molecular and Cellular Biology, Biomedicine and Telemedicine belonging to five research organizations of the Community of Madrid: Autonomous University of Madrid (UAM), Polytechnic University of Madrid (UPM), IMDEA Food Institute (IMDEA FOOD), Spanish National Research Council (CSIC), La Paz University Hospital (FIBHULP) and Infanta Sofia Hospital (HUIS).

Also, three companies actively support the activities of the consortium: Natac Group, specialized in natural bioactive extracts; Biopolis-ADM, with capacity for industrial production of new formulas; Canaan Research & Investment, specialized in health sector transfer of technology.

Based on the previous scientific-technological program, ALIBIRD2020-CM intends to make relevant scientific and socio-economic contributions in the field of health.

Likewise, for the food and nutrition industry, it is essential to have innovative strategies that lead to the creation of real value and reinforce their competitiveness. For these strategies to be effective it is necessary to train new nutritionists to obtain their confidence in the prescription of precision food products for cancer. Equally important is that patients and the population, in general, know the possibilities offered by modern nutrition to demand and use. Therefore, it is also the objective of ALIBIRD2020-CM to carry out training and communication actions in this direction.

To face the above challenges, ALIBIRD2020-CM will also have huge potential support within the framework of two major European projects of the European Institute of Innovation & Technology, EIT Food (https://www.eitfood.eu/) and EIT Health (https://www.eithealth.eu/), thanks to the involvement in them of some of their groups.

3. International R&D projects and consortia

EIT Food: Food4Future - Sustainable Supply Chain from Resources to Consumers

Principal researcher: Dr. Guillermo Reglero Rada and Dr. Ana Ramírez de Molina
Funded by: European Institute of Innovation and Technology
Duration: 2016-2023

EIT Food is a pan-European consortium that focuses on entrepreneurship and innovation in the food sector. The members of the EIT Food community are world-class players in the international

food domain: over 50 partners from leading businesses, research centers and universities across 13 countries.

EIT Food has six strategic objectives: 1.overcome low consumer trust; 2. create consumer valued food for healthier nutrition; 3. build a consumer-centric connected food system; 4. Enhance sustainability; 5. Educate to engage, innovate and advance; 6. catalyse food entrepreneurship and innovation: foster innovation at all stages of business creation.

EIT Food's headquarter is located in Leuven/Belgium and it is structured around five Co-location Centres (CLCs) located in Reading (with partners from the UK, Ireland and Iceland), Warsaw (with partners from Eastern Europe and Nordic countries), Madrid (with partners from Spain, Italy and Israel), Leuven (with partners from Belgium, France and Switzerland) and Munich (with partners from Germany and the Netherlands).

IMDEA Food Institute and at the Universidad Autónoma have the honor of being the Spanish CLC South's headquarter for Education and Communication activities.

COST Action-POSITIVe

Interindividual variation in response to consumption of plant food bioactives and determinants involved (FA 1403)

Principal researcher: Dr. José María Ordovás Muñoz
Funded by: European Comission
Duration: 2014 - 2018

To combat the burden of cardiometabolic disease, which constitutes a major public health issue in Europe, it is of crucial importance to develop efficient strategies that target the dietary behaviors of European consumers and improve the food supply. Plant foods are rich sources of a large range of bioactive compounds that beneficially affect our health, particularly by decreasing the risk of cardiometabolic diseases.

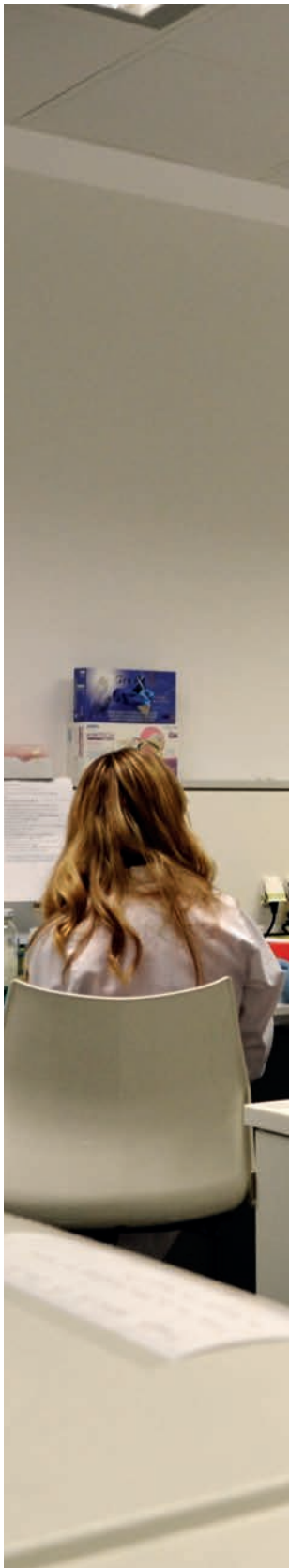
POSITIVe specifically addresses inter-individual variation in bioavailability and physiological responses to consumption of plant food bioactives in relation to cardiometabolic endpoints.

COST Action

European Epitranscriptomics Network (CA 16120)

Principal researcher: Dr. Alberto Dávalos Herrera
Funded by: European Commission
Duration: 2017-2021

This COST Action aims at fostering the development of the emerging field of epitranscriptomics in Europe. By understanding the role of RNA modifications in physiology and pathology, novel and powerful disease biomarkers and drug targets could be identified. This will in turn lead to



the development of a whole new class of diagnostic tools and targeted therapies, with particular attention devoted to cancer treatment. Furthermore, mechanistic understanding of this set of phenomena will allow to deepen our understanding of the contribution of post-transcriptional regulation of gene expression to proteome and thus phenotype variation.

By implementing collaborative efforts, data sharing and mobility-based learning opportunities, this COST action will accelerate discovery in the epitranscriptomics field and contribute to the ultimate realization of this vision. Tightly integrating biotech companies in this networking initiatives will be key to the complete achievement of the action goals and a considerable added value for the European biomedical sector, potentially offering a competitive advantage in the ensuing market.

Inflammarine

Anti-inflammatory and healing activity of sea cucumber (Isostichopus badionotus) in a murine model: characterization of pharmacological activity and cellular mechanisms involved (CB.2013-01 No. 22173)

Principal researcher: Dr. Alberto Dávalos Herrera
Funded by: CONACYT Consejo Nacional de Ciencia y Tecnología (Mexico)
Duration: 2015 - 2018

Uncontrolled inflammatory response is a major driver of many modern human chronic diseases. The natural world has been the source of novel anti-inflammatory and other biologically-active agents. Plants, insects and marine organisms, including algae and invertebrate marine organisms, have been screened for the presence of anti-inflammatory agents. Sea cucumbers are marine invertebrates, considered by the traditional Chinese medicine as tonic foods, attributing them with a wide range of biological effects, including anti-inflammatory. However, their mechanism of action is poorly described. Isostichopus badionotus, is a sea cucumber from the Peninsula of Yucatan (Mexico) whose many biological activities are not well characterized.

“inflammarine” aims to contribute to a better understanding of the anti-inflammatory activity and mechanisms of action of the bioactive components of sea cucumber I. badionotus. Our results will allow the development of possible therapies from this marine invertebrate and support the search for therapeutic alternatives to combat the devastating consequences of the chronic inflammatory processes that today afflict our modern society.

COST Action

COST Action CA17118

Principal researcher: Dr. Ana Ramírez de Molina
Funded by: European Comission

This Action aims at using innovative translational research to identify colorectal cancer biomarkers for personalized medicine that will improve screening, early detection and disease follow-up, and

attain better tumor profiling, state-of-the-art functional characterization of genetic variants and new therapy approaches. It will be organized in the following working groups:

- Disease risk profiling applied to the optimization of current screening programs. Germline predisposition variants, environmental factors, epigenetics, microbiome and metabolomics biomarkers will be used to better select patients eligible to be screened.

- Non-invasive biomarkers for early detection and disease follow-up. Circulating tumor cells, circulating tumor nucleic acids, tumor-educated platelets and exosomes will be explored in order to identify new tools for early detection and monitoring of the disease.

- Tumor profiling to identify biomarkers with prognostics and predictive value for patient stratification. Intra-tumor heterogeneity will be considered and tumor mutational profiling, epigenetics, single-cell genomics sequencing used as instruments to better inform tumor and precursor lesion characterization.

- Functional genomics and new therapies. Candidate genetic variants will be validated and routes to novel therapies for this disease will be conceived. To do so, cutting-edge approaches such as CRISPR-Cas9 and immunotherapy will be applied.

The network will bring together participants from different COST countries and will facilitate the research interaction and collaboration between research groups and enterprises interested in the described objectives. Diverse expertise includes clinical practice, germline and somatic genetics, epigenetics, bioinformatics, cell and molecular biology, microbiology, immunology, biostatistics, epidemiology, health economy and the industrial sector.

LIFETIME

Revolutionising healthcare by tracking, understanding, and treating human cells during diseases

Principal researcher: Dr. Ana Ramírez de Molina
Funded by: European Comission

LifeTime is expected to fundamentally impact basic science across multiple fields including developmental biology, regeneration, stem cell biology, RNA biology, epigenetics, signalling, cancer biology, neurobiology and metabolism. It will redefine the role of machine learning in basic science and precision medicine, which will be based on cellular biology and artificial intelligence.

The synthesis of 21st century biology and data sciences will impact medical practice and improve human health, reducing the economic burden of aging populations.

LifeTime will stimulate new developments in the healthcare sector, providing benefits to the EU economy in terms of business volume, jobs, and personal income for European households. The pharmaceutical industry in Europe will be strengthened by the general acceptance of targeted medicines. The implementation of innovative technologies in toxicology studies and improved

patient stratification in clinical trials will lead to substantial savings in the cost of drug development. High-tech industries and the emerging AI sector will be boosted by the development of knowledge and technology that go far beyond the state-of-the-art in linking molecular analysis at single-cell resolution to early detection and interception of diseases, thus making Europe a leader in this key driver of future economic growth. European SMEs that develop instruments, software and systems for clinical-grade molecular sequencing, mass spectrometry, microscopy, image analysis and AI systems will spin off and flourish. Improved early disease detection and interception will enable healthier ageing, leading to substantial savings in healthcare expenses and care costs for the elderly.

4. R&D grants

Contracts Juan de la Cierva - (FJCI-2014-19601)

Dr. Clara Ibáñez Ruiz
Funded by: Ministerio de Economía y Competitividad
Duration: 2016 – 2018

Contracts Ramón y Cajal (RYC-2015-18083)

Dr. Moisés Laparra Llopis
Funded by: Ministerio de Economía y Competitividad
Title: Influence of bioactive components on the enterohepatic axis
Duration: 2016 – 2021

Contracts for Research Assistants (PEJ15/BIO/AI-0355)

Elena García Carrascosa
Funded by: Consejería de Educación, Juventud y Deporte. Comunidad de Madrid
Duration: 2016 – 2017

Contracts for Research Assistants (PEJ16/BIO/AI-1590)

Sonia Wagner
Funded by: Consejería de Educación e Investigación. Comunidad de Madrid
Duration: 2017-2019

Contracts for Attraction of Talent Modality 1 (2016-T1/BIO-1854)

Dr. Manuel Alejandro Fernández Rojo
Funded by: Consejería de Educación e Investigación. Comunidad de Madrid
Duration: 2017-2020

Contracts for Ph.D researchers (PEJ2016/BIO-2781)

Dr. Mª del Carmen López de la Hazas
Tutor: Dr. Alberto Dávalos Herrera
Funded by: Consejería de Educación e Investigación. Comunidad de Madrid
Duration: 2017-2018

"Eduardo Gallego" Program

Dr. Pablo José Fernández Marcos
Funded by: Fundación Francisco Cobos
Duration: 2017-2018

Research Grant SFRH/BD/124022/2016

D. Luis Filipe Costa Machado
Tutor: Pablo José Fernández Marcos
Funded by: Fundación para la Ciencia y la Tecnología. Ministerio de Ciencia, Tecnología y Enseñanza Superior (Portugal)
Duration: 2017-2020

PEJD-2017 PRE/BIO 5100

Dª. Lorena del Pozo Acebo
Tutor: Dr. Davalos Herrera, Alberto
Funded by: Dirección General de Investigación e Innovación-CM
Duration: 01/03/2018-28/02/2020

PEJD-2017 PRE/BMD 4561

Dª. Arantzazu Sierra Ramírez
Tutor: Dr. Pablo José Fernández Marcos
Funded by: Dirección General de Investigación e Innovación-CM
Duration: 01/03/2018-28/02/2020

PEJD-2017 PRE/BMD 3541

Dª. Elena Borregón Rivilla
Tutor: Dra. Viviana Loria Kohen
Funded by: Dirección General de Investigación e Innovación-CM
Duration: 01/03/2018-28/02/2020

PEJD-2017 PRE/SAL 5109

Dª. Laura Díez Ricote
Tutor: Dr. José María Ordovás Muñoz
Funded by: Dirección General de Investigación e Innovación-CM
Duration: 01/03/2018-28/02/2020

PEJD-2017 PRE/BMD 3394

Adriana Quijada Freire
Tutor: Laparra Llopis, José Moisés
Funded by: Dirección General de Investigación e Innovación-CM
Duration: 01/03/2018-28/02/2020

RYC2016-201546

Dr. David Martínez Gómez

Funded by: Ministerio de Ciencia, Innovación y Universidades
Duration: 01/02/2018 a 31/01/2023

Marie Skłodowska-Curie Individual Fellowships-IF-2016/H2020-MSCA-746435

Dra. Almudena García Ruíz

Funded by: Comisión Europea
Duration: 15/01/2018 a 14/01/2021

IND2017/BIO-7826

Marina Reguero Simón
Tutor: Dra. Ana Ramírez de Molina
Funded by: Dirección General de Investigación e Innovación-CM
Duration: 19/02/2018 a 18/02/2021

IND2017/BIO-7857

Adrián Bouzas Muñoz
Tutor: Dr. José Moisés Laparra Llopis
Funded by: Dirección General de Investigación e Innovación-CM
Duration: 02/04/2018 a 03/04/2021TL_PEJ-2017-TL/SAL-7141

Entidad Financiadora: Dirección General de Investigación e Innovación-CM

Dª. Paloma Ruiz Valderrey
Tutor: Dr. José María Ordovás Muñoz
Duration: 02/04/2018 a 03/04/2020,

AT1_2017-T1/BMD-5333

Dra. Cristina Ramirez Hidalgo
Funded by: Dirección General de Investigación e Innovación-CM
Duration: 09/04/2018 -08/04/2022

RYC-2016-19435

Dr. Pablo Fernández Marcos
Funded by: Ministerio de Ciencia, Innovación y Universidades
Duration: 5 años
R. - concesión publicada: 28/12/2018

PTA2017_PTA2017-14689-I

D. José Luis López Aceituno
Funded by: Ministerio de Ciencia, Innovación y Universidades
R. - concesión publicada: 16/11/2018

PEJD-2018-POST/BIO-8933

Tutor: Dr. Alberto Davalos Herrera
Funded by: Dirección General de Investigación e Innovación-CM
R. - concesión publicada en BOCM: 30/11/2018

PEJD-2018-POST/BMD-8900_CR

Tutor: Dra. Cristina Ramirez Hidalgo
Funded by: Dirección General de Investigación e Innovación-CM
R. - concesión publicada en BOCM: 30/11/2018

IND2018/BIO-10097

Dª. Sonia Wagner Reguero
Tutor: Dra. Ana ramirez de Molina
Medicinal Gardens S.L.
Funded by: Dirección General de Investigación e Innovación-CM
R. - concesión publicada en BOCM: 19/12/2018

5. Contracts with companies

NUTRIPRECISION

Strategies for improving the quality of life of pre-senior and senior groups based on precision nutrition (Strategic Program National Business Research Consortia - CIEN)

Within the framework of the Strategic Program National Business Research Consortia (CIEN), 2 R&D contracts with companies are being developed to carry out this project:

AMC INNOVA SL

Principal Researcher: Dr. Guillermo Reglero Rada
Duration: 2017-2020

GALLETAS GULLÓN S.A.

Principal Researcher: Dr. Guillermo Reglero Rada
Duration: 2017-2020
Funded by: Centro para el Desarrollo Tecnológico Industrial. Ministerio de Economía y Competitividad

Determination of genetic variants associated with genetic studies

Principal researcher: Dr. Ana Ramírez de Molina
Funded by: PEACHES, S.L.
Duration: 2016 - 2018

PolyMicroBio

Ellagitannins as a tool to study the interindividual viability in the polyphenol metabolism: Relationship with the genotype and intestinal microbiota postpartum-lactation, children, adolescents and adults (normal weight, obesity and metabolic syndrome). Collaboration agreement for the project (AGL2015-64124-R)

Principal researcher: Dr. Ana Ramírez de Molina
Funded by: Centro de Edafología y Biología Aplicada del segura (CEBAS - CSIC)
Duration: 2016 – 2019

Risk&RNAs

Literature review of baseline information on non-coding RNA (ncRNA) that could support the food/feed risk assessment of ncRNA-based GM plants

Principal researcher: Dr. Alberto Dávalos Herrera
Funded by: European Food Safety (EFSA)
Duration: 2016 – 2018

INTALIM

New solutions in food technology for the development of products for people with food intolerances

Principal Researcher: Dr. Guillermo Reglero Rada
Funded by: SIRO JAEN, SLU y SIRO ANTEQUERA, SLU
Duration: 2017-2018

Study of the metabolic fate of rosemary polyphenols derived from the consumption of an enriched extract

Principal Researcher: Dr. Viviana Loria Kohen
Funded by: CIAL-CSIC
Duration: 2017-2018

Genetic characterization of the mTOR pathway using technology

Principal Researcher: Dr. Ana Ramírez de Molina and Dr. Pablo J. Fernández Marcos
Funded by: IMDEA Alimentacion - Fundación CNIO
Duration: 2018

7. scientific results

1. Publications [141]
2. Books and chapters of books [152]
3. Thesis directed or in progress [153]
4. Premios [154]
5. Patents [155]

annual report 2018

www.food.imdea.org

1. Publications

In 2018, the Institute's researchers have published 158 articles, of which 136 have been published in high-impact international journals (total impact factor of 607.91 and an average impact factor per publication of 4.64), which is indicative of the Institute's scientific excellence.

1. Cruz-Gil, S; Sanchez-Martinez, R; de Cedron, MG; Martin-Hernandez, R ; Vargas, T; Molina, S; Herranz, J ; Davalos, A; Reglero, G; de Molina, AR. **Targeting the lipid metabolic axis ACSL/SCD in colorectal cancer progression by therapeutic miRNAs: miR-19b-1 role**. *Journal of lipid research*, Volumen: 59. Número: 1 Páginas: 14-24 . Fecha de publicacion 20-Enero-2018.

2. Tome-Carneiro, Joao; Carmen Crespo, M; Burgos-Ramos, Emma; Tomas-Zapico, Cristina; Garcia-Serrano, Alba; Castro-Gomez, Pilar; Venero, Cesar; Pereda-Perez, Inmaculada; Baliyan, Shishir; Valencia, Azucena; Fontecha, Javier; Davalos, Alberto; Visioli, Francesco. **Buttermilk and krill oil phospholipids improve hippocampal insulin resistance and synaptic signaling in aged rats**. *Molecular neurobiology.* DOI:10.1007/s12035-018-0934-y. Fecha de publicacion 03-Feb-2018.

