



institute  
**imdea**  
food

institute  
**imdea** **10** años  
2007 · 2017

[www.food.imdea.org](http://www.food.imdea.org)

annual report

**2017**

food and health  
science, industry and society





# prologue

## **IMDEA Food: past, present and future**

*Excellent* scientific research is that which helps find efficient solutions to humanity's problems and contributes towards its progress. Since its beginnings, IMDEA Food has accepted the challenge of making scientific advances that improve people's quality of life.

Although the Institute's scientific project was designed in 2006, it was in 2017 that IMDEA Food celebrated the 10th anniversary of its formal establishment. Within the framework of the IMDEA programme promoted by the Government of the Madrid Region, the initial aim of IMDEA Food was to make scientific discoveries in the field of food science - discoveries with an impact on social well-being.

The year 2004 saw the beginning of a scientific revolution - a consequence of the successful completion of the Human Genome Project (often regarded as the most important research project ever). Since 1990, an international research consortium, working in parallel with the private sector, had been slowly deciphering the sequence of the entire human genome - the genetic code underlying the characteristics and functioning

of biological systems expressed by the genes and regulated by thousands of interconnected signalling, regulation and biosynthesis pathways. The sequencing of our genome drastically changed Molecular Biology, and with it the entire paradigm of the Life Sciences - including Food Science. The relationship between food and health was known, but until this time nutrition scientists had no way of investigating the mechanisms by which food components exerted their effects. The door was now open to understanding the interaction between genes and nutrients, and to make associations with human health.

It was within this context that, in 2007, IMDEA Food began its scientific activity with a view to applying to the field of Nutrition the advances made in Molecular Biology - of making what we eat an efficient tool for improving health. Such advances would of course invest the food industry with added value.

In its 10 years of life, IMDEA Food has had 526 scientific articles published, focusing on some of the most important areas of Life Sciences. These articles have been cited over 10,000 times. IMDEA Food scientists have been invited to give talks



# annual report

# 2017

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## Guillermo Reglero

Director of the IMDEA Food  
Institute

at international congresses on more than 170 occasions, they have registered four patents (three licensed to businesses), have supervised nine doctoral theses, and formed a tech company to exploit the results of the Institute's work.

Some of the most important scientific contributions made by IMDEA Food include:

- Finding associations between lipid metabolism and cancer, opening up the possibility of new treatments.
- Identifying the function of non-coding microRNAs in cardiometabolic health, opening up the possibility of designing new preventative and therapeutic strategies.
- Improving our understanding of the molecular basis of the benefits of the Mediterranean diet (work performed as part of a national consortium).
- Identifying mechanisms that mediate the effect of fasting and that may have a bearing in cancer therapy.
- Describing how certain food products can slow cognitive decline. A number of genetic polymorphisms were associated with phenotypes, leading to the production of marketable genetic "chips" capable of predicting the response of people to the consumption of different food products, the following of nutritional criteria, and the adoption of lifestyle changes.
- Contributing (in conjunction with food and nutrition sector companies) towards the confirmation of the validity of "personalised nutrition", or perhaps better said "precision nutrition", as a means of preventing and treating chronic disease.

One of the Institute's most important achievements has been the constitution of the GENYAL platform for the study of human nutritional genomics. This is a focus of attention for researchers from other national and international centres, and is the motor behind the Institute's activity, having performed over 25 trials in human subjects.

Thanks to the talent-drawing invitations of the Regional Government of Madrid, the *Plan Estatal* (The National Plan) and the *Plan Horizonte 2020* (The 2020 Horizon Plan), the Institute has continued to attract top class researchers, many from abroad. In addition, a large group of outside researchers of international prestige collaborates with the Institute via agreements with their centres. Their contribution is most significant.

The 2017 Report sets out the situation of the Institute, and recounts the results of the year. The 91 scientific articles published for the year continues the annual upward trend. Most of these articles were published in first quartile impact journals, including the Journal of the American College of Cardiology, Nature Genetics, Diabetes Care, Molecular Oncology, Advances in Nutrition, EMBO Molecular Medicine, Plos Genetics, Cell Metabolism and Circulation.

Of particular note is the culmination of the PRIMICIA project on personalised nutrition for the prevention of chronic inflammation, in which IMDEA Food participated along with a consortium of Spanish companies within the CIEN Programme of the Centre for the Development of Industrial Technology. The project showed that personalised (or precision) nutrition is a necessary focus in the production of efficient foods designed to improve health, and set out the groundwork for their introduction to the market.

Such a result is uncommon for the Spanish food sector, which has recently seen a slide in innovation, wealth creation, and competitiveness to the levels of several years ago. In fact, even though recent scientific development in the field of nutrition, food and health has been notable, the number of efficient food products (proven as such) that have reached the market has been small. This, however, is not just a Spanish problem but one that affects the whole of Europe. For this very reason, the European Commission's European Institute of Innovation and Technology made its 2016 call for the formation of a Knowledge and Innovation Community (KIC), the aim of which would be to lead change in this sector. IMDEA Food, along with *Universidad Autónoma de Madrid* (UAM) was selected to take part (as EIT Food) along with 50 distinguished European academic and industrial partners (universities, research centres and companies). IMDEA Food and the UAM act as a single entity, forming the management node for the project - an

important contribution. The participation of EIT Food affords IMDEA Food a great opportunity to meet its aim of making scientific discoveries known to industry and the population in general.

The KIC project lasts for seven years and is well funded, and the Institute is making a major effort as a partner. As part of this effort it has modified its "Products for Precision Nutrition" programme to create a new one that goes by the name of "Innovation and Communication for Precision Nutrition". This new programme brings together researchers and knowledge transfer and communication managers, and involves the existing Interactive Centre for Nutrigenomics (CIN) and the I+D Collaboration Laboratory (with its external partners) (LACID).

The funding received from the Madrid Region via its nominative subsidy programme, has allowed the activity of the Institute to grow. This financing has allowed 13 projects with further regional, national and international funding to be undertaken. The Institute is also involved in 14 projects with the private sector. During 2017, the overall funding granted to attract talented researchers totalled €869,320.

IMDEA Food has collaborated actively with a number of universities, hosting more than 50 students over 2017 for the completion of laboratory practice work and first and higher degree projects.

Finally IMDEA Food aims to use its resources to make the benefits of its research known to society. The Institute is self-funding a study on obesity in schoolchildren in Madrid. After monitoring the nutrition and health of these children, the Institute is promoting nutritional education designed to prevent obesity in those who are genetically susceptible to the problem.

With its mature scientific project, a staff of high-level researchers, and excellent technical, administrative and managerial support, the Institute continues to meet its science- business- and society-orientated goals in an international background sensitised to the relationship between nutrition and health.





## IMDEA Alimentación: pasado, presente y futuro

La investigación científica de excelencia es aquella que contribuye a la resolución eficaz de los problemas de la humanidad y a su progreso. En este sentido, IMDEA Alimentación asumió, desde el principio, el reto de realizar avances científicos de utilidad para la mejora de la calidad de vida de la población.

Aunque el proyecto científico del Centro fue diseñado en 2006, en el año 2017 se ha cumplido una década desde la constitución formal de la Fundación IMDEA Alimentación. En el marco del programa IMDEA, impulsado por el Gobierno de la Comunidad de Madrid, el objetivo inicial de IMDEA Alimentación fue generar descubrimientos en el campo de la alimentación para la salud orientados al bienestar social.

En 2004 se asistía a una auténtica revolución científica tras la culminación del Proyecto Genoma Humano, para muchos el proyecto de investigación más grande e importante de la historia. Desde 1990, un consorcio internacional de investigación y una empresa privada, en paralelo, habían trabajado para conseguir la secuencia completa del genoma, el código para entender las características y el funcionamiento de los

sistemas biológicos expresados por los genes a través de miles de rutas interconectadas de señalización, regulación y biosíntesis.

La secuenciación del genoma humano cambió drásticamente la Biología Molecular y con ello, el paradigma de las Ciencias de la Vida, entre ellas las Ciencias de la Alimentación. Tradicionalmente se conocía la relación entre la alimentación y la salud, pero la Nutrición no podía abordar la investigación de los mecanismos corporales en que se basan los efectos de los componentes de los alimentos. Es desde 2004 cuando es posible comprender las interacciones genes-nutrientes y asociarlas al estado de salud de las personas.

En ese contexto, IMDEA Alimentación inició su actividad científica en 2007 con la visión de trasladar a la Nutrición los avances de la nueva Biología Molecular y que así la alimentación pueda ser una herramienta eficaz en la mejora de la salud, con el convencimiento de que ello encierra también un gran potencial de generación de valor añadido para la industria alimentaria.

En sus 10 años de vida, IMDEA Alimentación ha publicado 526 artículos científicos en las revistas más importantes en las áreas de las Ciencias de la Vida que, hasta el momento, aparecen citados más de 10.000 veces en la bibliografía internacional; sus científicos han sido invitados a realizar ponencias



en congresos internacionales en más de 170 ocasiones; se han registrado 4 patentes, tres de las cuales han sido licenciadas a empresas; se han defendido 9 tesis doctorales y se ha constituido una empresa de base tecnológica para explotar algunos de los resultados de la investigación del Centro.

IMDEA Alimentación ha ido creciendo y ya ha sido posible realizar aportaciones científicas de importancia:

- Se han descubierto asociaciones entre el metabolismo lipídico y el cáncer que abren nuevas vías en el tratamiento de esta enfermedad.
- La identificación de la función de microRNA no codificantes en la salud cardio-metabólica que pueden dar lugar a nuevas estrategias de prevención y terapia
- Se han realizado importantes contribuciones a la comprensión de las bases moleculares de los beneficios de la dieta mediterránea, a través de la participación en un consorcio nacional; se han identificado algunos de los mecanismos que median el efecto del ayuno con fines terapéuticos para el cáncer
- Se ha descrito la utilidad de ciertos productos alimentarios para frenar el deterioro cognitivo; se han relacionado diversos polimorfismos genéticos con fenotipos, dando lugar a “chips” genéticos comercializables que permiten predecir

la respuesta de las personas al consumo de productos o al seguimiento de pautas nutricionales y de estilo de vida

- En colaboración con empresas del sector de la alimentación y la nutrición, se ha contribuido a demostrar la validez del concepto de la Nutrición Personalizada o más exactamente, de la Nutrición de Precisión, como estrategia para conseguir efectividad en la prevención y terapia de enfermedades crónicas mediante estrategias nutricionales.

Uno de los logros más destacables del Instituto en su primera década ha sido la constitución de su Plataforma GENYAL para estudios de genómica nutricional en humanos, que constituye uno de los principales atractivos para investigadores de otros centros y países y es motor de actividad para el Instituto, habiendo llevado a cabo más de 25 ensayos en humanos.

Gracias a las convocatorias de atracción de talento de la Comunidad de Madrid, del Plan Estatal y de Horizonte 2020, ha sido posible ir incorporando investigadores de alto nivel, muchos de ellos procedentes de centros extranjeros. A ellos se ha sumado un importante grupo de investigadores que como Asociados colaboran con el Instituto a través de acuerdos con las entidades a que pertenecen y cuya contribución es muy significativa, al tratarse de investigadores de gran prestigio internacional.

La presente Memoria 2017 recoge la situación del Instituto y sus resultados en este último año. En materia de artículos de

investigación, ha continuado la tendencia creciente y se ha alcanzado el número de 91, la mayoría de ellos publicados en revistas del Q1 de los rankings de impacto de diferentes áreas de las Ciencias de la Vida y algunos en revistas de muy alto índice de impacto como Journal of the American College of Cardiology, Nature Genetics, Diabetes Care, Molecular Oncology, Advances in Nutrition, EMBO Molecular Medicine, Plos Genetics, Cell Metabolism o Circulation.

Es destacable la culminación del proyecto PRIMICIA sobre nutrición personalizada para la prevención de la inflamación crónica a lo largo de la vida, en el que IMDEA Alimentación ha participado, junto con un consorcio de empresas españolas, dentro del Programa CIEN del CDTI. Este proyecto ha puesto de manifiesto que la nutrición personalizada o de precisión es el enfoque necesario para diseñar productos alimentarios eficaces para la mejora de la salud y ha establecido las bases para su implantación en el mercado.