3. Cabanas-Sánchez V, Guallar-Castillón P, Higueras-Fresnillo S, Rodríguez-Artalejo F, Martínez-Gómez D. **Changes in Sitting Time and Cardiovascular Mortality in Older Adults**. *Am J Prev Med.* 2018 Mar;54(3):419-42. DOI: 10.1016/j.amepre.2017.10.010. Epub 2018 Jan 2.

4. Pérez-Hernández B, Lopez-García E, Graciani A, Ayuso-Mateos JL, Rodríguez-Artalejo F, García-Esquinas E. **Housing conditions and risk of physical function limitations: a prospective study of community-dwelling older adults**. *J Public Health (Oxf).* 2018 Jan 17. DOI:10.1093/pubmed/fdy004.

5. Borghi C, Rodriguez-Artalejo F, De Backer G, Dallongeville J, Medina J, Nuevo J, Guallar E, Perk J, Banegas JR, Tubach F, Roy C, Halcox JP. **Serum uric acid levels are associated with cardiovascular risk score: A post hoc analysis of the EURIKA study**. *Int J Cardiol.* 2018 Feb 15;253:167-173. DOI: 10.1016/j.ijcard.2017.

6. Sadarangani KP, Von Oetinger A, Cristi-Montero C, Cortínez-O'Ryan A, Aguilar-Farías N, Martínez-Gómez D. **Beneficial association between active travel and metabolic syndrome in Latin-America: A cross-sectional analysis from the Chilean National Health Survey 2009-2010**. *Prev Med.* 2018;107:8-13. DOI: 10.1016/j.ypmed.2017.12.005.

7. Carmen Crespo, M.C., Tomé-Carneiro J., Gomez-Coronado, D., Emma Burgos-Ramos, E., García-Serrano, A., Martin-Hernandez, R., Baliyan S., Fontecha, J., Venero, C., Dávalos, A., and Visioli F. **Modulation of miRNA expression in aged rat hippocampus by buttermilk and krill oil**. *Scientific Reports* (2018) 8:3993. DOI:10.1038/s41598-018-22148-5

8. Corella D, Coltell O, Macian F, Ordovas JM. **Advances in Understanding the Molecular Basis of the Mediterranean Diet Effect.** *Annu Rev Food Sci Technol.* 2018 Jan 26. DOI: 10.1146/annurev-food-032217-020802.

9. Ghanbari M, Peters MJ, de Vries PS, Boer CG, van Rooij JGJ, Lee YC, Kumar V, Uitterlinden AG, Ikram MA, Wijmenga C, Ordovas JM, Smith CE, van Meurs JBJ, Erkeland SJ, Franco OH, Dehghan A. **A systematic analysis highlights multiple long non-coding RNAs associated with cardiometabolic disorders.** *J Hum Genet.* 2018 Jan 30. DOI: 10.1038/s10038-017-0403-x.

10. Corella D, Ramirez-Sabio JB, Coltell O, Ortega-Azorín C, Estruch R, Martínez-González MA, Salas-SalvadÃ³ J, SorlÃ JV, CastaÃ±er O, ArÃ³s F, Garcia-Corte FJ, Serra-Majem L, GÃ³mez-Gracia E, Fiol M, PintÃ³ X, Saez GT, Toledo E, Basora J, FitÃ³ M, CofÃ¡n M, Ros E, Ordovas JM. **Effects of the Ser326Cys Polymorphism in the DNA Repair OGG1 Gene on Cancer, Cardiovascular, and All-Cause Mortality in the PREDIMED Study: Modulation by Diet**. *J Acad Nutr Diet.* 2018 Jan 2. pii:S2212-2672(17)31616-7. DOI: 10.1016/j.jand.

11. Parnell LD, Ordovas JM, Lai CQ. **Environmental and epigenetic regulation of postprandial lipemia**. *Curr Opin Lipidol.* 2018 Feb;29(1):30-35. DOI:10.1097/MOL.0000000000000469. PubMed PMID: 29135687.

12. Martín-Hernández R, Reglero G, Dávalos A. **Data mining of nutrigenomics experiments: identification of a cancer protective gene signature**. *J Funct Foods.* 2018; 42:380-386. DOI:10.1016/j.jff.2018.01.021

13. Spreafico F, Sales R, Gil-Zamorano J, Medeiros P, Latasa MJ, Lima M, Lopes de Souza SA, Martin-Hernández R, Gómez-Coronado D, Iglesias-Gutierrez E, Mantilla-Escalante DC, Tavares do Carmo MdG, Dávalos A. **Dietary supplementation with hybrid palm oil alters liver function in**

the common Marmoset. *Scientific Reports* 2018; 8:2765. DOI: 10.1038/s41598-018-21151-0.

14. Ramos-Lopez O, Riezu-Boj JI, Milagro FI, Goni L, Cuervo M, Martinez JA. **Association of the Gly482Ser PPARGC1A gene variant with different cholesteroloutcomes in response to two energy-restricted diets in subjects with excessive weight**. *Nutrition.* 2018 Mar;47:83-89. DOI: 10.1373/clinchem.2017.280701

15. Ramos-Lopez O, Riezu-Boj JI, Milagro FI, Goni L, Cuervo M, Martinez JA. **Differential lipid metabolism outcomes associated with ADRB2 gene polymorphisms in response to two dietary interventions in overweight/obese subjects**. *Nutr Metab Cardiovasc Dis.* 2018 Feb;28(2):165-172. DOI: 10.1016/j.numecd.2017.11.006

16. Fallaize R, Livingstone KM, Celis-Morales C, Macready AL, San-Cristobal R, Navas-Carretero S, Marsaux CFM, O'Donovan CB, Kolossa S, Moschonis G, Walsh MC, Gibney ER, Brennan L, Bouwman J, Manios Y, Jarosz M, Martinez JA, Daniel H, Saris WHM, Gundersen TE, Drevon CA, Gibney MJ, Mathers JC, Lovegrove JA. **Association between Diet-Quality Scores, Adiposity, Total Cholesterol and Markers of Nutritional Status in European Adults: Findings from the Food4Me Study**. *Nutrients.* 2018 Jan 6;10(1) DOI: 10.3390/nu10010049.

17. Møller G, Rikardt Andersen J, Ritz C, P Silvestre M, Navas-Carretero S, Jalo E, Christensen P, Simpson E, Taylor M, Martinez JA, Macdonald I, Swindell N,Mackintosh KA, Stratton G, Fogelholm M, Larsen TM, Poppitt SD, Dragsted LO, Raben A. **Higher Protein Intake Is Not Associated with Decreased Kidney Function in Pre-Diabetic Older Adults Following a One-Year Intervention-A Preview Sub-Study**. *Nutrients.* 2018 Jan 9;10(1). DOI: 10.3390/nu10010054.

18. Cruz-Gil S, Sanchez-Martinez R, Gomez de Cedron M, Martin-Hernandez R, Vargas T, Molina S, Herranz J, Davalos A, Reglero G, Ramirez de Molina A.**Targeting the metabolic axis ACSL/SCD in colorectal cancer progression by therapeutic miRNAs: miR-19b-1 role.** *J Lipid Res.* 2018 Jan;59(1):14-24. DOI: 10.1194/jlr.M076752

19. Fernández LP, Ramos-Ruiz R, Herranz J, Martín-Hernández R, Vargas T, Mendiola M, Guerra L, Reglero G, Feliu J, Ramírez de Molina A.**The transcriptional and mutational landscapes of lipid metabolism-related genes in colon cancer.. Oncotarget**. eCollection 2018 Jan 19. DOI: 10.18632/oncotarget.23592.

20. Manuel A. Fernandez-Rojo, Evelyne Deplazes, Sandy S. Pineda, Andreas Brust, Tano Marth, Patrick Wilhelm, Nick Martel, Grant A. Ramm, Ricardo L. Mancera, Paul F. Alewood, Gregory M. Woods, Katherine Belov, John J. Miles, Glenn F. King and Maria P. Ikonomopoulou (2018). **Gomesin peptides prevent proliferation of Devil Facial Tumour Disease cells.** *Cell Death and Discovery* 4:19. DOI:10.1038/s41420-018-0030-0

21. Goldenberg, J., Cipriani, V., Jackson, T.N.W., Arbuckle, K., Debono, J., Dashevsky, D., Panagides, N., Ikonomopoulou, M.P., Koludarov, I., Li, B., Santana, R.C., Nouwens, A., Jones, A., Hay, C., Dunstan, N., Allen, L., Bush, B., Miles, J.J., Ge, L., Kwok, H.F., Fry, B.G. (2018). **Proteomic and functional variation within black snake venoms (Elapidae: Pseudechis).** *Comparative Biochemistry and Physiology,* part C 205:53-61. DOI: 10.1016/j.cbpc.2018.01.001

22. Jimenez Martinez. R., Ikonomopoulou, M.P., Lopez, A. & Miles, J.J. (2018). **Immune drug discovery from venoms**. *Review. Toxicon*, 141, 18-24. DOI: 10.1016/j.toxicon.2017.11.006

23. Norcliffe, J.L., Mina, J.G., Alvarez, E., Cantizani, J., Dios-Anton, F., Colmenarejo, G., Gonzalez-Del Valle, S., Marco, M., Fiandor, J.M., Martin, J.J. and Steel, P.G., 2018. **Identifying inhibitors of the Leishmania inositol phosphorylceramide synthase with antiprotozoal activity using a yeast-based assay and ultra-high throughput screening platform**. *Scientific reports,* 8(1), p.3938. DOI:10.1038/s41598-018-22063-9

24. Laparra JM, Haros M. I**nclusion of Whole Flour from Latin-American Crops into Bread Formulations as Substitute of Wheat Delays Glucose Release and Uptake.** *Plant Foods Hum Nutr.* 2018, Mar;73(1):13-17. DOI: 10.1007/s11130-018-0653-6.

25. Corredor-Andrés B, Muñoz-Calvo MT, Calero O, Aparicio C, Argente J, Calero M. **Nephrotic syndrome associated with severe hypertriglyceridemia in a pediatric patient: Questions**. *Pediatr Nephrol.* 2018 Mar 12. DOI: 10.1007/s00467-018-3894-6.

26. Hawkins-Carranza FG, Muñoz-Calvo MT, Martos-Moreno GÁ, Allo-Miguel G, Del Río L, Pozo J, Chowen JA, Pérez-Jurado LA, Argente J. **Recombinant Human Insulin Like-Growth Factor-1 Treatment Increases Bone Mineral Density and Trabecular Bone Structure in Children with PAPP-A2 Deficiency**. *Horm Res Paediatr.* 2018 Feb 16. DOI: 10.1159/000486336.

27. Márquez Rivera M, Corredor Andrés B, Azorín Cuadrillero D, Muñoz Calvo MT, Argente J.. **Bilateral pseudoangiomatous stromal hyperplasia of the breast**. *An Pediatr (Barc).* 2018 Feb 5. pii: S1695-4033(18)30007-9. DOI: 10.1016/j.anpedi.2017.12.011.

28. Aguado-Llera D, Canelles S, Frago LM, Chowen JA, Argente J, Arilla E, Barrios V. **The Protective Effects of IGF-I against β-Amyloid-related Downregulation of Hippocampal Somatostatinergic System Involve Activation of Akt and Protein Kinase A.** *Neuroscience.* 2018 Mar 15;374:104-118. DOI: 10.1016/j.neuroscience.2018.01.041. Epub 2018 Feb 3.

29. Villalva, M; Jaime, L ; Aguado, E ; Nieto, JA , Juan ; Reglero, G ; Santoyo, S. **Anti-Inflammatory and Antioxidant Activities from the Basolateral Fraction of Caco-2 Cells Exposed to a Rosmarinic Acid Enriched Extract.** *JOURNAL OF Agricultural And Food Chemistry.* Feb 7 2018. Volumen: 66 Número: 5 Páginas: 1167-1174. DOI: 10.1021/acs.jafc.7b06008.

30. Arranz-Martinez, P; Corzo-Martinez, M ; Vazquez, L ; Reglero, G ; Torres, CF . **Lipase catalyzed glycerolysis of ratfish liver oil at stirred tank basket reactor: A kinetic approach**. *Process Biochemistry.* Jan 2018Volumen: 64 Páginas: 38-45. DOI: 10.1016/j.procbio.2017.09.026.

31. Chowen Ja, Argente-Arizón P, Freire-Regatillo A, Argente J. **Sex differences in the neuroendocrine control of metabolism and the implications of astrocytes.** *Front Neuroendocrinol* 2018; 48:3-12. DOI: 10.1016/j.yfrne.2017.05.003.

32. Travieso-Suárez L, Pereda A, Pozo-Román J, Pérez De Nanclares G, Argente J. **Brachydactyly Type C due to a nonsense mutation in the GDF5 gene**. *An Pediatr* 2018; 88:107-109. DOI: 10.1016/j.anpedi.2017.03.001.

33. Argente-Arizón P, Díaz F, Ros P, Barrios V, Tena-Sempere M, García-Sefura Lm, Argente J, Chowen Ja. **The hypothalamic inflammatory/gliosis response to neonatal overnutrition is sex and age dependent**. *Endocrinology* 2018; 159(1):368-387. DOI: 10.1210/en.2017-00539.

34. Corredor-Andrés B, Muñoz-Calvo Mt, Calero O, Argente J, Calero M. **Nephrotic syndrome associated with severe hypertriglyceridemia in a pediatric patient: Answers**. *Pediatr Nephrol* 2018. DOI: 10.1007/s00467-018-3894-6.

35. Ramos-Lopez O, Samblas M, Milagro FI, Riezu-Boj JI, Crujeiras AB, Martinez JA, Project M. **Circadian gene methylation profiles are associated with obesity, metabolic disturbances and carbohydrate intake**. *Chronobiol Int.* 2018 Mar 26:1-13. DOI: 10.1080/07420528.2018.1446021.

36. Ramos-Lopez O, Riezu-Boj JI, Milagro FI, Moreno-Aliaga MJ, Martinez JA. **Endoplasmic reticulum stress epigenetics is related to adiposity, dyslipidemia, and insulin resistance. project MENA.** *Adipocyte.* 2018 Mar 23:1-6. DOI: 10.1080/21623945.2018.1447731.

37. Ramos-Lopez O, Riezu-Boj JI, Milagro FI, Goni L, Cuervo M, Martinez JA. **Association of the Gly482Ser PPARGC1A gene variant with different cholesterol outcomes in response to two energy-restricted diets in subjects with excessive weight.** *Nutrition.* 2018 Mar; 47:83-89. DOI: 10.1016/j.nut.2017.10.008. Epub 2018 Jan 4.

38. De Silva N, Samblas M, Martínez JA, Milagro FI. **Effects of exosomes from LPS-activated macrophages on adipocyte gene expression, differentiation, and insulin-dependent glucose uptake**. *J Physiol Biochem.* 2018 Mar 20. DOI: 10.1007/s13105-018-0622-4.

39. Cabanas-Sánchez, V., Guallar-Castillón, P., Higueras-Fresnillo, S., Rodríguez-Artalejo, F., & Martínez-Gómez, D. **Changes in sitting time and cardiovascular mortality in older adults**. *American Journal of Preventive Medicine.* DOI: 10.1016/j.amepre.2017.10.010.

40. Pelà G., De Rosa F., Demola P., Crocamo A., Missale G., Cecchini S., Marchesi F., Visioli F., Silini E.M., and Roncoroni L. **Resolution of late-onset heart and liver failures after reversion of jejuno-ileal bypass: a case report**. *Scandinavian Journal of Gastroenterology,* 2018 May 23:1-4. DOI: 10.1080/00365521.2018.1474944.

41. Visioli F., Franco M., Toledo E., Luchsinger J., Willett W.C., Hu F.B., Martinez-Gonzalez M.A. **Olive oil and prevention of chronic diseases: summary of an International conference**. *Nutrition Metabolism & Cardiovascular Disease,* 2018 Apr 26. DOI: 10.1016/j.

42. Poli A., Barbagallo C.M., Cicero A., Corsini A., Manzato E., Trimarco B., Bernini F., Visioli F., Bianchi A., Canzone G., Crescini C., de Kreutzenberg S., Ferrara N., Gambacciani M., Ghiselli A., Lubrano C., Marelli G., Marrocco W., Montemurro V., Parretti D., Pedretti R., Perticone F., Stella R., Marangoni F. **Nutraceuticals and functional foods for the control of plasma cholesterol levels. An Intersociety position paper**. *Pharmacological Research,* 2018 May 30. pii: S1043-6618(18)30762-X. DOI: 10.1016/j.phrs.2018.05.015."

43. Blanco-Rojo R, Vaquero MP. **Iron bioavailability from food fortification to precision nutrition. A review.** *Innovative Food Science & Emerging Technologies.* Available online 23 April 2018 DOI:10.1016/j.ifset.2018.04.015.

44. H.M. Pasero; E.A. Aguilar; I.E. Salinas; R. de la Iglesia; S. Molina; G. Colmenarejo; A.R. de Molina; G. Reglero, V.L. Kohen. **Genetic variant rs1260326 of GCKR as an indicator of the risk of obesity at early ages**. *Eur J Clin Invest.* 2018 May;48 Suppl 1:5-225.

45. Víctor Micó, Lidia Daimiel, Laura Berninches, Viviana Loria-Kohen, Isabel Espinosa-Salinas, José M Ordovás. "**Effect of alcoholic and non-alcoholic beer in the microrna profile of plasma and macrophages in high cardiovascular risk patients**". *European Journal of Clinical Investigation.* 2018;48(Suppl. 1):185. DOI: 10.1111/eci.12922.

46. Fernández LP, Sánchez-Martínez R, Vargas T, Herranz J, Martín-Hernández R, Mendiola M, Hardisson D, Reglero G, Feliu J, Redondo A, Ramírez de Molina A. "**The role of glycosyltransferase enzyme GCNT3 in colon and ovarian cancer prognosis and chemoresistance**". *Sci Rep.* 2018 May 31;8(1):8485. DOI: 10.1038/s41598-018-26468-4.

47. Martos-Moreno Gá, Travieso-Suárez L, Pozo-Román J, Muñoz-Calvo Mt, Chowen Ja, Frilander Mj, Pérez-Jurado La, Argente J. **Reponse to growth hormone in patients with RNPC3 mutations**. *EMBO Mol Med* 2018 Jun 4. pii: e9143. DOI:10.15252/Emmm.201809143.

48. Pereda A, Garin I, Anda E, Berrade S, Ramos-Arroyo Ma, Rodríguez-Erdozaín R, Vicente A, Rodríguez-López R, Moreno A, Guitart M, Oancea-Ionescu R, Pérez-Rodríguez O, Molinos-Castro S, Meriño E, Salvador-Sanchis JI, López-Mondéjar P, Zapico M, Palomo E, Rozas-Moreno P, Alexiandre-Blanquer F, Argente J, Martos G, Pozo J, Pérez De Nanclares G. **What to consider when pseudohypoparathyroidism is ruled out: iPPSD and differential diagnosis**. *BMC Med Genet* 2018; 19(1):32. DOI: 10.1186/s12881-018-0530-z.

49. Corredor-Andrés B, Muñoz-Calvo Mt, Calero O, Argente J, Calero M. **Nephrotic syndrome associated with severe hypertriglyceridemia in a pediatric patient: Questions**. *Pediatr Nephrol* 2018 Mar 12. . DOI: 10.1007/s00467-018-3919-1.

50. Machado-Fragua MD, Struijk EA, Graciani A, Guallar-Castillon P, Rodriguez-Artalejo F, Lopez-Garcia E. **Coffee consumption and risk of physical function impairment, frailty and disability in older adults**. *European Journal of Nutrition.* DOI: 10.1007/s00394-018-1664-7

51. Banegas JR, Ruilope LM, Sierra A, Vinyoles E, Gorostidi M, Cruz JJ, Ruiz-Hurtado G, Segura J, Rodríguez-Artalejo F, Williams B. **Relationship between clinic and ambulatory blood pressure and mortality**. *N Engl J Med.* April 19, 2018: 378:1509-1520 DOI: 10.1056/NEJMoa1712231

52. Martinez-Gomez D, Guallar-Castillon P, Higueras-Fresnillo S, Garcia-Esquinas E, Lopez-Garcia E, Bandinelli S, Rodríguez-Artalejo F. **Physical Activity Attenuates Total and Cardiovascular Mortality Associated With Physical Disability: A National Cohort of Older Adults**. *J Gerontol A Biol Sci Med Sci.* DOI: 10.1093/gerona/glx117

53. Marta Gomez de Cedron, Teodoro Vargas, Andres Madrona, Aranza Jimenez, Maria Jesus Perez Perez, Jose Carlos Quintela, Guillermo Reglero, Ana Rosa San-Felix and Ana Ramirez de Molina. "**Novel polyphenols that inhibit colon cancer cell growth affecting cancer cell metabolism**". *Journal of Pharmacology and Experimental Therapeutics* June 5, 2018, jpet.118.248278; DOI: 10.1124/jpet.118.248278 IF: 3.86, Q1"

54. Marques-Rocha JL, Garcia-Lacarte M, Samblas M, Bressan J, Martínez JA, Milagro Marques-Rocha JL, Garcia-Lacarte M, Samblas M, Bressan J, Martínez JA, Milagro F. **Regulatory roles of miR-155 and let-7b on the expression of inflammation-related genes in THP-1 cells: effects of fatty acids**. *I. J Physiol Biochem.* 2018 May 22. DOI: 10.1007/s13105-018-0629-x. [Epub ahead of print]

55. Romo-Hualde A, Huerta AE, González-Navarro CJ, Ramos-López O, Moreno-Aliaga MJ, Martínez JA. **Untargeted metabolomic on urine samples after α-lipoic acid and/or eicosapentaenoic acid supplementation in healthy overweight/obese women**. *Lipids Health Dis.* 2018 May 9;17(1):103. DOI: 10.1186/s12944-018-0750-4.

56. Malafarina V, Reginster JY, Cabrerizo S, Bruyère O, Kanis JA, Martinez JA, Zulet MA. **Nutritional Status and Nutritional Treatment Are Related to Outcomes and Mortality in Older Adults with Hip Fracture** *Nutrients.* 2018 Apr 30;10(5). pii: E555. DOI: 10.3390/nu10050555. Review.

57. Lai CQ, Smith CE, Parnell LD, Lee YC, Corella D, Hopkins P, Hidalgo BA, Aslibekyan S, Province MA, Absher D, Arnett DK, Tucker KL, Ordovas JM. **Epigenomics and metabolomics reveal the mechanism of the APOA2-**

saturated fat intake interaction affecting obesity. *Am J Clin Nutr.* 2018 Jun 12. DOI: 10.1093/ajcn/nqy081.

58. Ordovas JM, Ferguson LR, Tai ES, Mathers JC. **Personalised nutrition and health**. *BMJ.* 2018 Jun 13;361:bmj.k2173. DOI: 10.1136/bmj.k2173.

59. Camargo A, Jimenez-Lucena R, Alcala-Diaz JF, Rangel-Zuñiga OA, Garcia-Carpintero S, Lopez-Moreno J, Blanco-Rojo R, Delgado-Lista J, Perez-Martinez P, van Ommen B, Malagon MM, Ordovas JM, Perez-Jimenez F, Lopez-Miranda J. **Postprandial endotoxemia may influence the development of type 2 diabetes mellitus: From the CORDIOPREV study**. *Clin Nutr.* 2018 Apr 11. pii: S0261-5614(18)30128-6. DOI: 10.1016/j.clnu.2018.03.016.

60. Laclaustra M, Rodriguez-Artalejo F, Guallar-Castillon P, Banegas JR, Graciani A, Garcia-Esquinas E, Ordovas J, Lopez-Garcia E. **Prospective association between added sugars and frailty in older adults**. *Am J Clin Nutr.* 2018 May1;107(5):772-779. DOI: 10.1093/ajcn/nqy028.

61. Roncero-Ramos I, Rangel-Zuñiga OA, Lopez-Moreno J, Alcala-Diaz JF, Perez-Martinez P, Jimenez-Lucena R, Castaño JP, Roche HM, Delgado-Lista J, Ordovas JM, Camargo A, Lopez-Miranda J. **Mediterranean Diet, Glucose Homeostasis, and Inflammasome Genetic Variants: The CORDIOPREV Study**. *Mol Nutr Food Res.* 2018 May;62(9):e1700960. DOI: 10.1002/mnfr.201700960.

62. Geng X, Irvin MR, Hidalgo B, Aslibekyan S, Srinivasasainagendra V, An P,Frazier-Wood AC, Tiwari HK, Dave T, Ryan K, Ordovas JM, Straka RJ, Feitosa MF,Hopkins PN, Borecki I, Province MA, Mitchell BD, Arnett DK, Zhi D. **An exome-wide sequencing study of lipid response to high-fat meal and fenofibrate in Caucasians from the GOLDN cohort.** *J Lipid Res.* 2018 Apr;59(4):722-729. DOI: 10.1194/jlr. P080333.

63. Ghanbari M, Peters MJ, de Vries PS, Boer CG, van Rooij JGJ, Lee YC, Kumar V, Uitterlinden AG, Ikram MA, Wijmenga C, Ordovas JM, Smith CE, van Meurs JBJ, Erkeland SJ, Franco OH, Dehghan A. **A systematic analysis highlights multiple long non-coding RNAs associated with cardiometabolic disorders.** *J Hum Genet.* 2018 Apr;63(4):431-446. DOI: 10.1038/s10038-017-0403-x

64. Hong J, Hatchell KE, Bradfield JP, Bjonnes A, Chesi A, Lai CQ, Langefeld CD,Lu L, Lu Y, Lutsey PL, Musani SK, Nalls MA, Robinson-Cohen C, Roizen JD, SaxenaR, Tucker KL, Ziegler JT, Arking DE, Bis JC, Boerwinkle E, Bottinger EP, Bowden DW, Gilsanz V, Houston DK, Kalkwarf HJ, Kelly A, Lappe JM, Liu Y, Michos ED, Oberfield SE, Palmer ND, Rotter JI, Sapkota B, Shepherd JA, Wilson JG, Basu S, de Boer IH, Divers J, Freedman BI, Grant SFA, Hakanarson H, Harris TB, Kestenbaum BR, Kritchevsky SB, Loos RJF, Norris JM, Norwood AF, Ordovas JM, Pankow JS, Psaty BM, Sanghera DK, Wagenknecht LE, Zemel BS, Meigs J, Dupuis J, Florez JC, Wang T, Liu CT, Engelman CD, Billings LK. **Transethnic Evaluation Identifies Low-Frequency Loci Associated With 25-Hydroxyvitamin D Concentrations**. *J Clin Endocrinol Metab.* 2018 Apr 1;103(4):1380-1392. DOI: 10.1210/jc.2017-01802.

65. Corella D, Ramírez-Sabio JB, Coltell O, Ortega-Azorín C, Estruch R, Martínez-González MA, Salas-Salvadó J, Sorlí JV, Castañer O, Arós F, Garcia-Corte FJ, Serra-Majem L, Gómez-Gracia E, Fiol M, Pintó X, Saez GT, Toledo E, Basora J, Fitó M, Cofán M, Ros E, Ordovas M. **Effects of the Ser326Cys Polymorphism in the DNA Repair OGG1 Gene on Cancer,**

Cardiovascular, and All-Cause Mortality in thePREDIMED Study: Modulation by Diet. *J Acad Nutr Diet.* 2018 Apr;118(4):589-605. DOI: 10.1016/j.jand.2017.09.025.

66. López de las Hazas MC, Godinho-Pereira J, Macía A, Almeida F, Ventura MR, Motilva MJ, Santos CN. **Brain uptake of hydroxytyrosol and its main circulating metabolites: Protective potential in neuronal cells**. *Journal of Functional Foods* 46 (2018) 110–117. DOI:10.1016/j.jff.2018.04.028

67. Gonzalo-Calvo D, Dávalos A, Fernández-Sanjurjo M, Amado-Rodríguez L, Díaz-Coto S, Tomás-Zapico C, Montero A, García-González A, Llorente-Cortés V, Heras ME, Boratia-Pérez A, Díaz-Martínez AE, Úbeda N, Iglesias-Gutiérrez E. **Circulating microRNAs as emerging cardiac biomarkers responsive to acute exercise** *International Journal of Cardiology* 2018;264:130-136. DOI: 10.1016/j.ijcard.2018.02.092.

68. Tomé-Carneiro J, Fernández-Alonso N, Tomás-Zapico C, Visioli F, Iglesias-Gutierrez E, Dávalos A. **Breast milk microRNAs harsh journey towards potential effects in infant development and maturation. Lipid encapsulation can help.** *Pharmacol Res.* 2018;132:21-32. DOI:10.1016/j.phrs.2018.04.003

69. Jantsch MF, Quattrone A, O'Connell M, Helm M, Frye M, Macias-Gonzales M, Ohman M, Ameres S, Willems L, Fuks F, Oulas A, Vanacova S, Nielsen H, Bousquet-Antonelli C, Motorin Y, Roignant JY, Balatsos N, Dinnyes A, Baranov P, Kelly V, Lamm A, Rechavi G, Pelizzola M, Liepins J, Holodnuka Kholodnyuk I, Zammit V, Ayers D, Drablos F, Dahl JA, Bujnicki J, Jeronimo C, Almeida R, Neagu M, Costache M, Bankovic J, Banovic B, Kyselovic J, Valor LM, Selbert S, Pir P, Demircan T, Cowling V, Schäfer M, Rossmanith W, Lafontaine D, David A, Carre C, Lyko F, Schaffrath R, Schwartz S, Verdel A, Klungland A, Purta E, Timotijevic G, Cardona F, Davalos A, Ballana E, O Carroll D, Ule J, Fray R. **Positioning Europe for the EPITRANSCRIPTOMICS challenge**. *RNA Biol.* 2018 May 9:1-3. DOI: 10.1080/15476286.2018.1460996.

70. Colmenarejo, G.; Lozano-Arias, S.; González-Cortés, C.; Calvo, D.; Sánchez-García, J.; Presa-Matilla, J.L.; Leroy, D.; Rodrigues, J. "**Predicting transmission blocking potential of anti-malarial compounds in the mosquito feeding assay using Plasmodium falciparum male gamete inhibition assay**". (2018) *Sci. Rep.* 8, 7764. DOI: 10.1038/s41598-018-26125-w

71. Ikonomopoulou MP and Fernandez-Rojo MA. **The antiproliferative and apoptotic profile of gomesin against DFTD**. *CDDIS-18-1788.* Invited editorial by Cell Death & Disease.

72. Giménez-Bastida JA, Laparra-Llopis JM, Baczek N, Zielinski H. **Buckwheat and buckwheat enriched products exert an anti-inflammatory effect on the myofibroblasts of colon CCD-18Co.** *Food Funct.* 2018, 9, 3387 – 3397

73. Argente J, Pérez-Jurado LA. **Genetic causes of proportionate short stature**. *Best Pract Res Clin Endocrinol Metab.* 2018 Aug;32(4):499-522. DOI: 10.1016/j.beem.2018.05.012. Epub 2018 Jun 6. Review. PMID: 30086871

74. Dos Santos TJ, Martos-Moreno GÁ, Muñoz-Calvo MT, Pozo J, Rodríguez-Artalejo F, Argente J. **Clinical management of childhood hyperthyroidism with and without Down syndrome: a longitudinal study at a single center**. *J Pediatr Endocrinol Metab.* 2018 Jul 26;31(7):743-750. DOI: 10.1515/jpem-2018-0132. PMID: 29953411

75. Martínez-Villanueva J, González-Leal R, Argente J, Martos-Moreno GA. **Parental obesity is associated with the severity of childhood obesity and its comorbidities**. *An Pediatr (Barc).* 2018 Jul 24. pii: S1695-4033(18)30301-1. DOI: 10.1016/j.anpedi.2018.06.013. PMID: 30054225

76. González-Leal R, Martínez-Villanueva J, Argente J, Martos-Moreno GÁ. **Influence of neonatal anthropometry on the comorbidities of the obese patient**. *An Pediatr (Barc).* 2018 Jul 2. pii: S1695-4033(18)30227-3. DOI: 10.1016/j.anpedi.2018.05.017. [Epub ahead of print] Spanish. PMID: 30042032

77. Galarregui C, Abete I, Navas Carretero S, Reglero G, Ramírez de Molina A, Loria Kohen V, Zulet MÁ, Martínez JA, Consorcio N. **Precision dietary guidelines and ingredients for chronic diseases in pre-senior and senior populations**. *An Sist Sanit Navar.* 2018 Aug 29;41(2):227-242. DOI: 10.23938/ASSN.0311

78. Mendiola M, Redondo A, Heredia-Soto V, Herranz J, Berjón A, Hernández A, Miguel-Martín M, Crespo R, Barriuso J, Cruz P, Yébenes L, Peláez-García A, Castelo B, Ramírez de Molina A, Feliu J, Hardisson D. **Predicting Response to Standard First-line Treatment in High-grade Serous Ovarian Carcinoma by Angiogenesis-related Genes**. *Anticancer Res.* 2018 Sep;38(9):5393-5400. DOI: 10.21873/anticanres.12869.

79. Lamia Mouhid, Marta Gómez de Cedrón, Teodoro Vargas, Elena García-Carrascosa, Nieves Herranz Muñoz, Mónica R. García-Risco, Guillermo Reglero, Tiziana Fornari, Ana Ramírez de Molina. **Identification of antitumoral agents against human pancreatic cancer cells from Asteraceae and Lamiaceae plant extracts**. *BMC Complement Altern Med.* 2018 Sep 17;18(1):254. DOI: 10.1186/s12906-018-2322-6.

80. Salinero-Fort MA, Gómez-Campelo P, San Andrés-Rebollo FJ, Cárdenas-Valladolid J, Abánades-Herranz JC, Carrillo de Santa Pau E, Chico-Moraleja RM, Beamud-Victoria D, de Miguel-Yanes JM, Jimenez-Garcia R, López-de-Andres A, Ramallo-Fariña Y, De Burgos-Lunar C. **Prevalence of depression in patients with type 2 diabetes mellitus in Spain (the DIADEMA Study) : results from the MADIABETES cohort**. *BMJ Open.* 2018 Sep 24;8(9):e020768. DOI: 10.1136/bmjopen-2017-020768.

81. Brain Behav. Ramos-Lopez O, Riezu-Boj JI, Milagro FI, Martinez JA**. Dopamine gene methylation patterns are associated with obesity markers and carbohydrate intake.; MENA Project**. *Brain Behav.* 2018 Aug;8(8):e01017. DOI: 10.1002/brb3.1017. Epub 2018 Jul 11. PubMed PMID: 29998543; PubMed Central PMCID: PMC6085894

82. Grassi L, Pourfarzad F, Ullrich S, Merkel A, Were F, Carrillo-de-Santa-Pau E, Yi G, Hiemstra IH, Tool ATJ, Mul E, Perner J, Janssen-Megens E, Berentsen K, Kerstens H, Habibi E, Gut M, Yaspo ML, Linser M, Lowy E, Datta A, Clarke L, Flicek P, Vingron M, Roos D, van den Berg TK, Heath S, Rico D, Frontini M, Kostadima M, Gut I, Valencia A, Ouwehand WH, Stunnenberg HG, Martens JHA, Kuijpers TW. **Dynamics of Transcription Regulation in Human Bone Marrow Myeloid Differentiation to Mature Blood Neutrophils**.*Cell Rep.* 2018 Sep 4;24(10):2784-2794. DOI: 10.1016/j.celrep.2018.08.018.

83. Garcia-Rios A, Ordovas JM, Lopez-Miranda J, Perez-Martinez P. **New diet trials and cardiovascular risk**. *Curr Opin Cardiol.* 2018 Jul;33(4):423-428. DOI: 10.1097/HCO.0000000000000523. IF: 2.006, Q3 (Cardiac & Cardiovascular Systems).

84. Christensen P, Meinert Larsen T, Westerterp-Plantenga M, Macdonald I, Martinez JA, Handjiev S, Poppitt S, Hansen S, Ritz C, Astrup A, Pastor-Sanz L, Sandø-Pedersen F, Pietiläinen KH, Sundvall J, Drummen M, Taylor MA, Navas-Carretero S, Handjieva-Darlenska T, Brodie S, Silvestre MP, Huttunen-Lenz M, Brand-Miller J, Fogelholm M, Raben A. **Men and women respond differently to rapid weight loss: Metabolic outcomes of a multicentre intervention study after a low-energy diet in 2500 overweight, individuals with pre-diabetes (PREVIEW)**. *Diabetes Obes Metab.* 2018 Aug 7. DOI: 10.1111/dom.13466. PubMed PMID: 30088336

85. Costa-Machado LF, Martín-Hernández R, Sanchez-Luengo MÁ, Hess K, Vales-Villamarin C, Barradas M, Lynch C, de la Nava D, Diaz-Ruiz A, de Cabo R, Cañamero M, Martinez L, Sanchez-Carbayo M, Herranz D, Serrano M, Fernandez-Marcos PJ. **Sirt1 protects from K-Ras-driven lung carcinogenesis**. *EMBO Rep.* 2018 Sep;19(9). pii: e43879. DOI: 10.15252/embr.20164387 PubMed PMID: 30021836; PubMed Central PMCID: PMC6123659

86. Lopez-Moreno J, Garcia-Carpintero S, Gomez-Delgado F, Jimenez-Lucena R, Vals-Delgado C, Alcala-Diaz JF, Roncero-Ramos I, Rangel-Zuñiga OA, Yubero-Serrano EM, Malagon MM, Ordovas JM, Perez-Martinez P, Lopez-Miranda J, Camargo A. **Endotoxemia is modulated by quantity and quality of dietary fat in older adults**. *Exp Gerontol.* 2018 Aug;109:119-125. DOI: 10.1016/j.exger.2017.11.006. IF: 3.224. Q2 (Geriatrics & Gerontology)

87. Cortés-Martín A, García-Villalba R, González-Sarrías A, Romo-Vaquero M, Loria-Kohen V, Ramírez-de-Molina A, Tomás-Barberán FA, Selma MV, Espín JC. **The gut microbiota urolithin metabotypes revisited: the human metabolism of ellagic acid is mainly determined by aging**. *Food Funct.* 2018 Aug 15;9(8):4100-4106. DOI: 10.1039/c8fo00956b.

88. Mastrangelo A, Martos-Moreno GÁ, Rupérez FJ, Chowen JA, Barbas C, Argente J. **Metabolomics changes in patients with PAPP-A2 deficiency in response to rhIGF1 treatment**. *Growth Horm IGF Res.* 2018 Aug 12;42-43:28-31. DOI: 10.1016/j.ghir.2018.08.002. PMID: 30119035.Select item 300868713.

89. Sayón-Orea C, Santiago S, Bes-Rastrollo M, Martínez-González MA, Pastor MR, Moreno-Aliaga MJ, Tur JA, Garcia A, Martínez JA. **Determinants of Self-Rated Health Perception in a Sample of a Physically Active Population: PLENUFAR VI Study**. *Int J Environ Res Public Health.* 2018 Sep 25;15(10). pii: E2104. DOI: 10.3390/ijerph15102104. PubMed PMID: 30257464.