Ciertamente, un resultado como el anterior no es frecuente en el ámbito del sector alimentario español cuyos niveles globales de innovación, creación de riqueza y competitividad han vuelto en 2017 a los de varios años atrás. Siendo tan importante el desarrollo científico de los últimos años en materia de nutrición, alimentación y salud, sorprende la escasez de productos alimentarios de eficacia probada en el mercado. Este fenómeno no es exclusivo de España, sino que ocurre en toda Europa. Por ello, el Instituto Europeo de Innovación y Tecnología de la Comisión Europea, lanzó en 2016 la convocatoria para la constitución de una Comunidad de Conocimiento e Innovación (KIC, Knowledge and Innovation Community) con el objetivo de liderar un cambio global en el ámbito alimentario. IMDEA Alimentación, junto con la Universidad Autónoma de Madrid forma parte de la propuesta ganadora (EIT Food), junto con otros 50 socios académicos e industriales de Europa, entre los que se encuentran universidades, centros de investigación y empresas, destacados a nivel mundial. IMDEA Alimentación y la UAM actúan como un único socio y su papel en el proyecto es relevante al ser la sede del nodo sur de gestión del proyecto.

La participación en EIT Food proporciona a IMDEA Alimentación una gran oportunidad para cumplir con su objetivo de que los descubrimientos científicos lleguen a la industria y a

la población, ya que la duración del proyecto es de 7 años y la financiación a la que se puede aspirar es elevada. El Instituto realizará el mayor esfuerzo posible en este proyecto. Para ello, se ha modificado la estructura de Programas del Instituto para transformar el anterior “Programa de Productos para la Nutrición de Precisión” en un nuevo “Programa de Innovación y Comunicación para la Nutrición de Precisión”. Este nuevo Programa integra investigadores, gestores de transferencia y de comunicación e incluye a las plataformas, ya existentes, del CIN (Centro Interactivo de Nutrigenómica) y LACID (Laboratorio de Colaboración en I+D con agentes externos).

La financiación de la Comunidad de Madrid, a través de su subvención nominativa ha permitido abordar la actividad del Instituto y desarrollar 13 proyectos de investigación de programas competitivos regionales, nacionales e internacionales. También 14 proyectos con empresas privadas que, junto con las ayudas para atracción de talento investigador han supuesto una captación de fondos externos por un total de 869.320 €, ejecutados en 2017.

IMDEA Alimentación ha continuado colaborando activamente con diversas universidades, acogiendo estudiantes de grado y master para la realización de Prácticas Externas, Trabajos Fin de Grado, Trabajos Fin de Master y Doctorados. Más de 50 estudiantes han pasado por el Instituto en 2017 para llevar a cabo su formación con los investigadores del Centro.

Finalmente, IMDEA Alimentación trata de llevar a la sociedad, también mediante el empleo de recursos propios, los beneficios de su investigación. En esta línea financia y lleva a cabo un estudio sobre obesidad infantil en escolares de la Comunidad de Madrid que, tras los primeros hitos de seguimiento, está poniendo de manifiesto la efectividad de prevenir el desarrollo de la obesidad en niños con susceptibilidad genética, mediante acciones de educación nutricional.

Con un proyecto científico maduro, una plantilla de investigadores de alto nivel, apoyados por técnicos, gestores y administrativos muy implicados en la actividad del Centro, y en un contexto internacional sensibilizado para la alimentación para la salud, IMDEA Alimentación tratará de seguir cumpliendo con su misión, en torno a sus ejes Ciencia, Empresa y Sociedad.