90. Navas-Carretero S, San-Cristobal R, Livingstone KM, Celis-Morales C, Marsaux CF, Macready AL, Fallaize R, O'Donovan CB, Forster H, Woolhead C, Moschonis G, Lambrinou CP, Jarosz M, Manios Y, Daniel H, Gibney ER, Brennan L, Walsh MC, Drevon CA, Gibney M, Saris WHM, Lovegrove JA, Mathers JC, Martinez JA. **Food4Me Study. Higher vegetable protein consumption, assessed by an isoenergetic macronutrient exchange**

model, is associated with a lower presence of overweight and obesity in the web-based Food4me European study. *Int J Food Sci Nutr.* 2018 Jul 26:1-14. DOI: 10.1080/09637486.2018.1492524. [Epub ahead of print] PubMed PMID: 30049236.

91. Roncero-Ramos I, Jimenez-Lucena R, Alcala-Diaz JF, Vals-Delgado C, Arenas-Larriva AP, Rangel-Zuñiga OA, Leon-Acuña A, Malagon MM, Delgado-Lista J, Perez-Martinez P, Ordovas JM, Camargo A, Lopez-Miranda J. **Alpha cell function interacts with diet to modulate prediabetes and Type 2 diabetes**. *J Nutr Biochem.* 2018 Sep 1;62:247-256. DOI:10.1016/j.jnutbio.2018.08.012. IF: 4.414, Q1 (Nutrition & Dietetics)

92. Samblas M, Martínez JA, Milagro F. **Folic Acid Improves the Inflammatory Response in LPS-Activated THP-1 Macrophages**. *Mediators Inflamm.* 2018 Jul. 4;2018:1312626. DOI: 10.1155/2018/1312626. eCollection 2018. PubMed PMID:30116142; PubMed Central PMCID: PMC6079441

93. Jiménez-Lucena R, Rangel-Zúñiga OA, Alcalá-Díaz JF, López-Moreno J, Roncero-Ramos I, Molina-Abril H, Yubero-Serrano EM, Caballero-Villarraso J, Delgado-Lista J, Castaño JP, Ordovás JM, Pérez-Martinez P, Camargo A, López-Miranda J. **Circulating miRNAs as Predictive Biomarkers of Type 2 Diabetes Mellitus Development in Coronary Heart Disease Patients from the CORDIOPREV Study**. *Mol Ther Nucleic Acids.* 2018 Sep 7; 12:146-157. DOI:10.1016/j.omtn.2018.05.002. IF: 5.66, Q1 (Medicine, Research & Experimental)

94. Pérez-Gálvez A., Jarén-Galán M., Garrido-Fernández J., Visitacion Calvo M., Visioli F., and Fontecha. **Activities, bioavailability, and metabolism of lipids from structural membranes and oils: promising research on mild cognitive impairment**. *J. Pharmacological Research* (August 2018) 134:299-304.

95. Galilea-Zabalza I, Buil-Cosiales P, Salas-Salvadó J, Toledo E, Ortega-Azorín C, Díez-Espino J, Vázquez-Ruiz Z, Zomeño MD, Vioque J, Martínez JA, Romaguera D, Perez-Farinos N, PREDIMED-PLUS Study Investigators. **Mediterranean diet and quality of life: Baseline cross-sectional analysis of the PREDIMED-PLUS trial**. *PLoS One.* López-Miranda J, Estruch R, Bueno-Cavanillas A, Arós F, Tur JA, Tinahones F, Serra-Majem L, Marcos-Delgado A, Ortega-Calvo M, Vázquez C, Pintó X, Vidal J, Daimiel L, Delgado-Rodríguez M, Matía P, Corella D, Diaz-López A, Babio N, Muñoz MA, Fitó M, González-Palacios S, Abete I, García-Rios A, Ros E, Martínez-González MÁ; 2018 Jun 18;13(6):e0198974. DOI: 10.1371/journal.pone.0198974. eCollection 2018. IF: 2.766, Q1 (Multidisciplinary sciences).

96. Huttunen-Lenz M, Hansen S, Christensen P, Meinert Larsen T, Sandø-Pedersen F, Drummen M, Adam TC, Macdonald IA, Taylor MA, Martinez JA, Navas-Carretero S, Handjiev S, Poppitt SD, Silvestre MP, Fogelholm M, Pietiläinen KH, Brand-Miller J, Berendsen AA, Raben A, Schlicht W. **PREVIEW study-influence of a behavior modification intervention (PREMIT) in over 2300 people with pre-diabetes: intention, self-efficacy and outcome expectancies during the early phase of a lifestyle intervention**. *Psychol Res Behav Manag.* 2018 Sep 12;11:383-394. DOI: 10.2147/PRBM.S160355. eCollection 2018. PubMed PMID: 30254498; PubMed Central PMCID: PMC6143124

97. Ikonomopoulou MP, Fernandez-Rojo MA, Pineda SS et al. (2018). **Gomesin inhibits melanoma growth by manipulating key signaling cascades that control cell death and proliferation**. August 2018. *Scientific Reports* 8(1):11519.

98. Barcones-Molero, MF; Sanchez-Villegas, A; Martinez-Gonzalez, MA ; Bes-Rastrollo, M ; Martinez-Urbistondo, M ; Santabarbara, J ; Martinez, JA. **The influence of obesity and weight gain on quality of life according**

to the SF-36 for individuals of the dynamic follow-up cohort of the University of Navarra. *Revista Clinica Espanola.* Nov. 2018. Volumen: 218 Número: 8 Páginas: 408-416. DOI: 10.1016/j.rce.2018.05.005.

99. Andres, BC ; Rivera, MM; Bailon, FL ; Meli, BG; Cuadrillero, DA ; Calvo, MTM ; Argente, J. **Giant breast fibroadenomas in adolescents: Diagnostic and therapeutic procedures**. *Anales de pediatria.* Volumen: 89 Número: 6 Páginas: 383-385.DOI: 10.1016/j.anpedi.2018.01.006.DEC 2018

100. Marques-Rocha, JL; Garcia-Lacarte, M ; Samblas, M; Bressan, J; Martinez, JA ; Milagro, FI. **Regulatory roles of miR-155 and let-7b on the expression of inflammation-related genes in THP-1 cells: effects of fatty acids**. *Journal of physiology and biochemistry.* NOV 2018. Volumen: 74 Número: 4 Páginas: 579-589 Número especial: SI. DOI: 10.1007/s13105-018-0629-x.

101. Sayon-Orea, C ; Santiago, S; Bes-Rastrollo, M ; Martinez-Gonzalez, MA ; Pastor, MR ; Moreno-Aliaga, MJ; Tur, JA ; Garcia, A; Martinez, JA. **Determinants of Self-Rated Health Perception in a Sample of a Physically Active Population: PLENUFAR VI Study**. *International Journal Of Environmental Research And Public Health.* Oct 2018. Volumen: 15 Número: 10. Número de artículo: 2104. DOI: 10.3390/ijerph15102104. PMID: 30257464 PMCID: PMC6210315

102. Higueras-Fresnillo, S ; Cabanas-Sanchez, V ; Garcia-Esquinas, E ; Rodriguez-Artalejo, F ; Martinez-Gomez, D. **Physical activity attenuates the impact of poor physical, mental, and social health on total and cardiovascular mortality in older adults: a population-based prospective cohort study**. Quality Of Life Research. Dec. 2018. Volumen: 27 Número: 12 Páginas: 3293-3302. DOI: 10.1007/s11136-018-1974-5.

103. Mena-Sanchez, G; Babio, N ; Martinez-Gonzalez, MA ; Corella, D ; Schroder, H ; Vioque, J; Romaguera, D] ; Martinez, JA ; Lopez-Miranda, J ; Estruch, R ; Warnberg, J; Bueno-Cavanillas, A ; Serra-Majem, L ; Tur, JA; Aros, F ; Tinahones, FJ ; Sanchez, VM; Lapetra, J; Pinto, X (Pinto, X.; Vidal, J ; Vazquez, C; Ordovas, JM ; Delgado-Rodriguez, M ; Matia-Martin, R ; Basora, J ; Buil-Cosiales, R; Fernandez-Carrion, R; Fito, M ; Salas-Salvado, J. **Fermented dairy products, diet quality, and cardio-metabolic profile of a Mediterranean cohort at high cardiovascular risk.** *Nutrition Metabolism And Cardiovascular Diseases.* Oct 2018, Volumen: 28 Número: 10 Páginas: 1002-1011. DOI: 10.1016/j.numecd.2018.05.006. PMID: 30207268

104. Lopez-Pascual, A; Arevalo, J; Martinez, JA ; Gonzalez-Muniesa, P. **Inverse Association Between Metabolic Syndrome And Altitude: A Cross-Sectional Study In An Adult Population Of Ecuador**. *Frontiers in endocrinologY.* NOV 12 2018. Volumen: 9. Número de artículo: 658. DOI: 10.3389/fendo.2018.00658.

105. Morales, D ; Tabernero, M; Largo, C; Polo, G ; Piris, AJ; Soler-Rivas, C. **Effect of traditional and modern culinary processing, bioaccessibility, biosafety and bioavailability of eritadenine, a hypocholesterolemic compound from edible mushrooms**. *Food & function.* Dec. 2018. Volumen: 9 Número: 12 Páginas: 6361-6369. DOI: 10.1039/c8fo01704b.

106. Galarregui, C ; Zulet, MA; Cantero, I ; Marin-Alejandre, BA; Monreal, JI ; Elorz, M ; Benito-Boillos, A ; Herrero, JI ; Tur, JA; Abete, I ; Martinez, JA. **Interplay of Glycemic Index, Glycemic Load, and Dietary Antioxidant Capacity with Insulin Resistance in Subjects with a Cardiometabolic Risk Profile.** *International Journal Of Molecular Sciences.* Nov 2018. Volumen: 19 Número: 11. Número de artículo: 3662. DOI: 10.3390/ijms19113662.

107. Martinez, MA; Ares, I ; Martinez-Larranaga, MR; Anadon, A ; Casado, V; Vazquez, L; Martin, D; Reglero, G ; Torres, C. **Acute and repeated dose (28 days) oral safety studies of phosphatidyl-hydroxytyrosol**. *Food And Chemical Toxicology.* Oct 2018 Volumen: 120 Páginas: 462-471 DOI: 10.1016/j.fct.2018.07.046. PMID: 30055313

108. Rivera P, Ramírez-López MT, Vargas A, Decara J, Vázquez M, Arco R, Gómez de Heras R, Argente J, Rodríguez de Fonseca F, Chowen JA, Suárez J. **Perinatal free-choice of a high-calorie low-protein diet affects leptin signaling through IRS1 and AMPK dephosphorylation in the hypothalami of female rat offspring in adulthood** *Acta Physiol (Oxf).* 2018 Dec 27:e13244. DOI: 10.1111/apha.13244. [Epub ahead of print] PMID: 30589509.

109. Chen, Y; Liu, X; Jiang, CM; Liu, L; Ordovas, JM; Lai, CQ; Shen, LR. **Curcumin supplementation increases survival and lifespan in Drosophila under heat stress conditions**. *Biofactors.* NOV-DEC 2018. Volumen: 44 Número: 6 Páginas: 577-587. DOI: 10.1002/biof.1454.

110. Cordoba-Chacon, J; Sarmento-Cabral, A; del Rio-Moreno, M; Diaz-Ruiz, A; Subbaiah, PV; Kineman, RD. **Adult-Onset Hepatocyte GH Resistance Promotes NASH in Male Mice, Without Severe Systemic Metabolic Dysfunction**. *Endocrinology.* nOV 2018. Volumen: 159 Número: 11 Páginas: 3761-3774. DOI: 10.1210/en.2018-00669.

111. Martinez-Romero J, Bueno-Fortes S, Martín-Merino M, Ramirez de Molina A, De Las Rivas J. **Survival marker genes of colorectal cancer derived from consistent transcriptomic profiling**. *BMC Genomics.* 2018 Dec 11;19(Suppl 8):857. DOI: 10.1186/s12864-018-5193-9. (Open access)

112. Varela-Nieto I, Chowen JA, García-Segura LM. **Hormones and Neural Aging. Lessons From Experimental Models**. *Front Aging Neurosci.* 2018 Nov 15;10:374. DOI: 10.3389/fnagi.2018.00374. eCollection 2018. No abstract available. PMID: 30498442

113. Sánchez-Villegas A, Álvarez-Pérez J, Toledo E, Salas-Salvadó J, Ortega-Azorín C, Zomeño MD, Vioque J, Martínez JA, Romaguera D, Pérez-López J, López-iranda J, Estruch R, Bueno-Cavanillas A, Arós F, Tur JA, Tinahones FJ, Lecea O, Martón V, Ortega-Calvo M, Vázquez C, Pintó X, Vidal J, Daimiel L, Delgado-Rodríguez M, Matía P, Corella D, Díaz-López A, Babio N, Muñoz M, Fitó M, García de la Hera M, Abete I, García-Rios A, Ros E, Ruíz-Canela M, Martínez-González MA, Izquierdo M, Serra-Majem L. **Seafood Consumption, Omega-3 Fatty Acids Intake, and Life-Time Prevalence of Depression in the PREDIMED-Plus Trial.** *Nutrients.* 2018 Dec 18;10(12). pii: E2000. DOI: 10.3390/nu10122000. PubMed PMID: 30567286; PubMed Central PMCID: PMC6315981.

114. Cano-Ibáñez N, Bueno-Cavanillas A, Martínez-González MA, Corella D, Salas-Salvadó J, Zomeño MD, García-de-la-Hera M, Romaguera D, Martínez JA, Barón-López FJ, García-Ríos A, Estruch R, García-Molina L, Alonso Gómez, Tur JA, Tinahones F, Serra-Majem L, Cubelos-Fernández N, Lapetra J, Vázquez C, Pintó X, Vidal J, Daimiel L, Gaforio JJ, Matía P, Ros E, Diez-Espino J, Fernández-Carrión R, Basora J, Fitó M, Zazo JM, Colom A, Toledo E, Díaz-López A, Muñoz M, Ruiz-Canela M, Gea A. **Dietary Intake in population with Metabolic Syndrome: Is the Prevalence of Inadequate Intake Influenced by Geographical Area? Cross-Sectional Analysis from PREDIMED-Plus Study**. *Nutrients.* 2018 Nov 4;10(11). pii: E1661. DOI: 10.3390/nu10111661. PubMed PMID: 30400355; PubMed Central PMCID: PMC6266979.

115. Cansanção K, Silva Monteiro L, Carvalho Leite N, Dávalos A, Tavares do Carmo MDG, Arantes Ferreira Peres W. **Advanced Liver Fibrosis Is Independently Associated with Palmitic Acid and Insulin Levels in Patients with Non-Alcoholic Fatty Liver Disease**. *Nutrients.* 2018 Oct 29;10(11). pii: E1586. DOI: 10.3390/nu10111586. PMID: 30380656 PMCID: PMC6266910

116. Milton-Laskibar, I; Aguirre, L; Etxeberria, U; Milagro, FI; Martinez, JA; Portillo, MP. **Do the Effects of Resveratrol on Thermogenic and Oxidative Capacities in IBAT and Skeletal Muscle Depend on Feeding Conditions?.** *Nutrients.* OCT 2018. Volumen: 10. Número: 10. Número de artículo: 1446. DOI: 10.3390/nu10101446. PMID: 30301195 PMCID: PMC6213586

117. Barragan, R; Coltell, O ; Portoles, O ; Asensio, EM ; Sorli, JV; Ortega-Azorin, C ; Gonzalez, JI ; Saiz, C; Fernandez-Carrion, R; Ordovas, JM ; Corella, D. **Bitter, Sweet, Salty, Sour and Umami Taste Perception Decreases with Age: Sex-Specific Analysis, Modulation by Genetic Variants and Taste-Preference Associations in 18 to 80 Year-Old Subjects**. *Nutrients.* Volumen: 10 Número: 10. Número de artículo: 1539. DOI: 10.3390/nu10101539. OCT 2018

118. Janeiro, MH; Ramirez, MJ; Milagro, FI; Martinez, JA; Solas, M. **Implication of Trimethylamine N-Oxide (TMAO) in Disease: Potential Biomarker or New Therapeutic Target**. *Nutrients.* Oct 2018. Volumen: 10 Número: 10. Número de artículo: 1398. DOI: 10.3390/nu10101398.

119. Mallorquí-Bagué N, Lozano-Madrid M, Toledo E, Corella D, Salas-Salvadó J, Cuenca-Royo A, Vioque J, Romaguera D, Martínez JA, Wärnberg J, López-Miranda J, Estruch R, Bueno-Cavanillas A, Alonso-Gómez, Tur JA, Tinahones FJ, Serra-Majem L, Martín V, Lapetra J, Vázquez C, Pintó X, Vidal J, Daimiel L, Gaforio JJ, Matía P, Ros E, Granero R, Buil-Cosiales P, Barragán R, Bulló M, Castañer O, García-de-la-Hera M, Yáñez AM, Abete I, García-Ríos A, Ruiz-Canela M, Díaz-López A, Jiménez-Murcia S, Martínez-González MA, De la Torre R, Fernández-Aranda F. **Type 2 diabetes and cognitive impairment in an older population with overweight or obesity and metabolic syndrome: baseline cross-sectional analysis of the PREDIMED-plus study**. *Sci Rep.* 2018 Oct 31;8(1):16128. DOI:10.1038/s41598-018-33843-8. PubMed PMID: 30382190; PubMed Central PMCID:PMC6208341.

120. Balboa-Castillo, T; Struijk, EA; Lopez-Garcia, E ; Banegas, JR; Rodriguez-Artalejo, F; Guallar-Castillon, P. **Low vitamin intake is associated with risk of frailty in older adults**. *AGE AND AGEING.* Nov. 2018. Volumen: 47 Número: 6 Páginas: 872-879. DOI: 10.1093/ageing/afy105.

121. Tomé-Carneiro J, Dávalos A, Iglesias-Gutiérrez E. **Some thoughts about the possibility of diet-derived exogenous small RNAs**. *Pharmacol Res.* 2018 Nov 12. pii: S1043-6618(18)31680-3. DOI: 10.1016/j.phrs.2018.11.016. PMID: 30439411

122. Aganzo M, Montojo MT, López de Las Hazas MC, Martínez-Descals A, Ricote-Vila M, Sanz R, González-Peralta I, Martín-Hernández R, de Dios O, Garcés C, Galdón A, Lorenzo Ó, Tomás-Zapico C, Dávalos A, Vázquez

C, González N. **Customized Dietary Intervention Avoids Unintentional Weight Loss and Modulates Circulating miRNAs Footprint in Huntington's Disease.** *Mol Nutr Food Res.* 2018 Dec;62(23):e1800619. DOI: 10.1002/mnfr.201800619. PMID: 30359470. (Trabajo en portada de la revista)

123. Jimenez-Lucena, R; Camargo, A; Alcala-Diaz, JF; Romero-Baldonado, C; Luque, RM ; van Ommen, B ; Delgado-Lista, J; Ordovas, JM; Perez-Martinez, P ; Rangel-Zuniga, OA. **A plasma circulating miRNAs profile predicts type 2 diabetes mellitus and prediabetes: from the CORDIOPREV study**. E*xperimental And Molecular Medicine.* Volumen: 50. Número de artículo: 168. DOI: 10.1038/s12276-018-0194-y. DEC 26 2018

124. Lana, A; Banegas, JR; Guallar-Castillon, P ; Rodriguez-Artalejo, F; Lopez-Garcia, E. **Association of Dairy Consumption and 24-Hour Mood Pressure in Older Adults with Hypertension**. *American Journal Of Medicine.* Oct 2018 Volumen: 131 Número: 10 Páginas: 1238-1249. DOI: 10.1016/j.amjmed.2018.04.039. PMID: 29807002

125. Aguirre-Portoles, C; Feliu, J; Reglero, G; de Molina, AR. **ABCA1 overexpression worsens colorectal cancer prognosis by facilitating tumour growth and caveolin-1-dependent invasiveness, and these effects can be ameliorated using the BET inhibitor apabetalone**. *Mol Oncol.* 2018 Oct;12(10):1735-1752. DOI: 10.1002/1878-0261.12367. PMCID: PMC6166002, PMID: 30098223

126. Rodriguez-Pascual, C; Torres-Torres, I; Gomez-Quintanilla, A ; Ferrero-Martinez, AI ; Sharma, J ; Guitian, A ; Basalo, MC ; Montero-Magan, M; Vilches-Moraga, A ; Olcoz-Chiva, MT ; Paredes-Galan, E ; Rodriguez-Artalejo, F. **Safety of Direct Oral Anticoagulants and Vitamin K Antagonists in Oldest Old Patients: A Prospective Study**. *Journal Of The American Medical Directors Association.* Nov 2018. Volumen: 19 Número: 11 Páginas: 936-941. DOI: 10.1016/j.jamda.2018.04.017.

127. Rosique-Esteban, N ; Papandreou, C ; Romaguera, D ; Warnberg, J ; Corella, D ; Martinez-Gonzalez, MA; Diaz-Lopez, A ; Estruch, R ; Vioque, J; Aros, F ; Garcia-Rios, A; Bueno-Cavanillas, A ; Vidal, J; Serra-Majem, L ; Sibai, AA ; Tinahones, FJ; Martinez, A ; Ordovas, JM ; Tur, JA ; Ellacuria, MT ; Sanllorente, A ; Pinto, X ; Buil-Cosiales, P; Fernandez-Carrion, R ; Castaner, O ; Bullo, M ; Ruiz-Canela, M ; Garcia-de la Hera, M ; Perez-Farinos, N ; Baron-Lopez, FJ ; Colom, A ; Abete, I ; Ros, E; Salas-Salvado, J. **Cross-sectional associations of objectively-measured sleep characteristics with obesity and type 2 diabetes in the PREDIMED-Plus trial.** *Sleep.* Dec. 2018. Volumen: 41 Número: 12. Número de artículo: UNSP zsy190. DOI: 10.1093/sleep/zsy190.

128. Schröder H, Cárdenas-Fuentes G, Martínez-González MA, Corella D, Vioque J, Romaguera D, Alfredo Martínez J, Tinahones FJ, Miranda JL, Estruch R, Bueno-Cavanillas A, Arós F, Marcos A, Tur JA, Warnberg J, Serra-Majem L, Martín V, Vázquez C, Lapetra J, Pintó X, Vidal J, Daimiel L, Gaforio JJ, Matía-Martín P, Ros E, Castañer O, Lassale C, Ruiz-Canela M, Asensio EM, Basora J, Torres-Collado L, Garcia-Rios A, Abete I, Toledo E, Buil-Cosiales P, Bullo M, Goday A, Fitó M, Salas-Salvadó J. **Effectiveness of the physical activity intervention program in the PREDIMED-Plus study: a randomized controlled trial**. *Int J Behav Nutr Phys Act.* 2018 Nov 13;15(1):110. DOI:10.1186/s12966-018-0741-x. PubMed PMID: 30424822; PubMed Central PMCID: PMC6234632.

129. Jimenez, MCF; Remacha, AF ; Moreno, G; Rojo, RB ; Wright, I; Murga, MJ ; Shih, PC; Vaquero, MP . **Improvement Of Cognitive Function In Ferropenic Anemia As An Answer To Oral Iron Treatment**. *Haematologica.* Oct 10 2018. Volumen: 103 Páginas: 98-98 Suplemento: 2 Abstract de reunión: CO-139.

130. Salas-Salvadó J, Díaz-López A, Ruiz-Canela M, Basora J, Fitó M, Corella D, Serra-Majem L, Wärnberg J, Romaguera D, Estruch R, Vidal J, Martínez JA, Arós F, Vázquez C, Ros E, Vioque J, López-Miranda J, Bueno-Cavanillas A, Tur JA, Tinahones FJ, Martín V, Lapetra J, Pintó X, Daimiel L, Delgado-Rodríguez M, Matía P, Gómez-Gracia E, Díez-Espino J, Babio N, Castañer O, Sorlí JV, Fiol M, Zulet M, Bulló M, Goday A, Martínez-González MA. **Effect of a Lifestyle Intervention Program With Energy-Restricted Mediterranean Diet and Exercise on Weight Loss and Cardiovascular Risk Factors: One-Year Results of the PREDIMED-Plus Trial**. *Diabetes Care.* 2018 Nov 2. pii: dc180836. DOI:10.2337/dc18-0836. [Epub ahead of print] PubMed PMID: 0389673.

131. Laclaustra, M.; Lopez-Garcia, E. ; Civeira, F.; Garcia-Esquinas, E. ; Graciani, A.; Guallar-Castillon, P.; Banegas, JR. ; Rodriguez-Artalejo, F. **LDL Cholesterol Rises With BMI Only in Lean Individuals: Cross-sectional US and Spanish Representative Data**. *Diabetes Care.* Oct 1 2018. Volumen: 41 Número: 10 Páginas: 2195-2201. DOI: 10.2337/dc18-0372. PMID: 30061315

132. Ellen A. Struijk, José R. Banegas, Fernando Rodríguez-Artalejo and Esther Lopez-Garcia. **Consumption of meat in relation to physical**

functioning in the Seniors-ENRICA cohort. *BMC Medicine* 2018 16:50. DOI: 10.1186/s12916-018-1036-4.

133. Verónica Cabanas-Sánchez, Pilar Guallar-Castillón, Sara Higueras-Fresnillo, Esther García-Esquinas, Fernando Rodríguez-Artalejo and David Martinez-Gomez. **Physical Activity, Sitting Time, and Mortality From Inflammatory Diseases in Older Adults.** *Front. Physiol.,* 12 July 2018 | DOI: 10.3389/fphys.2018.00898

134. Moreno-Franco B, Pérez-Tasigchana RF, Lopez-Garcia E, Laclaustra M, Gutierrez-Fisac JL, Rodríguez-Artalejo F, Guallar-Castillón P. **Socioeconomic determinants of sarcopenic obesity and frail obesity in community-dwelling older adults: The Seniors-ENRICA Study**. *Sci Rep.* 2018 Jul 17;8(1):10760. DOI: 10.1038/s41598-018-28982-x.

135. David Martinez-Gomez, Pilar Guallar-Castillon, Sara Higueras-Fresnillo, Jose R. Banegas, Kabir P. Sadarangani & Fernando Rodriguez-Artalejo. **A healthy lifestyle attenuates the effect of polypharmacy on total and cardiovascular mortality: a national prospective cohort study.** *Scientific Reports* volume 8, Article number: 12615 (2018). DOI: 10.1038/s41598-018-30840-9

136. Helena Sandoval-Insausti, Raúl F. Pérez-Tasigchana, Esther López-García, José R. Banegas, Fernando Rodríguez-Artalejo, Pilar Guallar-Castillón. **Protein Intake and Risk of Falls: A Prospective Analysis in Older Adults.** *Journal of the American Geriatrics Society* 67(2) · December 2018. DOI: 10.1111/jgs.15681.

2. Books and chapters of books

1. Marta Gómez de Cedrón, Ana Ramírez de Molina, Guillermo Reglero. **Royal Society of Chemistry Book entitled Legumes - Nutritional Quality, Processing and Potential Health Benefits,** edited by María Ángeles Martín-Cabrejas.Chapter: Legumes and cancer

2. Aguirre C, Ramírez de Molina A. **Obesidad y Cáncer. En: Obesidad y Síndrome Metabólico.** Monografía coordinada por Francisco J Sánchez Muñiz. Real Academia de Farmacia, 2018.

3. Ramos-Lopez O., Riezu-Boj J.I., Milagro F.I., Martinez J.A. (2017) **Epigenetics of Undernutrition.** In: Patel V., Preedy V. (eds) Handbook of Nutrition, Diet, and Epigenetics. Springer, Cham. DOI: 10.1007/978-3-319-31143-2_24-1

4. M. Gómez de Cedrón*, A. Ramírez de Molina*, G. Reglero, **Nutritional Quality, Processing and Health Benefits of Legumes.** Chapter 15. Legumes and cancer. Royal Society of Chemistry. 2018

5. Adrián Bouzas, María Tabernero*, Ana Ramírez de Molina, Guillermo Reglero. **Alimentos vegetales autóctonos iberoamericanos subutilizados.** Primera Edición: septiembre 2018. ISBN: 978-1-938038-10-5. Capítulo 10: Hoja de Romero

6. Víctor Micó, Lidia Daimiel. **Epigenetic biomarkers of biological age.** Encyclopedia of Biomedical Gerontology. Ed. Elsevier.

7. Gomez de Cedrón M., Ramírez de Molina A., Reglero G. **Nutritional Quality, Processing and Health Benefits of Legumes.** Legumes and Cancer (Chapter 15)". RSC Books. En prensa, 2018.

3. Thesis directed or in progress

During this year, 9 new doctoral theses have been initiated at IMDEA Food, in addition to the 11 that were in progress; 20 doctoral theses directed by IMDEA Food researchers have been found in progress, and one of them having been defended.

1. Title: ***Efecto de compuestos bioactivos como nuevos agentes complementarios como agentes terapéuticos en cáncer***
   PhD student: D. Jorge Martínez Romero
   Directors: Dra. Ana Ramírez de Molina y Prof. Guillermo Reglero Rada
   University: Autónoma de Madrid
   Estimated lecture date: 2019

2. Title: ***Efectos de una restricción calórica basada en la Dieta Mediterránea sobre microRNAs reguladores de procesos moleculares asociados al envejecimiento***
   PhD student: D. Victor Micó Moreno
   Director: Prof. José María Ordovás Muñoz
   University: Autónoma de Madrid
   Estimated lecture date: 2019

3. Title: ***Implicaciones del metabolismo lipídico en la progresión tumoral del cáncer colorrectal y en el pronóstico de la enfermedad***
   PhD student: Dª. Silvia Cruz Gil
   Directors: Dra. Ana Ramírez de Molina y Dra. Ruth Sánchez Martínez
   University: Autónoma de Madrid
   Estimated lecture date: 2019

4. Title: ***Extractos de origen vegetal para la nutrición personalizada de pacientes con cáncer***
   PhD student: Dª. Lamia Mouhid Al Achbili
   Directors: Dra. Ana Ramírez de Molina y Prof. Tiziana Fornari Reale
   University: Autónoma de Madrid
   Estimated lecture date: 2019

5. Title: ***Desarrollo de una plataforma de minería de datos en Nutrigenómica***
   PhD student: D. Roberto Martín Hernández
   Directors: Dr. Alberto Dávalos Herrera y Prof. Guillermo Reglero Rada
   University: Autónoma de Madrid
   Estimated lecture date: 2019

6. Title: ***Papel de los ARNs no codificantes de proteínas en el metabolismo lipídico***
   PhD student: Dª. Judit Gil Zamorano
   Director: Dr. Alberto Dávalos Herrera
   University: Complutense de Madrid
   Estimated lecture date: 2019

7. Title: ***Identificación, caracterización y desarrollo de compuestos naturales activos contra el síndrome metabólico***
   PhD student: D. Luís Filipe Costa Machado
   Director: Dr. Pablo José Fernández Marcos
   University: Complutense de Madrid
   Estimated lecture date: 2019

8. Title: ***Componentes bioactivos de la dieta como moduladores de ARNs no codificantes***
   PhD student: Dª. Diana Carolina Mantilla Escalante
   Director: Dr. Alberto Dávalos Herrera
   University: Autónoma de Madrid
   Estimated lecture date: 2020

9. Title: ***Detección de polimorfismos asociados a obesidad y sus complicaciones, en escolares de la Comunidad de Madrid y valoración de acciones de salud encaminadas a la reducción de riesgo***
   PhD student: Dª. Helena Marcos Pasero
   Directors: Dr. Viviana Loria Kohen, Prof. Guillermo Reglero
   Estimated lecture date: 2020

10. Title: ***Impacto Inmunonutricional de agonistas TLR4 en la progresión del hepatocarcinoma***
    PhD student: D. Mario Fernández De frutos
    Director: Dra. Cristina Ramírez Hidalgo

11. Title: ***Mejora de formulaciones alimentarias con función preventivo/terapéutica de la disfunción cognitiva***
    PhD student: Dª. Adriana Quijada Freire.
    Director: Dra. Ana ramírez de Molina

12. Title: ***Desarrollo y validación de formulaciones nutricionales como complementos terapéuticos en enfermedades crónicas relacionadas con la alimentación***
PhD student: D. Adrian Bouzas Muñoz
Director: Dra. Ana ramírez de Molina

13. Title: ***Molecular Biology of Metabolic Syndrome***
PhD student: D. Andrés Pastor Fernández
Director: Dr. Pablo J. Fernández Marcos

14. Title: ***Estudio del papel de la senescencia en diabetes y obesidad: senolíticos como estrategia terapéutica***
PhD student: Dª. Aranzazu Sierra Ramírez
Director: Dr. Pablo J. Fernández Marcos

15. Title: ***Desregulación de exosomas y ARNs no codificantes en condiciones de exceso alimenticio***
PhD student: Dª. Lorena del Pozo Acebo
Director: D. Alberto Davalos Herrera

16. Title: ***Identificación del efecto molecular de compuestos bioactivos para el desarrollo de suplementos nutricionales y alimentos funcionales eficaces en lograr un envejecimiento saludable a través de la nutrición de precisión***
PhD student: Dª. Marina Reguero
Director: Dra. Ana ramírez de Molina

17. Title: ***Plasma membrane proteins regulating the function of liver mitochondria in physiology and disease***
PhD student: Dª. Yaiza Lopez
Director: Dr. Manuel Alejandro Fernandez-Rojo

18. Title: ***Papel modulador de compuestos alimenticios y patrones de dieta sobre los niveles de microRNAs relacionados con la salud cardiovascular***
PhD student: Dª. Laura Díez Ricote
Director: Dr. José María Ordovas Muñoz

3. 1. Defended Thesis

1. Title: ***Estudio del papel que desempeñan los micronutrientes en las enfermedades cardiovasculares y neurodegenerativas***
PhD student: Dª. Carmen Crespo Lorenzo
Director: Prof. Francesco Visioli
University: Autónoma de Madrid
Lecture date: 16/03/2018

Finally, IMDEA Food continues promoting scientific research vocations, bringing the practice of research activity closer to students in the final year of their Bachelor Degree's and Master's degrees related to Food Sciences, Human Nutrition and Dietetics, through their participation in projects during their internships under agreements signed with different universities (Universidad Autónoma de Madrid-Universidad Complutense de Madrid-Universidad Politécnica de Madrid-Universidad Carlos III de Madrid-Universidad Rey Juan Carlos-Universidad San Pablo CEU- Universidad de Valencia-Universidad de Islas Baleares-Universidad de Granada-Universidad de Oviedo, etc.) During 2018, IMDEA Food welcomed 35 undergraduate and master's degree students.

4. Premios

María Tabernero
2nd International Conference on Food Bioactives & Health. Lisboa, 26-28 septiembre. Poster: Novel opioid peptides derived from αs1-casein and mucin stimulatory effect in the rat intestine. S. Fernández-Tomé1, D. Martínez-Maqueda, R. Girón, C. Goicoechea, M. Tabernero, C. Largo, B. Miralles, I. Recio. Segundo premio en la Sesión de Proteínas y Péptidos

Jose María Ordovás y Ruth Blanco-Rojo
Best Poster in Preventive Cardiology. ESC Congress 2018. ESC Congress 2018. 25 - 29 August 2018, Munich – Alemania. Association of actigraphy-measured sleep parameters and subclinical atherosclerotic burden: the PESA study. Authors : F Dominguez Rodriguez (Madrid,ES), JM Fernandez Alvira (Madrid,ES), L Fernandez Friera (Madrid,ES), B Lopez-Melgar (Madrid,ES), R Blanco-Rojo (Madrid,ES), A Fernandez-Ortiz (Madrid,ES), P Garcia-Pavia (Madrid,ES), JM Sanz (New York,US), JM Mendiguren (Madrid,ES), B Ibanez (Madrid,ES), H Bueno (Madrid,ES), V Fuster (Madrid,ES), E Lara-Pezzi (Madrid,ES), JM Ordovas (Madrid,ES)

J. Alfredo Martínez

Prize for professional career at the IV World Congress of Public Health Nutrition and XII Congress of the Spanish Society of Community Nutrition (SENC) - NUTRIMAD 2018.

Rodrigo San Cristóbal

Extraordinary Doctorate Award: "Food, Physiology and Health" of Faculty of Pharmacy, University of Navarra. Course 2017 - 2018.

Laura J. Marcos Zambrano

Extraordinary Doctorate Award. Faculty of Pharmacy, UniversidadComplutense de Madrid.

5. Patents

The Institute has a portfolio of 5 patents, two patents already granted and two applied for in 2018, a new one in Spain and an international extension. Two of them have been transferred to the company CANAAN through the concession of an exclusive license with the right to sublicense, to develop, use and market the international patent PCT/ES2017/070263 and the Spanish priority patent number P201131733, and the company YNSADIET has been licensed two products derived from the invention P201830740. In January 2018, an EBT (technology-based company) was set up, in which IMDEA Alimentación, p4H has a stake, and the creation of another EBT (4CHRONIC) is about to be completed, based on the research results obtained at the Institute.

Publication number: **ES24087301B1**
Title: ***Supercritical Rosemary extract for cancer treatment***
Owners: IMDEA Food, Universidad Autónoma de Madrid
Inventors: Ana Ramírez de Molina, Susana Molina Arranz, Margarita González-Vallinas Garrachón, Tiziana Fornari Reale, Mónica Rodríguez García-Risco, Guillermo Reglero Rada

Publication number: **ES2475366B1**
Title: ***Methods and kits for prognosis of colorectal cancer***
Owners: IMDEA Food, Hospital La Paz Institute for Health Research
Inventors: Ana Ramírez de Molina, Guillermo Reglero Rada, Teodoro Vargas Alonso, Susana Molina Arranz, Margarita González-Vallinas Garrachón, Juan Moreno Rubio, Paloma Cejas Guerrero, Jaime Feliú Batlle

Application number: **PCT/ES2017/070263 (Licensed to Canaan)**
Title: ***Formulaciones con sistemas lípidos portadores de compuestos bioactivos para su uso como agente adyuvante o potenciador de la terapia inmunológica en pacientes que sufren de cáncer o de trastornos inmunológicos***
Owners: IMDEA Food, Universidad Autónoma de Madrid and Hospital Universitario Infanta Sofía
Inventors: Ana Ramírez de Molina, Guillermo Reglero Rada, Carlos Torres Olivares, Luis Vázquez de Frutos, Marta Corzo, Pablo Arranz, Viviana Loria Kohen, Marta Gómez de Cedrón, Juan Moreno Rubio, Moisés Laparra Llopis, Enrique Casado Sáenz

Application number: **P201730304**
Title: ***Uso de la apolipoproteína A1 como inhibidor de proliferación, migración e invasión celular en cáncer***
Owners: IMDEA Food
Inventors: Cristina Aguirre Portolés, Ana Ramírez de Molina, Guillermo Reglero

Application number: **P201830740**
Title: ***Composición para la reducción del declive metabólico asociado al envejecimiento y/o el metabolismo lipídico***
Owners: IMDEA Food, Universidad Autónoma de Madrid, Fundación Hospital Universitario La Paz, Igenfarma
Inventors: Maria Tabernero, Ana Ramírez de Molina, Carlos Torres Olivares, Enrique de Miguel del Campo, Ignacio Alvarez Gómez de Segura, Carlota Largo Aramburu, Mónica Santamaría Ramiro, Gonzalo Polo Paredes, Daniel Ruíz Pérez

Spin-off: **Precision ForHealth SL (P4H)**

Technological Base Company belonging IMDEA Food Institute and recognized by Agreement of the Delegate Committee of the IMDEA Food's Board of Trustees on December 11, 2017, and Knowledge Based Company of the Autonomous University of Madrid, recognized by agreement of the Government Council of the UAM dated on November 17, 2017. Incorporation date January 10, 2018. The capital contribution was 1,000 euros (10%).