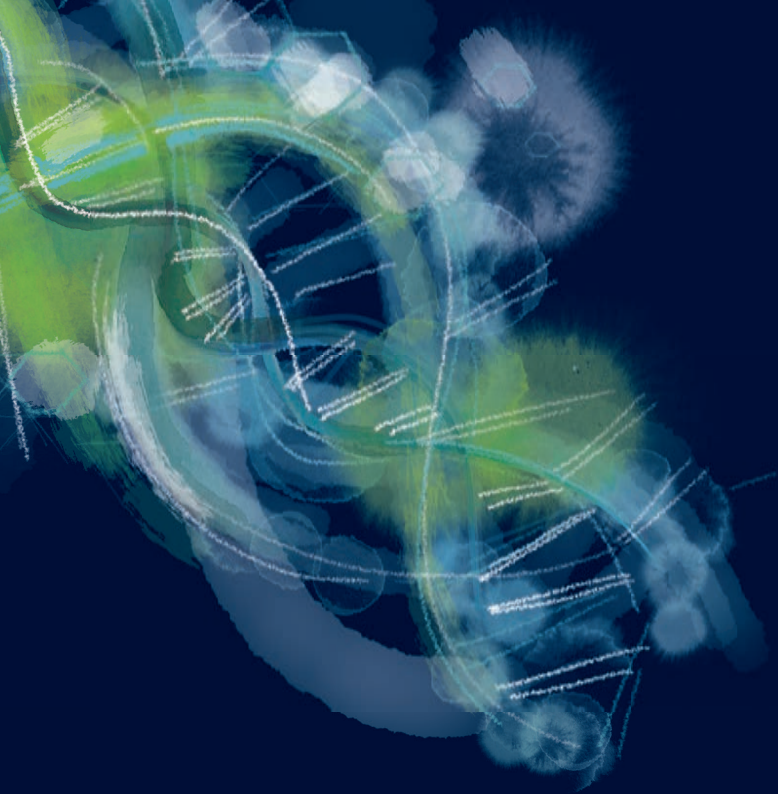


# imdea food institute





food and health  
science, industry and society



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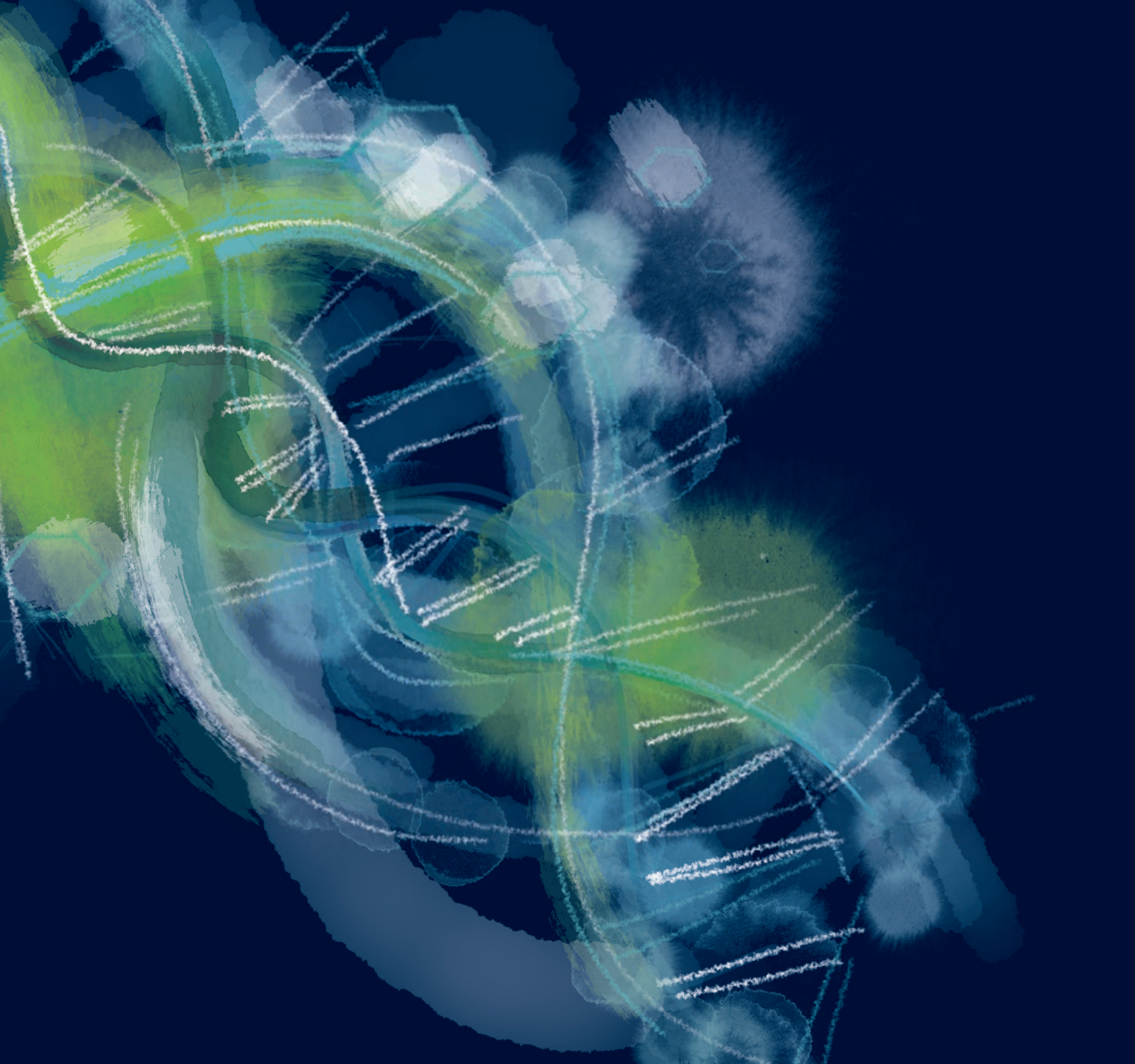
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1.

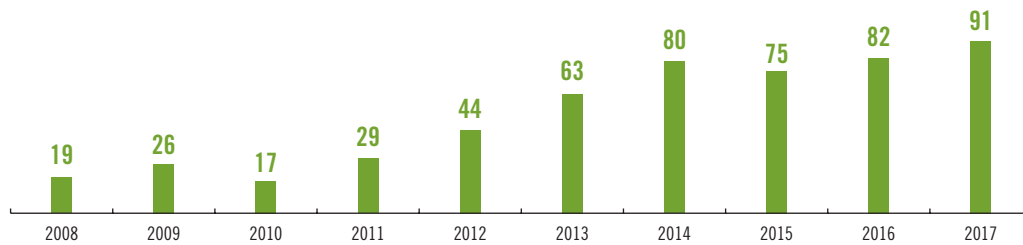
in figures

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## 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 (2008-2017)

# 526

Total papers published  
in indexed scientific journals

# 2.595

Cumulative impact factor

# 649

Average impact factor  
per R&D program

### 2017 Results

Congresses communications	46
Invited conferences	43
Book's chapters	4
Submitted patents	2
Ph.D thesis under development	11
Ph.D thesis defended	2
International Awards	10

# 91

Publications in  
indexed scientific  
journals

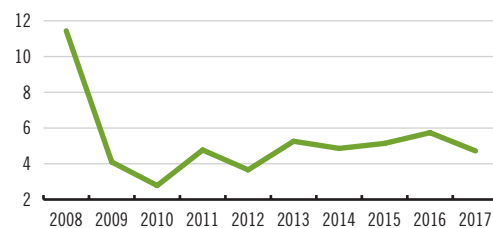
# 430

Publications  
annual impact  
factor

# 55%

Publications ranked  
in Q1 SCI (Science  
Citation Index)

### Average Impact Factor



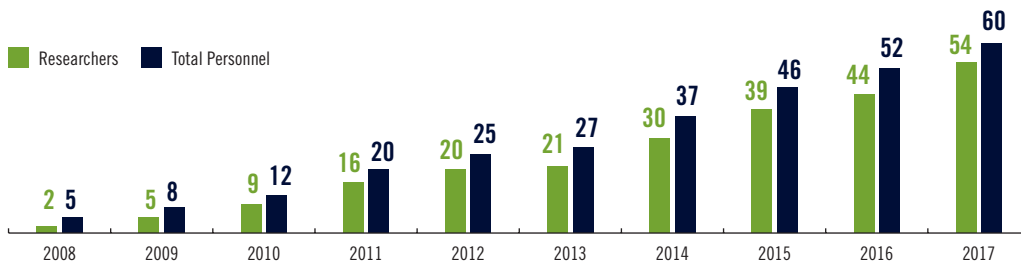


# personnel

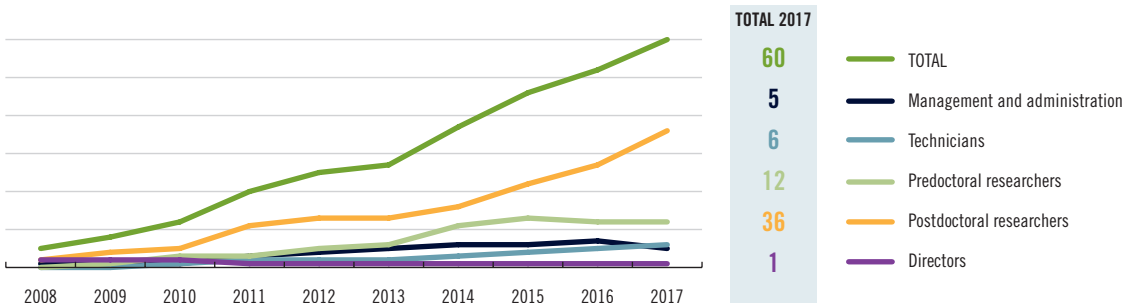
The attraction of talent and prestigious researchers is one of the key objectives of the Institute. IMDEA Food has recruited researchers from world-class universities such as the Pierre and Marie Curie University of Paris, the University of New York or the University of Tufts and renowned Spanish entities 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.

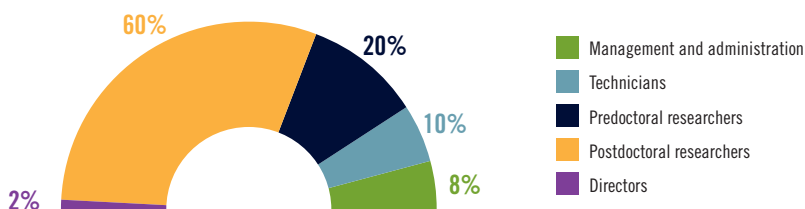
## Personnel Evolution



## Personnel Evolution per category



## Personnel Distribution by 31-12-17



## external funding

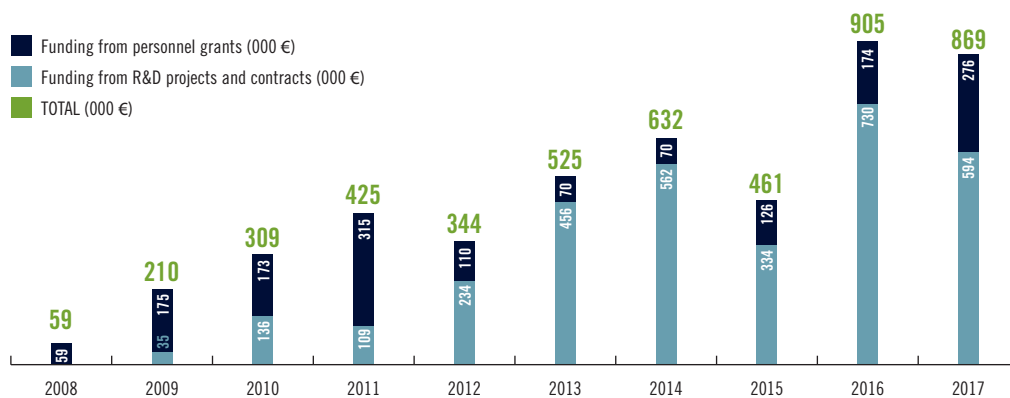
In 2017 IMDEA Food has participated in highly competitive national research projects - Plan Estatal de I+D+i, Instituto de Salud Carlos III, Fundación BBVA and Fundación Ramón Areces - as well as R&D Programs funded by the Regional Government of Madrid and international projects of great scope like those framed in the EIT Food Program funded by the European Commission.

In 2017, IMDEA food has received € 275,000 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, in 2017 the institute has carried out an intense R&D activity through the current contracts amounting to € 406,000. It is worth highlighting the CIEN project funded by CDTI, PRIMICIA, led by IMDEA Food, aims to prevent chronic diseases throughout life by means of designing and validation of personalized products and diets.

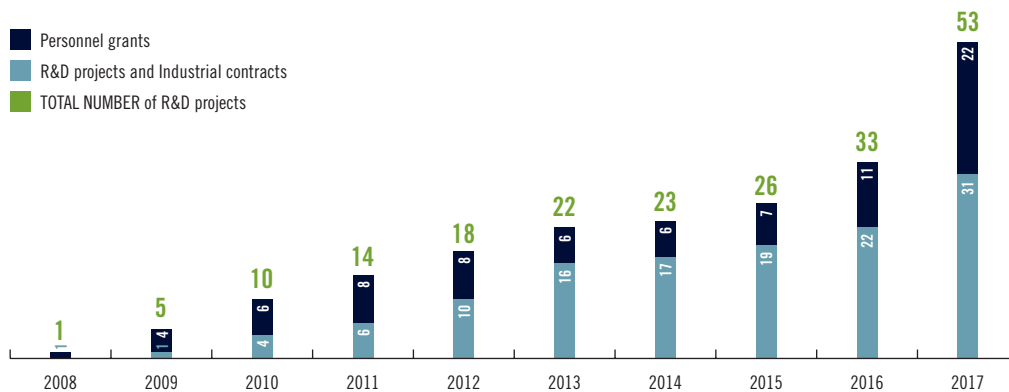
### Total External Funding



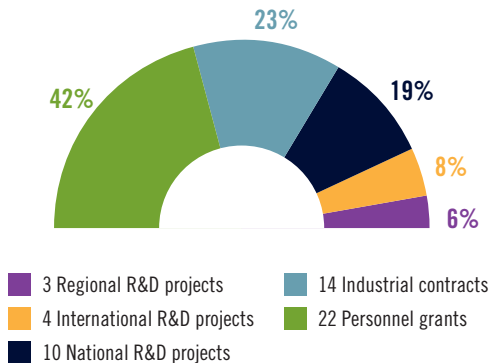




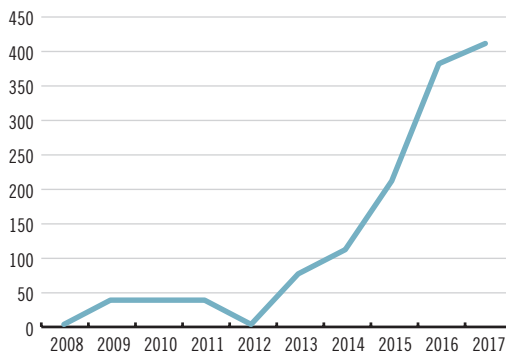
### Number of R&D Projects, industrial contracts and personnel grants