P4H is constituted for the industrial and commercial exploitation, of innovations derived from the IMDEA Food and UAM in the field of precision nutrition, that is to say in the design and application of effective nutritional strategies in the improvement of health, adapted to the genetic profile of people and their lifestyle or physiological situation.

8. dissemination activities

1. **Organization of conferences and seminars [160]**
2. **Congress, invited conferences and courses [162]**
   - 2.1. Congress communications [162]
   - 2.2. Invited conferences[170]
   - 2.3. Courses [175]

2018 annual report

www.food.imdea.org

The IMDEA Food Institute has organized 31 seminars and dissemination events. IMDEA Food's researcher have performed 46 communications in congresses, 43 invited conferences and have given classes in 4 specialization courses. In addition IMDEA food has had 80 appearances in media with qualitative impacts in press, radio and television.

In 2018 IMDEA Food has had 62 appearances in generalist media of great impact (TV, radio, press and internet) being a reference of the latest advances carried out in research on food and health.

In addition, the Institute maintains 14 strategic alliances with public and private entities relevant to performance of his activity.

In line with the three strategic lines of action of the Institute-science, business and society-IMDEA Food has carried out in 2018 the following dissemination and diffusion activities with the aim of disseminating the advances of the research carried out in the center:

- 9 guided visits and talks to educational centres all over Spain, through which the institute's research has been taken to the youngest collectives promoting the development of STEM careers and thus reaching more than 800 students.
- Participation in 3 wide-ranging dissemination events such as Science at School during the Education Week held at IFEMA, the European Researchers' Night and the Science Week, all of which have promoted more than 1,000 meetings with the general public at science dissemination events.
- Participation in the exhibition of the 50th Anniversary of the Autonomous University of Madrid (UAM) with the theme of Nutritional Genomics in food, as a sign of identity of the Institute, thus reinforcing the participation of IMDEA Food in the Campus of Excellence of the UAM.
- Celebration of the "FOODIO Gala" within the framework of the communication projects promoted by European Innovation Technology (EIT) Food in which students from different European countries presented the results of their research and innovation project to bring new healthier and more sustainable products to the market.
- Organization of 18 scientific Seminars, among which the event "I Conference Top Science to Society Aging", held at the headquarters of IMDEA Food on 19 October 2018 should be highlighted.

institute IMDEA food

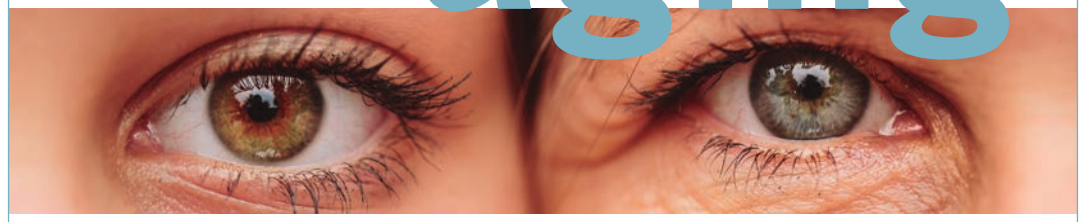
food and health
science, industry and society

IMDEA 10 años 2007-2017

2018 october 19th

1st Conference

Top science to society aging



IMDEA Food is a Research Institute in the field of food, nutrition and health that focuses its scientific activity on the resolution of society problems

Aiming to transfer scientific advances to the population

1st Conference Top Science to Society -Aging- will take place during 2 days following differentiated approaches

19th October (9.00-17.30)

Science

Research in the frontier of knowledge focused on translational research and potential applications

- **María Blasco.** *Director of the Spanish National Cancer Research Center and Head of the Telomeres and Telomerase Group (CNIO), Madrid*
- **Rafael de Cabo.** *Leader of the Translational Gerontology Branch at The National Institutes of Health (NIH), Baltimore*
- **Ana M. Cuervo.** *Co-director of the Einstein Institute for Aging Research, and member of the Einstein Liver Research Center and Cancer Center, New York*
- **Guido Kroemer.** *Full Professor of the Centre de Recherche des Cordeliers Paris Descartes, Paris*
- **Valter Longo.** *Edna M. Jones Professor and Director of the USC Longevity Institute at University Southern California*
- **Pablo J. Fernández-Marcos.** *Group Leader of the Metabolic Syndrome Group at IMDEA Food Institute, Madrid*
- **Ana Ramírez de Molina.** *Director of the Precision Nutrition program and cancer, and Deputy Director at IMDEA Food Institute, Madrid*
- **Manuel Serrano.** *Group Leader of the Cellular Plasticity and Disease Group at the Institute for Research in Biomedicine (IRB), Barcelona*
- **David Sinclair.** *Professor and co-Director of the Paul F. Glenn Center for the Biology of Aging at Harvard Medical School, Boston*

Organizers:
Rafael de Cabo, Pablo J. Fernández-Marcos, Ana Ramírez de Molina, Guillermo Reglero and Manuel Serrano

Additional information and registration

www.food.imdea.org/TopSciencetoSociety

Carretera de Canto Blanco, 8 · 28049 Madrid · Campus Universidad Autónoma de Madrid

The event "I Conference Top Science to Society Aging", held at the headquarters of IMDEA Food on 19 October 2018, hosted leading researchers from around the world who brought society closer to frontier research in the area of aging and health. Important political decisionmakers such as the Secretary of State for Universities, Research and Innovation of the Ministry of Science, Ms. Ángeles Heras and the Minister of Education and Research of the Community of Madrid, Mr. Rafael van Grieken, took part in this event.

The conference was attended by nine leading scientists in this field at a global level, such as the director of the National Cancer Research Centre (CNIO), María Blasco; or the director of the Translational Gerontology Group of the National Institute on Aging (NIA) in Bailtimore (United States), Rafael de Cabo or Dr. Manuel Serrano, head of the "Cellular Plasticity and Disease" Group at the Institute for Research in Biomedicine (IRB), Barcelona.

Also attended the co-director of the Albert Einstein Institute, member of the Center for Research on Aging and member of the Liver Research and Cancer Center (United States), Ana M. Cuervo; the Center Co-Director Paul F. Glenn of Aging Biology at Harvard Medical School, David Sinclair; the Director of the USC Longevity Institute at the University of Southern California, Valter Longo and Dr. Guido Kroemer, Full Professor of the Centre de Recherche des Cordeliers Paris Descartes, Paris.

1. Organization of conferences and seminars

1. Title: Stem Cells in Cancer and Aging
Author: Dr. Manuel Collado. Instituto de Investigación Sanitaria de Santiago de Compostela (IDIS)
Venue: Madrid
Date: 18/1/2018

2. Title: Precision Medicine in Cancer: Challenges and Oportunities
Author: Dr. Mariano Barbacid. Centro Nacional de Investigaciones Oncológicas (CNIO)
Venue: Madrid
Date: 23/1/2018

3. Title: Visita Colegio Salesianos El Pilar de Soto del Real
Mujeres Científicas Investigando en Nutrición de Precisión
Venue: IMDEA Alimentación. Madrid
Date: 6/2/2018

4. Title: Visita Colegio Escolapios de Pozuelo
Mujeres Científicas Investigando en Nutrición de Precisión
Venue: IMDEA Alimentación. Madrid
Date: 6-7/2/2018

5. Title: Therapeutic opportunities for RANK signaling pathway in breast cancer
Author: Eva González Suárez. Bellvitge Biomedical Research Institute (IDIBELL)
Venue: Madrid
Date: 9/2/2018

6. Title: Visita Colegio San Patricio de Alcobendas
Mujeres Científicas Investigando en Nutrición de Precisión
Venue: IMDEA Alimentación. Madrid
Date: 13/2/2018

7. Title: Visita IES Rusadir de Melilla
Mujeres Científicas Investigando en Nutrición de Precisión
Venue: IMDEA Alimentación. Madrid
Date: 13/2/2018

8. Title: Visita Colegio Gredos San Diego de Buitrago del Lozoya
Mujeres Científicas Investigando en Nutrición de Precisión
Venue: IMDEA Alimentación. Madrid
Date: 14/2/2018

9. Title: Spider venoms as novel therapeutic leads against cancer
Author: Dra. María Ikonomopoulou. I
Venue: IMDEA Food Institute, Madrid
Date: 16/2/2018

10. Title: Participación en Planeta Ciencia. Feria AULA 2018
Stand propio de IMDEA Alimentación. Pantalla interactiva y experimentos de poyata
Venue: IFEMA. Madrid
Date: 2/3/2018

11. Title: Role of the Notch pathway in lung adenocarcinoma: beyond the KrasG12V mouse model
Author: Dr. Antonio Maraver. Institute of Cancer Research in Montpellier (IRCM)
Venue: Madrid
Date: 9/3/2018

12. Title: The two faces of inhibiting the mitochondrial oxidative phosphorylation in pathology
Author: Dra. Laura Formentini. Centro de Biología Molecular Severo Ochoa
Venue: Imdea Alimentacion. Madrid
Date: 20/4/2018

13. Title: Immunonutritional innate agonists in the progression of hepatocarcinoma: Friend or foe
Author: Dr. Moises Laparra. Imdea Food Institute
Venue: Imdea Alimentacion. Madrid
Date: 24/4/2018

14. Title: Visita IES Trayamar de Algarrobo (Málaga)
Visita organizada a través del Centro de Intercambios Escolares de la Comunidad de Madrid
Venue: IMDEA Alimentación. Madrid
Date: 25/5/2018

15. Title: Retos de la medicina personalizada de precisión en España
Author: Enrique Carrillo, IMDEA Food Institute.
Venue: Auditorio Centro Nacional de Investigaciones Oncológicas
Date: 4/6/2018

16. Title: Ketogenic diets in longevity and healthspan
Author: Dr. Jose Alberto Lopez Domingez. Buck Institute for Research on Aging in California
Venue: Imdea Alimentacion. Madrid
Date: 11/6/2018

17. Title: Multidimensional Integrative Methods in Epigenomics for Large-Scale Projects
Author: Dr. Enrique Carrillo. IMDEA Food Institute
Venue: Imdea Alimentacion. Madrid
Date: 13/6/2018

18. Title: Accelerometer-measured physical activity and sedentary patterns in older adults
Author: Dr. David Martínez. Cardiovascular and Nutritional Epidemiology Group IMDEA Food
Venue: Imdea Alimentacion. Madrid
Date: 7/9/2018

19. Title: Exploring the immunosuppressive potential of venom-derived molecules
Author: Rachael Ryan. StudentGriffith University, Australia
Venue: Imdea Alimentacion. Madrid
Date: 17/9/2018

20. Title: Growth Hormone Signalling, the Good and the Bad: Roles in Cancerand Liver regeneration
Author: Dr. Andrew Brooks. Andrew Brooks
Venue: Imdea Alimentacion. Madrid
Date: 19/9/2018

21. Title: Loss of Growth Hormone mediated STAT5 signalling in mice results in insulin sensitivity and lifespan extension
Author: Dr. Yash Chhabra. Diamantina Institute, University of Queensland, Brisbane (Australia)
Venue: Imdea Alimentacion. Madrid
Date: 28/9/2018

22. Title: Noche de los Investigadores en IMDEA Alimentación. "La Nutrigenética en tus manos"
Venue: Instituto IMDEA Alimentación
Date: 28/9/2018

23. Title: Participación en la Noche de los Investigadores (junto a todos los IMDEA). CSIC
Venue: Residencia de Estudiantes del CSIC
Date: 28/9/2018

24. Title: Visita guiada a IMDEA Alimentación de 30 alumnos del Máster de Nutrición de la Universidad Complutense de Madrid
Venue: Imdea Alimentacion. Madrid
Date: 5/10/2018

25. Title: Studying Urban Food Environments and their possible impact on diet and health: The Heart Healthy Hoods study in Madrid
Author: Dr. Manuel Franco Tejero. Universidad Alcalá de Henares & Johns Hopkins Bloomberg School of Public Health, Baltimore, USA
Venue: Imdea Alimentacion. Madrid
Date: 10/10/2018

26. Title: I Conference Top Science to Society -Aging-
Venue: Imdea Alimentacion. Madrid
Date: 19/10/2018

27. Title: Geroscience: an international and multidisciplinary initiative to treat aging
Author: Dr. Felipe Sierra. Director of The Division of Aging Biology, National Institute on Aging, NIH, USA
Venue: Imdea Alimentacion. Madrid
Date: 25/10/2018

28. Title: Visita IES Trayamar de Algarrobo (Málaga)
Visita organizada a través del Centro de Intercambios Escolares de la Comunidad de Madrid
Venue: IMDEA Alimentación. Madrid
Date: 26/10/2018

29. Title: Celebración Semana de la Ciencia en IMDEA Alimentación. "Dieta Mediterránea, Patrimonio Cultural de la Humanidad con mucha ciencia"
Conferencia y visitas guiadas
Date: 13-14/11/2018

30. Title: Charla Divulgativa
Author: Laura J. Marcos Zambrano
Venue: Colegio Fundación Caldeiro, Madrid
Date: 16/11/2018

31. Title: Efecto del IMC sobre la mortalidad en pacientes con Diabetes Mellitus tipo 2: Resultados de la Cohorte de diabéticos de Madrid (MADIABETES)
Author: Dr. Miguel Ángel Salinero. Subdireccion General de Investigación Sanitaria CAM
Venue: Imdea Alimentacion. Madrid
Date: 21/11/2018

32. Title: A disease-oriented approach to the pathogenesis of epithelial tumors: of mice and men
Author: Dr. Francisco X Real. Head Epithelial Carcinogenesis Group CNIO
Venue: Imdea Alimentacion. Madrid
Date: 26/11/2018

33. Title: Estudiando los microbios a fondo: "Viaje al Centro del ADN"
Participación en Exhibición 50 Aniversario UAM en Sala Centro del Palacio de Comunicaciones de Cibeles. Exposición y Juegos Interactivos sobre genómica Nutricional desarrollados por IMDEA Alimentación
Date: 12/2018

2. Congress, invited conferences and courses

2.1. Congress communications

1. Author/s: L. Mouhid, M. Gómez de Cedrón, G. Reglero, T. Fornari and A. Ramírez de Molina
Title: Yarrow Supercritical Extract inhibits pancreatic cancer cell growth by targeting lipogenic genes
Event: 4th EACR. A Matter of Life or Death: From Basic Cell Death Mechanisms to Novel Cancer Treatments
Venue: Amsterdam, Netherlands
Date: 01-03/2/2018

2. Author/s: JA Martinez
Title: The nutrition game changer
Event: The Health Future of Europe: Healthy Nutrition for Children Conference
Venue: Sofia, Bulgary
Date: 6/2/2018

3. Author/s: JA Martinez
Title: Nutrición de precisión para comprender la obesidad
Event: XI Aniversario del Programa Instituto Tomás Pascual Sanz
Venue: CSIC. Madrid
Date: 26/2/2018

4. Author/s: Alberto Dávalos
Title: exomiRNAs
Event: XIV Congreso de la Sociedad Española para el Estudio de la Obesidad
Venue: Lleida, Spain
Date: 14-16/3/2018

5. Author/s: Fernandez-Marcos
Title: Anti-cancer genes to fight obesity. PI3K inhibition as a new anti-obesity strategy
Communication: Oral
Event: DIAMET Workshop
Venue: Tarragona, Spain
Date: 6-7/4/2018

6. Author/s: Espinosa-Salinas I, de la Iglesia R, Martinez JA, Aguilar-Aguilar E, Reglero G, Loria-Kohen V, Ramírez de Molina A.
Title: GCKR rs780094 genetic variant as a marker to detect predisposition to sport practice: potential role in personalized strategies for body weight control
Communication: Poster
Event: XXII Congreso Internacional de Nutrición, Alimentación y Dietética; XXII Jornadas de Nutrición
Venue: Madrid, Spain
Date: 11-12/4/2018

7. Author/s: de la Iglesia R, Espinosa-Salinas I, Colmenarejo G, Marcos-Pasero H, Loria-Kohen V, Reglero G, Ramirez De Molina A.
Title: Development and validation of a genetic score to predict sports capacities
Communication: Poster
Event: XII Congreso Internacional de Nutrición, Alimentación y Dietética
Venue: Madrid, Spain
Date: 11-12/4/2018

8. Author/s: Aguilar-Aguilar E, Marcos-Pasero H, Molina S, Espinosa-Salinas I, Ramírez De Molina A, Reglero G, Loria-Kohen V.
Title: Influencia de la variante genética SEC16B rs10913469 sobre la presencia de sobrecarga ponderal en escolares
Communication: Poster
Event: XII Congreso Internacional de Nutrición, Alimentación y Dietética
Venue: Madrid, Spain
Date: 11-12/4/2018

9. Author/s: JA Martinez
Title: Epigenetic Effects of the Mediterranean Diet
Event: XVII Mediterranean Congress of Rheumatology
Venue: Madrid, Spain
Date: 12-14/4/2018

10. Author/s: Diana C. Mantilla-Escalante, María-Carmen López de las Hazas, Judit Gil-Zamorano, M. Carmen Crespo, Andrea del Saz, Almudena García-Ruiz, Alberto Dávalos
Title: Lipid-modulated exosomal miRNAs
Communication: Poster
Event: ISEV 2018 (International society for extracellular vesicles)
Venue: Barcelona, Spain
Date: 2-6/5/2018

11. **Author/s: M. Carmen López de las Hazas, Judit Gil-Zamorano, Montserrat Cofán, Diana C. Mantilla-Escalante, María Yáñez-Mo, Joan Sabaté, Emilio Ros, Alberto Dávalos, Aleix Sala-Vila**
Title: Walnuts supplementation alter exosomal miRNA in elderly subjects
Communication: Poster
Event: ISEV 2018 (International society for extracellular vesicles)
Venue: Barcelona, Spain
Date: 2-6/5/2018

12. **Author/s: Alcala-Diaz JF, Gomez-Delgado F, Lopez-Moreno J, Delgado-Casado N, Blanco-Rojo R, Perez-Jimenez F, Lopez-Miranda J, Perez-Martinez P**
Title: Clinical relevance of screening tests to identify diabetes in patients with atherosclerotic cardiovascular disease: A prospective population-based cohort study
Communication: Poster
Event: 86 EAS Congress. European Atherosclerosis Association
Venue: Lisbon, Portugal
Date: 5-7/5/2018

13. **Author/s: Ikonomopoulou, M.P., Llanos, S., Serrano, M.**
Title: The senolytic properties of venom-derived compounds
Communication: Poster
Event: Molecular Cellular and Organismal Hallmarks of Aging
Venue: CNIO, Madrid, Spain
Date: 7-9/5/2018