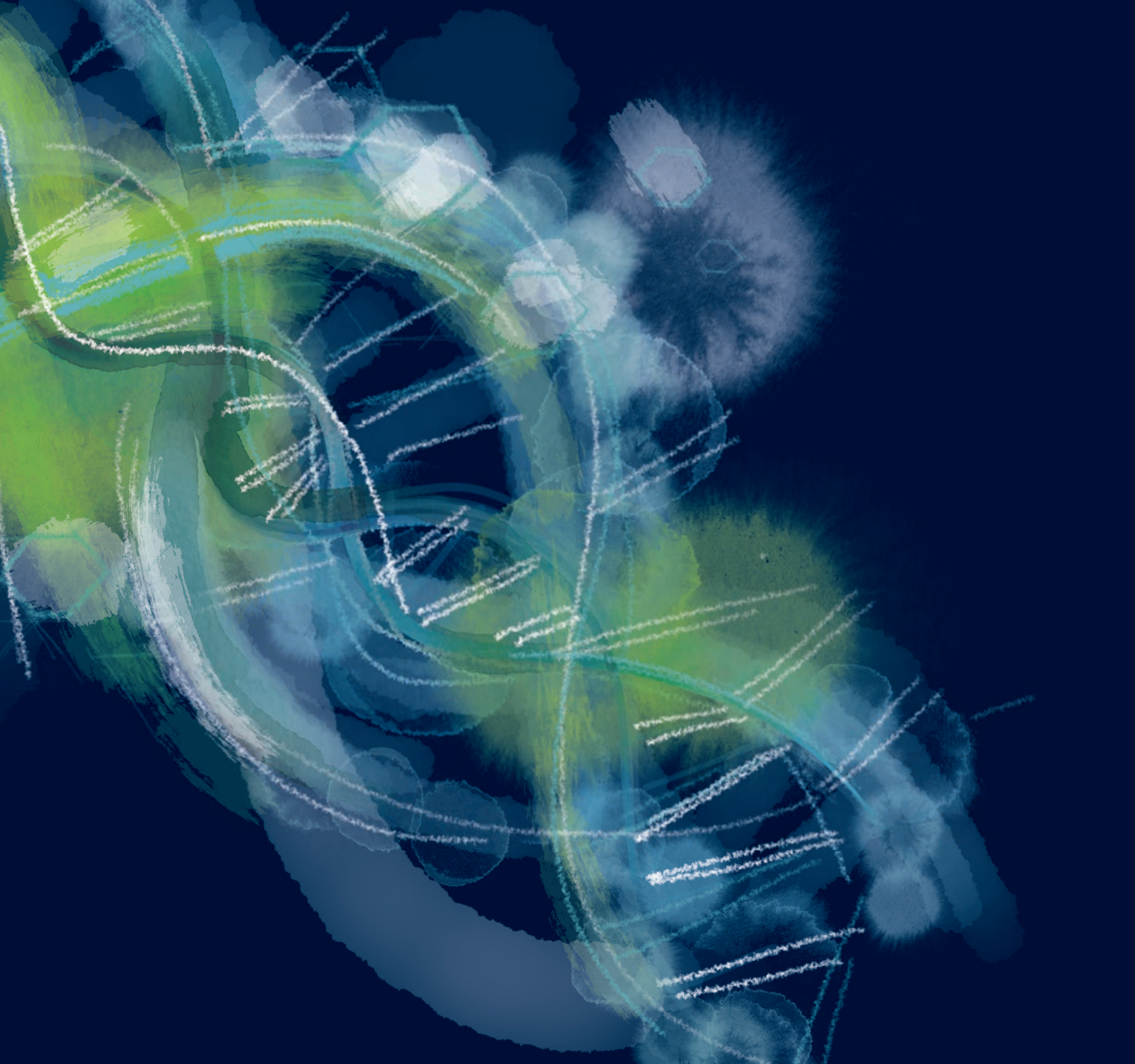


### 2017 split by founding source



### Funding from Industrial Contracts





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2.

our structure

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**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****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

**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

**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****Jowita Spytzkowska Szklarczyk**  
Technician**Raul Terrón Fernández**  
Technician**Gema Alegre Pulido**  
Technician**Carlos Zarapuz Agüero**  
Technician**Cristina Merino Fernández**  
Technician**Astrid Valencia Quiñónez**  
Technician**Marta Gómez de Dios**  
Technician**Natalia Riveira Gómez**  
Technician



## research programs and groups

### Precision Nutrition and AGING

Dr. Manuel Serrano

#### groups

- **Metabolic Syndrome**  
Dr. Pablo Fernández
- **Nutritional Interventions**  
Dr. Rafael Calvo
- **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

Prof. José María Ordovás

#### groups

- **Nutritional Genomics and Epigenomics**  
Prof. José María Ordovás
- **Neuroendocrinology of Metabolism**  
Prof. Dr. Jesús Argente
- **Cardiovascular and Nutritional Epidemiology**  
Prof. F. Rodríguez

### Precision Nutrition and CARDIOMETABOLIC HEALTH

Prof. A. Martínez

#### groups

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

## R+D+I platforms and technology transfer

### Innovation & Communication Unit

Prof. Guillermo Reglero Rada

- Innovation
- Education
- Communication

### GENYAL platform

Director: Prof. Guillermo Reglero Rada

Scientific Director: Ana Ramírez de Molina

- Nutrition and Clinical Trials Unit
- Biostatistics and Bioinformatic 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

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 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

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Deputy General Director of Research. Education and Research Counseling. Madrid Regional Government. Spain

#### José de la Sota Rius

Scientific-Technical Coordinator. madi+d Foundation for Knowledge. Spain

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 Chancellor. Universidad Autónoma de Madrid. Spain

#### Alberto Garrido Colmenero

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

#### Juan Miguel Rodríguez Gómez

Professor of Nutrition and Bromatology. Universidad Complutense de Madrid. Spain

#### M<sup>a</sup> Isabel Medina Méndez

Coordinator of the Science and Technology. Department Spanish National Research Council. Spain

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**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

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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.

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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

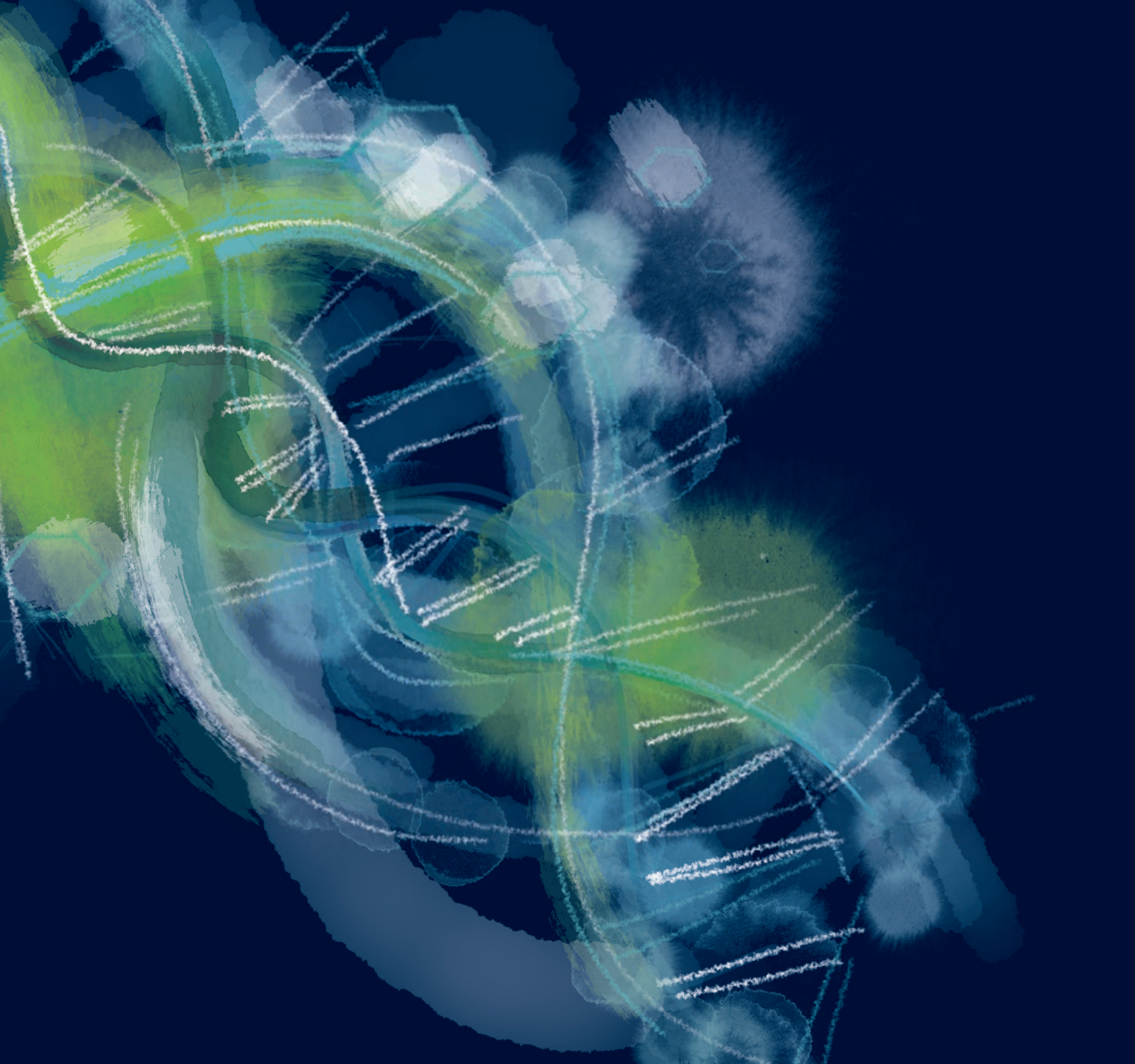
**Prof. Rafael Garesse Alarcón**  
Professor of Biochemistry and Molecular Biology. Biomedical Research Institute Alberto Sols (UAM-CSIC). Spain

**Prof. José M<sup>o</sup> Ordovás Muñoz**  
IMDEA Food senior researcher. Spain Professor of the Tufts University. USA

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

## executive board

(+) [previous page](#)



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3.

# strategic alliances





The Institute maintains strategic alliances with public and private entities relevant to the performance of its activity.

Cooperation agreements between these Institutions and IMDEA Food aim to carry out activities related to scientific research and technological development in the areas of food, health, nutrition and biomedicine in order to contribute to the advancement of Nutrition Science and to the improvement of the population health through the correct nutrition.

# strategic alliances



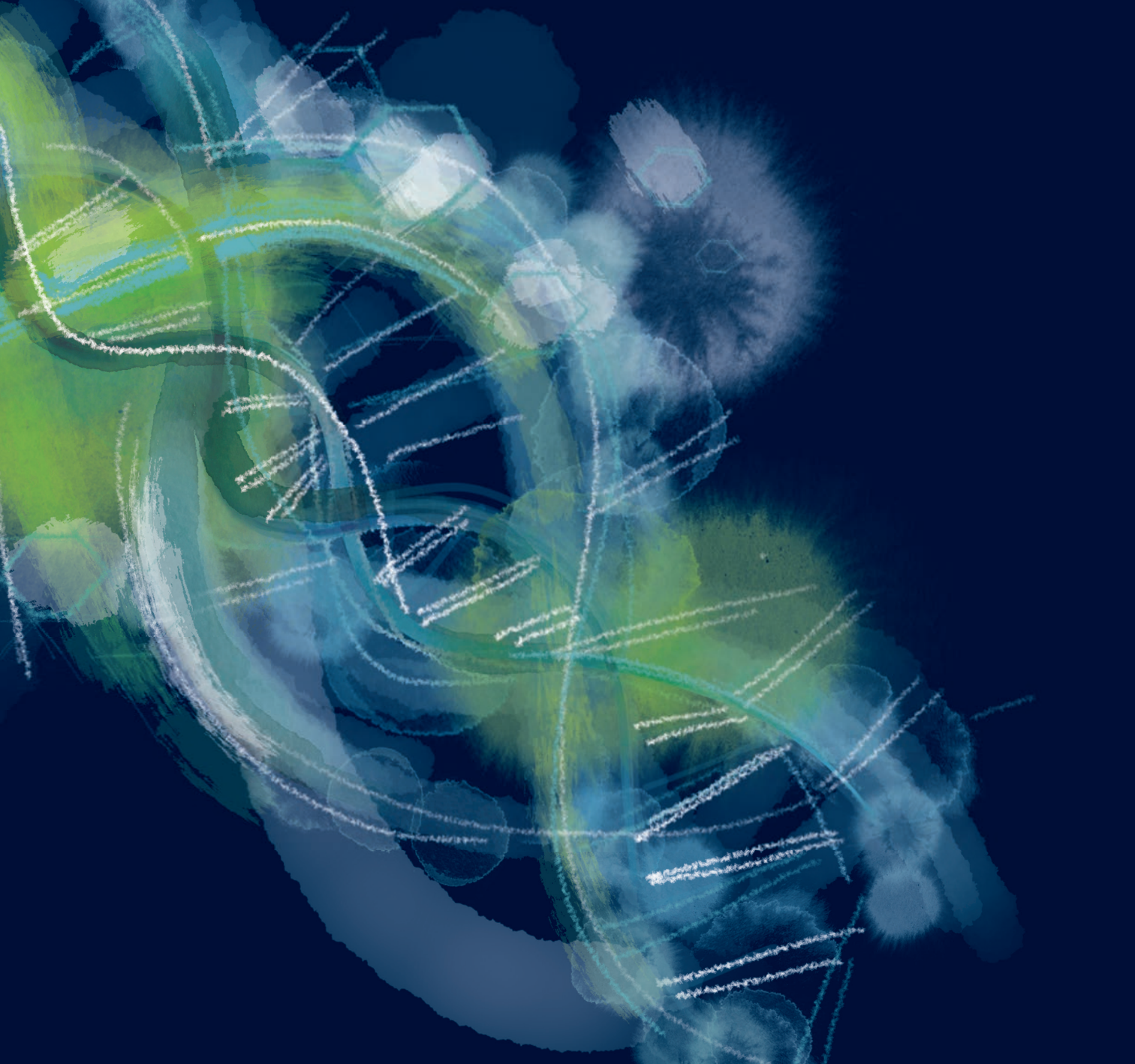
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# strategic alliances