14. **Author/s: Fernandez-Marcos**
Title: Fasting and fasting mimetics as nutritional strategies against metabolic syndrome and cancer
Communication: Poster
Event: Molecular Cellular and Organismal Hallmarks of Aging
Venue: CNIO, Madrid, Spain
Date: 7-9/5/2018

15. **Author/s: Enrique Carrillo**
Event: Kick-off meeting de la red TransBioNet Plataforma de Bioinformática del ISCIII
Venue: Barcelona, Spain
Date: 8/5/2018

16. **Author/s: Marcos-Pasero H, Aguilar-Aguilar E, Molina S, de la Iglesia R, Ramírez De Molina A, Reglero G, Loria-Kohen V.**
Title: Valoración parental del estado ponderal y del grado de actividad física de escolares de la Comunidad de Madrid
Communication: Poster
Event: XXII Jornadas de Nutrición Práctica y XII Congreso Internacional de Nutrición, Alimentación y Dietética
Venue: Madrid, Spain
Date: 11-12/5/2018

17. **Author/s: JA Martinez**
Title: Lifestyle determinants of obesity
Event: Conference at Collegium Rungego
Venue: Poznan University of Sciences
Date: 17/5/2018

18. **Author/s: JA Martinez**
Title: Microbiota and obesity
Event: 52nd Annual Scientific Meeting of the European Society for Clinical Investigation (ESCI)
Venue: Barcelona, Spain
Date: 30/5/2018

19. **Author/s: Víctor Micó, Lidia Daimiel, Laura Berninches, Viviana Loria-Kohen, Isabel Espinosa-Salinas, José M Ordovás**
Title: Effect of alcoholic and non-alcoholic beer in the microrna profile of plasma and macrophages in high cardiovascular risk patients
Communication: Poster
Event: Annual Scientific Meeting of the European Society of Clinical Investigation: Precision Medicine for Heatlhy Aging
Venue: Barcelona, Spain
Date: 30/5/2018 – 1/6/2018

20. **Author/s: Lidia Daimiel, Víctor Micó, M José Motilva, Laura Rubió, Montse Fitó, Marta Farrás, M Isabel Covas, Rosa M Valls, Anna Pedret, Rosa Solá, José M Ordovás**
Title: Impact of Phenol-Enriched Virgin Olive Oils on the circulating levels of microRNAs related to cardiovascular disease
Communication: Poster
Event: Annual Scientific Meeting of the European Society of Clinical Investigation: Precision Medicine for Heatlhy Aging
Venue: Barcelona, Spain
Date: 30/5/2018 – 1/6/2018

21. **Author/s: N. Mallorquí-Bagué, M. Lozano-Madrid; E. Toledo; D. Corella; J. Salas-Salvadó; A. Cuenca-Royo; J. Vioque; D. Romaguera; A. Martíınez; J. Warnberg; J. Lopez-Miranda; R. Estruch; A. Bueno-Cavanillas; F. Arós; J.A. Tur Tur; F.J. Tinahones; L. Serra-Majem; V. Martin; J. Lapetra; C. Vázquez; X. Pintó; J. Vidal; L. Daimiel; M. Delgado-Rodríguez; P. Matía; E. Ros; R. Granero; P. Buil-Cosiales; R. Barragan; M. Bulló; O. Castañer; M. Ruiz-Canela; A. Díıaz; S. Jiménez-Murcia; M.A. Martíınez-González; R. De la Torre; F. Fernández-Aranda**
Title: Type 2 diabetes and cognitive impairment in an older population with obesity and metabolic syndrome: baseline cross-sectional analysis of the PREDIMED-plus study
Communication: Poster
Event: Annual Scientific Meeting of the European Society of Clinical Investigation: Precision Medicine for Heatlhy Aging
Venue: Barcelona, Spain
Date: 30/5/2018 – 1/6/2018

22. **Author/s: E.M.N. Muñoz; M.G. de la Hera; S. Gonzalez-Palacios; L. Torres-Collado; M. Fitó; D. Corella; J.A. Martinez; D. Romaguera; J. Warnberg; J. López-Miranda; R. Estruch; A. Bueno-Cavanillas; F. Aros; J.A. Tur; F. Tinahones; L. Serra-Majem; V. Martin; J. Lapetra; C. Vázquez; X. Pintó; J. Vidal; L. Daimiel; M. Delgado-Rodríguez; P. Matía; E. Ros; J. Salas-Salvado; M.A. Martinez-Gonzalez; J. Vioque**
Title: Dietary folate intake and cardiometabolic risk in participants of the PREDIMED-PLUS randomized trial
Communication: Poster
Event: Annual Scientific Meeting of the European Society of Clinical Investigation: Precision Medicine for Heatlhy Aging
Venue: Barcelona, Spain
Date: 30/5/2018 – 1/6/2018

23. **Author/s: H.M. Pasero; E.A. Aguilar; I.E. Salinas; R. de la Iglesia; S. Molina; G. Colmenarejo; A.R. de Molina; G. Reglero, V.L. Kohen**
Title: Genetic variant rs1260326 of GCKR as an indicator of the risk of obesity at early ages
Communication: Poster
Event: 52nd Annual Scientific Meeting of the European Society for Clinical Investigation "Precision medicine for healthy aging"
Venue: Barcelona, Spain
Date: 30/5/2018 – 1/6/2018

24. **Author/s: JA Martinez**
Title: Obesomics for precision nutrition
Event: 52nd Annual Scientific Meeting of the European Society for Clinical Investigation (ESCI)
Venue: Barcelona, Spain
Date: 1/6/2018

25. Author/s: JA Martinez
Title: Individualized Food Dietary Patetrns
Event: American Society for Nutrition
Venue: Boston, USA
Date: 13/6/2018

26. Author/s: L. Mouhid, M. Gómez de Cedrón, G. Reglero, T. Fornari, A. Ramírez de Molina
Title: Effect of Yarrow supercritical extract as a novel approach to pancreatic cancer treatment
Event: IX Expert Meeting on Compressed Fluids Technologies FLUCOMP 2018
Venue: Madrid, Spain
Date: 15/6/2018

27. Author/s: Enrique Carrillo
Title: Multidisciplinary High Performance Data Analysis for Societal Challenges
Event: Multidisciplinary High Performance Data Analysis for Societal Challenges Forum
Venue: St. Girons, France
Date: 17-19/6/2018

28. Author/s: Enrique Carrillo
Title: Future omic tools in oncology: genomics bioinformatics and epigenetics
Event: Onco emergence Forum
Venue: Barcelona, Spain
Date: 21-22/6/2018

29. Author/s: M.A. Fernández-Rojo
Title: Targeting hepatic stellate cells to ameliorate liver inflammation
Communication: Oral
Event: Frontiers in Immunomodulation and Cancer Therapy
Venue: CNIO, Madrid, Spain
Date: 9-11/7/2018

30. Author/s: Manuel Fernández-Rojo
Title: Frontiers in Immunomodulation and cancer therapy
Communication: Poster
Venue: CNIO, Madrid, Spain
Date: 9-11/7/2018

31. Author/s: Dominguez Rodriguez F, Fernandez Alvira JM, Fernandez Friera L, Lopez-Melgar B, Blanco-Rojo R, Fernandez-Ortiz A, Garcia-Pavia P, Sanz JM, Mendiguren JM, Ibanez B, Bueno H, Fuster V, Lara-Pezzi E, Ordovas JM
Title: Association of actigraphy-measured sleep parameters and subclinical atherosclerotic burden: the PESA study
Communication: Poster
Event: ESC Congress 2018. European Society of Cardiology
Venue: Munich, Germany
Date: 25-29/8/2018

32. Author/s: Maria Ikonomopoulou
Title: Gomesin peptides target melanoma
Event: 19th European Congress of the International Society on Toxinology (EU-IST2018)
Venue: Yerevan, Armenia
Date: 22-26/9/2018

33. Author/s: S. Fernández-Tomé, D. Martínez-Maqueda, R. Girón, C. Goicoechea, M. Tabernero, C. Largo, B. Miralles, I. Recio
Title: Novel opioid peptides derived from αs1-casein and mucin stimulatory effect in the rat intestine
Communication: Poster
Event: 2nd International Conference on Food Bioactives & Health
Venue: Lisbon, Portugal
Date: 26-28/9/2018

34. Author/s: Mastrangelo A, Martos-Moreno Gá, Rupérez Fj, Chowen Ja, Barbas C, Argente J.
Title: Metabolomic changes in patients with PAPP-A2 deficiency in response to rhIGF1 treatment
Communication: Poster
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

35. **Author/s: Suárez J, Rivera P, Vargas A, Rubio L, Rodríguez De Fonseca F, Chowen Ja, Argente J**
Title: The reduction in longitudinal growth induced by PAPP-A2 deficiency is associated with reduced body weight, increased energy expenditure and behavior modification
Communication: Poster
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

36. **Author/s: Suárez J, Martos-Moreno Gá, Rivera P, Serra-Juhé C, Chowen Ja, Pérez-Jurado La, Argente J**
Title: Identification of the first obesity-associated mutations in human mesoderm-specific transcript (MEST) result in protein overexpression, adipocyte hypertrophy and a reduction in adipocyte mitochondrial area
Communication: Poster
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

37. **Author/s: Dos Santos Tj, Martos-Moreno Gá, Muñoz-Calvo Mt, Pozo J, Rodríguez-Artalejo F, Argente J**
Title: Clinical management of childhood hyperthyroidism: A longitudinal study at a single center
Communication: Poster
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

38. **Author/s: Travieso-Suárez L, Martos-Moreno Gá, Pozo J, Muñoz-Calvo Mt, Frilander Mj, Pérez-Jurado La, Hawkins Fg, Argente J**
Title: Response to growth hormone in patients with isolated familial growth hormone deficiency due to RNPC3 mutations
Communication: Poster
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

39. **Author/s: Escudero J, Uribe A, Villa Jr, Argente J, Martos-Moreno Gá.**
Title: Age and exocrine pancreatic enzyme requirements are major determinants for carbohydrate metabolism impairment in children affected with cystic fibrosis
Communication: Poster
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

40. **Author/s: Martos-Moreno Gá, González-Vicent M, Sebastián E, Argente J.**
Title: Successful immune tolerance induction in the first case of neutralizing antibody mediated loss of efficacy of asfotase alfa treatment in hypophosphatasia
Communication: Oral
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

41. **Author/s: Guerra-Cantero S,Torrecilla M, Díaz F, Argente J, Chowen Ja.**
Title: Sexual dimorphism of IGF1 and IGF2 expression in the neonatal rat brain
Communication: Poster
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

42. **Author/s: Ros P, Díaz F, Freire A, Argente-Arizón P, Argente J, Chowen Ja.**
Title: Maternal resveratrol intake during pregnancy and lactation modulates the long-term metabolic effects of maternal nutrition on offspring depending on the sex and diet
Communication: Poster
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

43. **Author/s: Holmgren A, Kijlasson A, Martínez-Villanueva J, Martos-Moreno Gá, Argente J, Albertsson-Wikland K.**
Title: The more obese, the less pubertal height gain
Communication: Poster
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 27-29/9/2018

44. **Author/s: J.A. Martínez**
Event: 12th Congress of the International Society of Nutrigenetics/Nutrigenomics (ISNN)
Venue: Winnipeg, Manitoba, Canada
Date: 30/9/2018

45. **Author/s: Gonzalez Guevara, M.C.; Colmenarejo Sánchez, G.; Leone, A.; Zamora Barrios, M.D.; Terleira Fernández, A.**
Title: Association between therapeutic drug monitoring reports and dispensation of antiepileptic and antibiotic
Event: XXX Congreso Sociedad Española de Farmacología Clínica
Venue: Santander, Spain
Date: 3-5/10/2018

46. **Author/s: González Guevara, M.C.; Colmenarejo Sánchez, G.; Laredo, L.; Vargas, E.**
Title: Use of oncologic and oncohematologic drugs in a tertiary hospital in 2017
Communication: Poster
Event: XXX Congreso Sociedad Española de Farmacología Clínica
Venue: Santander, Spain
Date: 3-5/10/2018

47. **Author/s: Jesús Argente**
Title: Estado actual del tratamiento con GH en los niños pequeños para la edad gestacional
Event: XVIII Reunión de la Sociedad Española de Investigación en Nutrición y Alimentación en Pediatría (SEINAP)
Venue: Madrid, Spain
Date: 6/10/2018

48. **Author/s: Costa-Machado L.F., Barradas M., Herranz D., Megías D., Serrano M., Fernandez-Marcos P.J.**
Title: Fasting and fasting mimetics as nutritional strategies against metabolic syndrome and cancer
Communication: Poster
Event: Congreso Internacional de la EACR Mechanisms to Therapies: Innovations in Cancer Metabolism
Venue: Bilbao, Spain
Date: 9-11/10/2018

49. **Author/s: Rafael de Cabo**
Title: Analysis and vision of Science in Spain
Communication: Oral
Event: 1st Conference Top Science to Society - Aging
Venue: Madrid, Spain
Date: 19/10/2018

50. **Author/s: Pablo José Fernandez-Marcos**
Title: Precision Nutritionfor Aging
Communication: Oral & Organization
Event: 1st Conference Top Science to Society - Aging
Venue: Madrid, Spain
Date: 19/10/2018

51. Author/s: Lidia Daimiel; Víctor Micó; Laura Berninches; Viviana Loria Kohen; Isabel Espinosa Salinas; Ana Rodríguez Mateos; José mª Ordovás

Title: effect of beer intake on circulating micrornas and polyphenolic profiles in high cardiovascular risk patients

Event: IV World Congress of Public Health Nutrition and XII Congreso de la Sociedad Española de Nutrición Comunitaria (SENC) – NUTRIMAD 2018

Venue: Madrid, Spain

Date: 24-27/10/2018

52. Author/s: Laura Díez Ricote; Victor Micó; Britt Blokker; José Mª Ordovás; Lidia Daimiel

Title: tmao effect on micrornas expression related to cardiovascular disease risk and inflammation

Communication: Oral

Event: IV World Congress of Public Health Nutrition and XII Congreso de la Sociedad Española de Nutrición Comunitaria (SENC) – NUTRIMAD 2018

Venue: Madrid, Spain

Date: 24-27/10/2018

53. Author/s: Aguilar-Aguilar, E.; Marcos-Pasero, H.; Colmenarejo, G.; Espinosa-Salinas, I.; Reglero, G.; Ramírez De Molina, A.; Loria-Kohen, V.

Title: Calcium intake, dairy consumption and weight status in a group of Spanish school children

Communication: Poster

Event: IV World Congress of Public Health Nutrition and XII Congreso de la Sociedad Española de Nutrición Comunitaria (SENC) – NUTRIMAD 2018

Venue: Madrid, Spain

Date: 24-27/10/2018

54. Author/s: Marcos-Pasero, H.; Aguilar Aguilar, E.; Molina, S.; Colmenarejo, G.; Ramírez de Molina, A.; Reglero, G.; Loria Kohen, V.

Title: Asociations between nutritional status and environmental and genetic factors: GENYAL study to childhood obesity prevention

Communication: Oral

Event: IV World Congress of Public Health Nutrition and XII Congreso de la Sociedad Española de Nutrición Comunitaria (SENC) – NUTRIMAD 2018

Venue: Madrid, Spain

Date: 24-27/10/2018

55. Author/s: San-Cristobal R, Navas-Carretero S, Martínez JA

Title: Macronutrient differences across European countries. Role of protein intake

Event: IV World Congress of Public Health Nutrition and XII Congreso de la Sociedad Española de Nutrición Comunitaria (SENC) – NUTRIMAD 2018

Venue: Madrid, Spain

Date: 24-27/10/2018

56. Author/s: Navas-Carretero S, Martínez JA.

Title: Nutrigenetics of Obesity

Event: IV World Congress of Public Health Nutrition and XII Congreso de la Sociedad Española de Nutrición Comunitaria (SENC) – NUTRIMAD 2018

Venue: Madrid, Spain

Date: 24-27/10/2018

57. Author/s: Jesús Argente

Title: Aspectos diagnóstico-terapéuticos de la pubertad precoz central

Event: XII Congreso Nacional de Laboratorio clínico

Venue: Bilbao, Spain

Date: 25/10/2018

58. Author/s: Jesús Argente

Title: Fundamentos genéticos de la obesidad infantil

Event: I Reunión del Grupo de Trabajo de la SEEP de Obesidad

Venue: Madrid, Spain

Date: 26/10/2018

59. Author/s: Fernández Jiménez MC., Remacha AF, Moreno G, Blanco Rojo R, Wright I, Murga MJ, Shih PC, Vaquero MP.
Title: Improvement of cognitive function in ferropenic anemia as an answer to oral iron treatment
Event: LX Congreso Nacional de la Sociedad Española de Hematología y Hemoterapia
Venue: Granada, Spain
Date: 11-13/11/2018

60. Author/s: Martínez JA.
Title: Microbiota y obesidad: el papel de los polifenoles
Event: XVIII Congreso Lationoamericano de Nutrición: Alimentación saludable para un planeta sostenible (Sociedad Latinoamericana de Nutrición (SLAN))
Venue: Guadalajara, Mexico
Date: 11-15/11/2018

61. Author/s: Enrique Carrillo
Title: Muscle Invasive Bladder Cancer stratification by genomic architecture
Event: XIV Symposium on Bioinformatics (Centre for Genomics and Oncological Research (GENyO), Barcelona Supercomputing Center (BSC) and Spanish National Bioinformatics Institute (INB/ELIXIR-ES)
Venue: Granada, Spain
Date: 14-16/11/2018

62. Author/s: San-Cristobal R, Navas-Carretero S, Martínez JA.
Title: Nutritional status assessment for Precision Nutrition based in personalized nutrindices and scores
Event: APNNO 2018 Biennial Conference (Asia Pacific Nutrigenomics Nutrigenetics Organisation)
Venue: Tokyo, Japan
Date: 2-4/12/2018

63. Author/s: Martínez JA.
Title: Epigenetics within the double burden of malnutrition
Event: International Symposium on Understanding the Double Burden of Malnutrition for Effective Interventions (World Health Organization (WHO), United Nations Children's Fund (UNICEF) and International Atomic Energy Agency (IAEA)
Venue: Viena, Austria
Date: 10-13/12/2018

2.2. Invited conferences

1. Author/s: Francesco Visioli
Title: Olive oil action mechanisms
Event: International Conference on Olive oil and Prevention of Chronic Disease
Venue: Davis, CA, USA
Date: 17/1/2018

2. Author/s: J. Argente
Title: Enfermedades monogénicas que cursan con talla baja: De la hipótesis al descubrimiento
Event: Reunión del Grupo Andaluz de Endocrinología Pediátrica
Venue: Cádiz, Spain
Date: 27/1/2018

3. Author/s: J. Argente
Title: Genes y crecimiento humano. Planteamiento clínico e investigador ante nuevos genes
Event: Reunión Sandoz "Haciendo historia juntos"
Venue: Segovia, Spain
Date: 2/2/2018

4. Author/s: J.M. Ordovas
Title: To Your Health and Long Life: Precision Nutrition
Event: Congress Healthy kitchens, Healthy lives
Venue: California, USA
Date: 8/2/2018

5. Author/s: Ana Ramírez de Molina
Title: Mujeres Científicas investigando en Nutrición de Precisión
Event: Mesa Redonda: Día Internacional de la Niña y la Mujer en la Ciencia. Hospital Clínico de San Carlos
Venue: Madrid, Spain
Date: 8/2/2018

6. Author/s: J. Argente
Title: Uso de la hormona de crecimiento en los niños nacidos pequeños para la edad gestacional
Event: II Reunión del Grupo de Trabajo de la SEEP Pequeño para la Edad Gestacional (PEG)
Venue: Madrid, Spain
Date: 9/2/2018

7. Author/s: Ana Ramírez de Molina
Title: Obesidad y Cancer
Event: Curso Avanzado sobre Obesidad y Síndrome Metabólico, de la Real Academia Nacional de Farmacia
Venue: Madrid, Spain
Date: 19/2/2018

8. Author/s: J.A. Martínez
Title: Dietas de Precisión en la Prevención y Tratamiento de la Obesidad y Síndrome Metabólico
Event: V Curso Avanzado sobre Obesidad y Síndrome Metabólico. Real Academia Nacional de Farmacia
Venue: Madrid, Spain
Date: 20/2/2018

9. Author/s: J.A. Martínez
Title: Aplicaciones ómicas para nutrición de precisión en la obesidad
Event: IV Jornada Nacional de la Alimentación
Venue: Zaragoza, Spain
Date: 20/2/2018

10. Author/s: J.A. Martínez
Title: Nutrición personalizada basada en la nutrigenética
Event: XII Jornadas Actualización en Nutrición
Venue: Madrid, Spain
Date: 24/2/2018

11. Author/s: J.A. Martínez
Title: Nutrición de precisión para entender la obesidad
Event: XI Aniversario Instituto Tomás Pascual
Venue: Madrid, Spain
Date: 26/2/2018

12. Author/s: Maria Ikonomopoulou
Title: Spider peptides as potential anticancer agents and scaffolds against melanoma
Event: IBV Institute
Venue: Valencia, Spain
Date: 14/3/2018

13. Author/s: J.A. Martínez
Title: Precision nutrition for obesity management based on omics
Event: Convocatoria de la Asamblea de la Sociedad Española para el Estudio de la Obesidad (SEEDO-SEO)
Venue: Lleida, Spain
Date: 14/3/2018

14. Author/s: Viviana Loria
Title: Prevención de la obesidad infantil en escolares de la CCAA de Madrid
Event: II Reunión sobre alimentos funcionales y salud. CIAL. Centro de Investigación en Ciencias de la Alimentación
Venue: Madrid, Spain
Date: 20/3/2018

15. Author/s: Alberto Dávalos
Title: Intestinal organoids as model for deciphering processes that handle and mishandle lipid metabolism
Event: Centro Nacional de Investigaciones Oncológicas CNIO
Venue: Madrid, Spain
Date: 17/4/2018

16. Author/s: J.A. Martínez
Title: Nutrigenomics of obesity
Event: 1st Congress of the Italian Society of Clinical Nutrigenomics and Epigenetic (SINEC)
Date: 27/4/2018

17. Author/s: Marta Gómez de Cedrón
Title: Lipid metabolism alterations in Cancer as targets for Precision Nutrition
Event: International Conference on Obesity & Metabolic Diseases 2018
Venue: Wembley, United Kingdom
Date: 30/4/2018 – 2/5/2018

18. Author/s: J.A. Martínez
Title: Nutrición de precisión
Event: 50º Aniversario CEICID
Date: 4-5/5/2018

19. Author/s: Lidia Daimiel
Title: Introducción a la Nutrigenómica
Event: Grado de Nutrición Humana. Universidad San Pablo CEU
Venue: Madrid, Spain
Date: 14/5/2018

20. Author/s: Ana Ramírez de Molina
Title: Cell models for precision nutrition research
Event: 52 Annual Scientific Meeting of the European Society of Clinical Investigation
Venue: Barcelona, Spain
Date: 1/6/2018

21. Author/s: Alberto Dávalos
Title: miRNAs exógenos y su modulación terapéutica a través de la dieta y ejercicio físico
Event: Seminar at the Instituto de Ciencia y Tecnología de Alimentos y Nutrición (ICTAN, CSIC)
Venue: Madrid, Spain
Date: 1/6/2018

22. Author/s: Ana Ramírez de Molina
Title: Impacto de la nutrición personalizada en la Medicina de Precisión
Event: Jornada Retos de la Medicina Personalizada de Precisión en España. CNIO
Venue: Madrid, Spain
Date: 4/6/2018

23. Author/s: Lidia Daimiel
Title: Las tecnologías ómicas y el binomio alimentación-salud: nutrigenómica y nutrigenética
Event: Máster Universitario en Gestión de Empresas Biotecnológicas para la Salud. Universidad San Pablo CEU.
Venue: Madrid, Spain
Date: 5/6/2018

24. Author/s: Maria Ikonomopoulou
Title: The anticancer properties of spider peptides
Event: Seminar at the Dpto. Biología Celular e Inmunología
Venue: Madrid, Spain
Date: 18/6/2018

25. Author/s: María Tabernero
Title: Precision nutrition: From –omic sciences to molecular precision Nutrition
Event: 3as Jornadas Internacionales de Ciencia y Tecnología de Alimentos: Los desafíos de la Ing. Química y Bioquímica en Iberoamérica
Venue: Nayarit, México
Date: 19/6/2018

26. Author/s: María Tabernero
Title: 1er Simposium de la Red Iberoamericana ALSUBCYTED sobre Propiedades Funcionales de Alimentos Autóctonos Subutilizados
Event: 3er Congreso Internacional de Alimentos Funcionales y Nutracéuticos
Venue: Sinaloa, México
Date: 20-22/6/2018

27. Author/s: Marta Gómez de Cedrón
Title: Telemedicine, mhealth and healthy habits for oncologic patients
Event: ONCONET SUDOE Emergence Forum Barcelona. Brainstorming Challenges
Venue: Barcelona, Spain
Date: 21-22/6/2018

28. Author/s: J.A. Martínez
Title: Genetics in severe early-onset obesity
Event: International meeting on Pediatric Endocrinology
Venue: Leipzig, Alemania
Date: 7/7/2018

29. Author/s: Francesco Visioli
Title: How much is enough of a good thing?
Event: The Olive oil conference of the North American Olive Oil Association
Venue: Chicago, IL, USA
Date: 10-12/7/2018

30. Author/s: José Mª Ordovás
Title: The Mediterranean Diet: Nutrigenomics
Event: Summer Course: Spanish Food Culture: The Mediterranean Diet and the Agro-food Industry". Mediterranean Agribusiness School
Venue: Zaragoza, Spain
Date: 11/7/2018

31. Author/s: María Tabernero & María Jesús Latasa
Title: Soluciones a los retos en Alimentación y Salud para el consumidor Europeo mediante Innovación Científica
Event: #Barbac0d1ng. Innovation & Fun
Venue: Madrid, Spain
Date: 26/7/2018

32. Author/s: Enrique Carrillo
Title: Deciphering epigenomic changes with multidimensional integrative methods
Event: Deciphering epigenomic changes with multidimensional integrative methods
Venue: Hannover, Germany
Date: 30/8/2018

33. Author/s: María Tabernero
Title: Tools and methodologies
Event: International Workshop: Holistic Approaches to Develop Alternative Strategies for Animal Testing
Venue: Brussels, Belgium
Date: 6-7/9/2018

34. Author/s: José Mª Ordovás
Title: Nutrigenética una ciencia en auge
Event: Gastronomía: hacia la Gastronomía Personalizada 2050. Basque Culinary Center
Venue: San Sebastián, Spain
Date: 13/9/2018

35. Author/s: J.A. Martínez
Title: Growth failure due to PAPP-A2 mutation
Event: 9th International Congress of the GRS and IGF Societies
Venue: Seattle, WA, USA
Date: 14-17/9/2018

36. Author/s:
Event: I Reunión Bioinformática y Biología Computacional de la Comunidad de Madrid. Instituto IMDEA Alimentación
Venue: Madrid, Spain
Date: 18/9/2018

37. Author/s: José Mª Ordovás
Title: Nutrigenomics; The future of nutrition
Event: International Academic Seminar on Nutrition and National Health Hangzhou Science and Technology Association
Venue: Hangzhou, China
Date: 21/9/2018

38. Author/s: José Mª Ordovás
Title: Childhood Diabetes, Genetics, Epigenetics and Nutrition
Event: CUDOS (Conference on Understanding molecular mechanisms in cardiovascular biology, Diabetes, Obesity and Stroke)
Venue: Doha, Qatar
Date: 24/9/2018

39. Author/s: José Mª Ordovás
Title: Omics approaches for nutritional biomarkers of intake and exposure
Event: NIH Workshop on Biomarkers of Dietary Intake
Venue: Washington, USA
Date: 26/9/2018

40. Author/s: Jesús Argente
Title: Identification of patients with rare genetic disorders of obesity
Event: 57th Annual Meeting of the European Society for Paediatric Endocrinology (ESPE)
Venue: Athens, Greece
Date: 28/9/2018

41. Author/s: José Mª Ordovás
Title: Dieta Mediterránea rica en aceites de oliva: salud y disfrute gastronómico
Event: The Mediterranean Diet Conference & Olive Oil Guided Tasting
Venue: Chicago, IL, USA
Date: 5/10/2018

42. Author/s: S. Navas-Carretero, R. San-Cristobal, J.A. Martínez
Title: PREVIEW Project - PREVention of diabetes through lifestyle Intervention and population studies in Europe and around the World
Event: PREVIEW Plenary Meeting
Venue: Berlin, Germany
Date: 5-7/10/2018

43. Author/s: Jesús Argente
Title: Fundamentos moleculares de la talla baja proporcionada
Event: Entrega de Título y Medalla de Académico Correspondiente / Real Academia de Medicina de España
Venue: Madrid, Spain
Date: 30/10/2018

44. Author/s: Marta Gómez de Cedrón, Ana Ramírez de Molina
Title: Nutritional supplement enhancing immune system as a potential adjuvant in the therapy of patients suffering from cancer or immune disorders: a randomized trial in healthy volunteers
Event: Seminario CNB (National Centre of Biotechnology, CNB-CSIC-UAM)
Venue: Madrid, Spain
Date: 5/11/2018

45. Author/s: Enrique Carrillo
Title: Caracterización de los pacientes diabéticos adultos de reciente diagnóstico en Atención Primaria y validación de un score clínico para identificar pacientes con alto riesgo de LADA
Event: VI Jornada de Investigación en Atención Primaria de la Comunidad de Madrid (Fundación para la Investigación e Innovación Biomédica de Atención Primaria)
Venue: Madrid, Spain
Date: 7/11/2018

46. Author/s: Alberto Dávalos
Title: Genómica Nutricional y miRNAs: hacia la nutrición personalizada
Event: I Jornada Nuevas Tecnologías Ómicas para el Desarrollo de Fármacos
Venue: Sevilla, Spain
Date: 11/12/2018

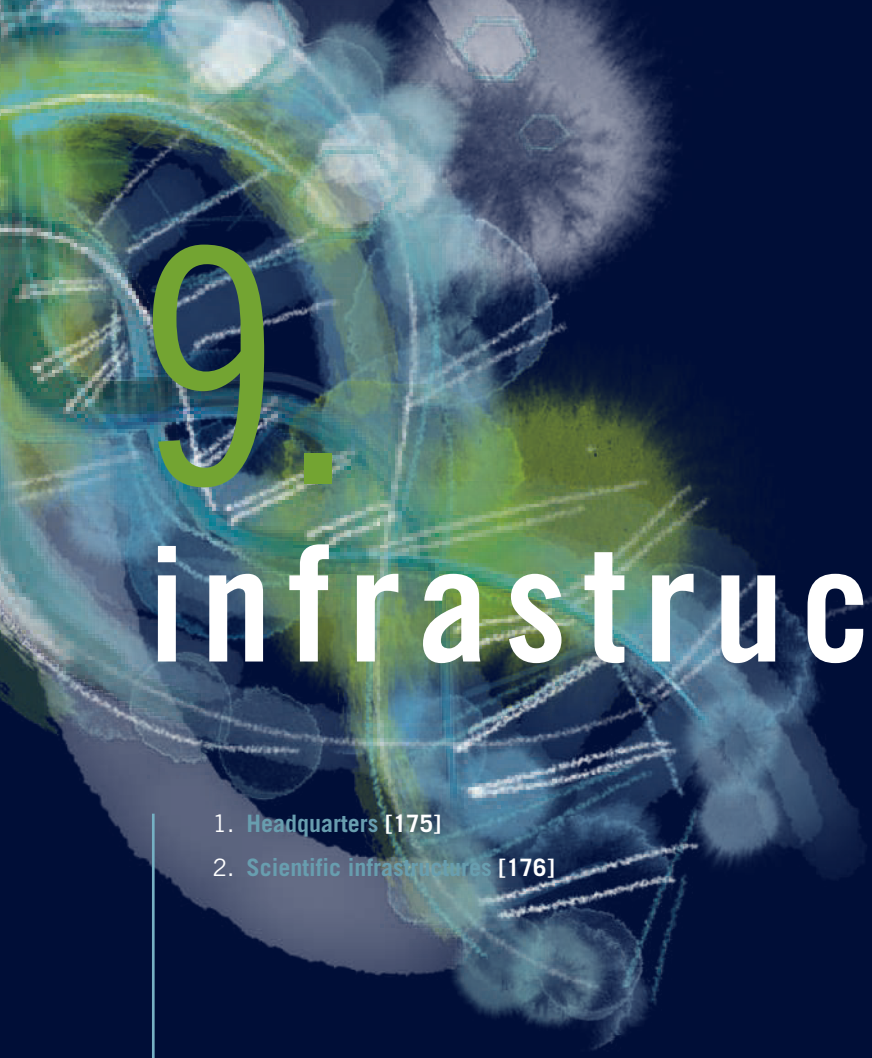
47. Author/s: Enrique Carrillo
Title: Cancer Genomics Data & Cancer Data Repositories
Event: ONCOTHON SUDOE European Project
Venue: Granada, Spain
Date: 12-13/11/2018

48. Author/s: Jesús Argente
Title: Mutations of PAPP-A2: A new clinically relevant mutation to be considered in children with growth failure
Event: Inaugural Seminar of the Academical Course 2018-2019
Venue: Odense, Denmark
Date: 15/11/2018

49. Author/s: J.A. Martínez
Title: La dieta mediterránea y su papel para contrarrestar las enfermedades crónicas
Event: Hablando de ciencia
Venue: Tokyo, Japan
Date: 5/12/2018

2.3. Courses

1. Title: curso de genómica nutricional y nutrición personalizada
Director: Jose Mª Ordovás
Co-direction y organization: Lidia Daimiel, Ruth Blanco
Duration: 21 Horas



9. infrastructures

1. Headquarters [175]
2. Scientific infrastructures [176]

2018 annual report

www.food.imdea.org

1. Headquarters

IMDEA Food headquarters are located in the old main building of the Cantoblanco Hospital since beginning of 2014. The building, ceded to the Institute by the Consejería de Educación y Empleo de la Comunidad de Madrid (the Education, Youth and Sport Council of the Madrid Region), is an excellent space in which to undertake scientific research.

It is located next to the Cantoblanco Campus of the Universidad Autónoma de Madrid with which the Institute has strong cooperative ties – within the grounds of the Cantoblanco University Hospital.

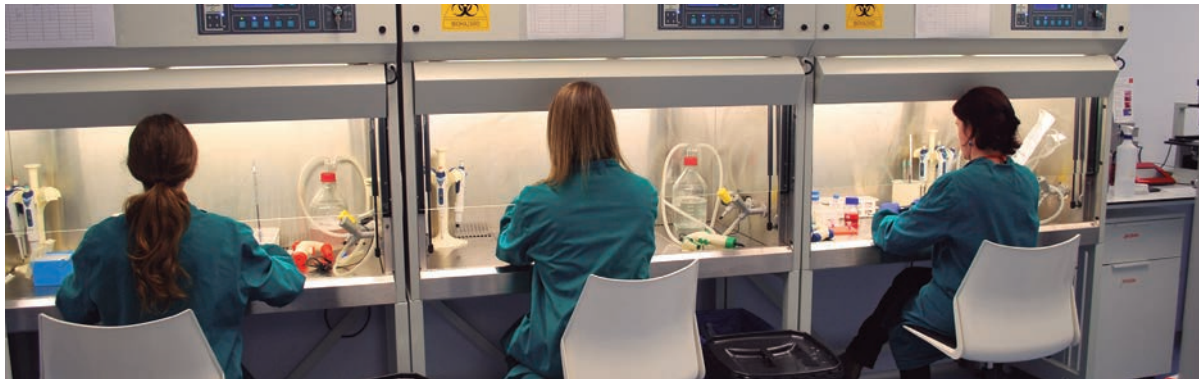
The building occupies an area of 4.595 m2 and is divided into two symmetrical main sections of five stories each that can house up to 100 researchers. It is equipped with laboratories of molecular and cellular biology P2, genomics and instrumental analysis, as well as facilities for clinical trials in humans.

The project for completing the Institute's Insfraestructures in the west wing of the building has started. It includes the construction of new research areas (including new laboratories and experimental animal facilities) provided with advanced technical and scientific equipment.

2. Scientific infrastructures

Currently the building is equipped with research laboratories, all of which are fitted with advanced scientific-technical hardware.

Laboratory 1. Cell Culture Laboratory (Biosafety Level 2)



Cell Culture Laboratory

This Biosafety Level 2 laboratory allows research to be undertaken on a wide range of moderate risk agents. It is routinely used in experimentation on, and the maintenance of, cell cultures.

It is equipped with incubators for maintaining cells under optimum growth conditions, laminar flow cabinets for working in sterile conditions, plus all the basic equipment needed for work on cell cultures, such as microscopes, water baths, centrifuges and cell counters. It also has a fluorescence microscope and a nucleoflector system, which are required in certain experiments. It has the latest equipment for analysis of metabolic activity (SeaHorse) apparatus, along with a fluorescence microscope and a nucleofector, a pressure reducer, an apparatus with micro-electric biosensors for cellular assays with real-time results and an analyzer with Luminex technology.

Laboratory 2. Genomics Laboratory

The Genomics Laboratory contains equipment required for genetic, genomic, transcriptomic and epigenetic analyses, etc. It is fitted with all the basic equipment required, such as thermocyclers for performing conventional PCR work, an ABI PRISM HT 7900 apparatus for real-time PCR, plus equipment for gene expression and high performance genotyping analysis, such as the latest generation QuantStudioTM apparatus. The versatility of these systems allows analyses to be performed in different formats depending on the number of samples to be tested, from the use of 96-well plates through to chips capable of performing.

Genomics Laboratory

3.072 genotyping reactions. These devices have different applications, such as digital PCR, DNA fragment analysis, expression/gene quantification analysis, allele discrimination using TaqMan probes, and the detection of SNPs and mutations, etc.

The laboratory has a designated clean area for processing and extracting nucleic acids from samples originating from clinical trials.

Laboratory 3. Biochemical Instrumental Techniques Laboratory

This multifunctional laboratory is fitted with a range of small apparatuses for the preparation of reagents and solutions, plus more specific equipment for use in biochemical and molecular biological investigations, such as plate readers, a luminometer, a NanoDrop 2000 spectro- photometer, a SpeedVac sample concentrator, and an HPLC apparatus.

It is divided into different areas where different techniques, such as Western blotting and agarose gel separations, and microbiological techniques for the cultivation and handling of bacteria, can be followed.

Laboratory 4. General Biochemistry and Molecular Biology Laboratory

This is where the different research Groups undertake their normal laboratory work. Each Group has its own space equipped with benches and all the reagents and materials required for its research line. Predoctoral students and those undertaking laboratory experience also work in these areas. Fume cupboards are available for handling volatile compounds, there are cupboards for the storage of flammable products and acids etc., and freezers for preserving samples and reagents.

The IMDEA Food installations also have a cold room, a freezing room, a dark room, a cooling and ultrafreezing room, and a cryopreservation tank.