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# 4.

# research programs and groups

## 1. Precision Nutrition and Aging [?]

Metabolic Syndrome [?]

Nutritional Interventions [?]

Hepatic Regenerative Medicine [?]

Posttranscriptional regulation of metabolic diseases [?]

## 2. Precision Nutrition and Cancer [?]

Molecular Oncology [?]

Clinical Oncology [?]

Molecular Immunonutrition [?]

Computational Biology [?]

## 3. Precision Nutrition and Obesity [?]

Nutritional Genomics and Epigenomics [?]

Neuroendocrinology of Metabolism [?]

Cardiovascular and Nutritional Epidemiology [?]

## 4. Precision Nutrition and Cardiometabolic Health [?]

Cardiometabolic Nutrition [?]

Bioactive Ingredients Food [?]

Epigenetics of Lipid Metabolism [?]

## research program

# Precision Nutrition and Aging



### **Dr. Manuel Serrano Marugán**

Director of the Cellular Plasticity and Disease of the Institute for Research in Biomedicine of Barcelona (IRB)  
External supervisor of the Precision Nutrition and Aging Program

Manuel Serrano is a researcher at Institute for Research in Biomedicine (IRB), in Barcelona, and Director of the Cellular Plasticity and Disease Group of the IRB. After completing his studies and PhD in Madrid, M.S. 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 Suppression Group and nowadays 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

The Precision Nutrition and Aging Program at IMDEA Food is focused on the molecular and physiological effects that nutrition exerts on the process of aging. Since aging is a complex, multi-organ degenerative process strongly influenced by the genetic background and the environment, our research covers a wide range of biological topics: from the discovery and development of new bioactive products active against aging-related pathologies, to the dissection of different molecular pathways involved in degenerative pathologies, or the study of nutritional interventions with anti-aging properties, such as fasting or calorie restriction.

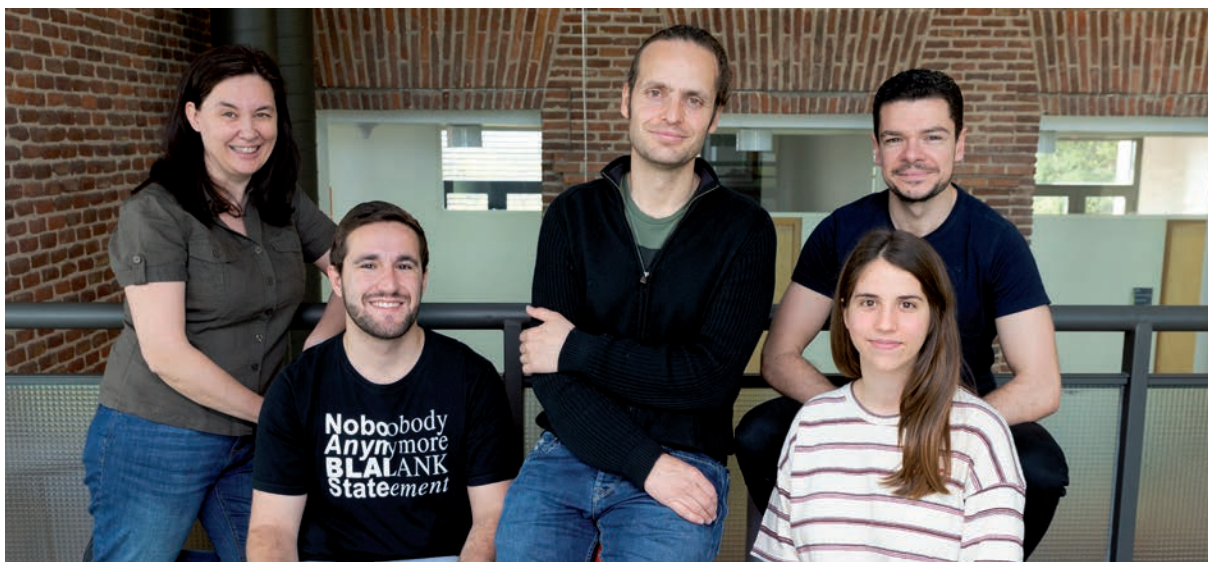
Headed by Dr. Manuel Serrano, one of the most prestigious Spanish scientist in the fields of aging and cancer, the Precision Nutrition and Aging Department is intensely expanding at the moment. The program is formed by 4 groups led by prestigious researchers such as the worldwide best-known aging scientist, Dr. Rafael de Cabo, from the National Institute of Aging, a reference in the study of calorie restriction as a nutritional intervention to lengthen lifespan. Along with these two very important figures, Dr. Pablo J. Fernandez Marcos, Manuel Fernández Rojo and Cristina Ramírez led the other 3 research groups that make up the program.



## 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 reaction.
- 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 labs 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 Eli Lilly 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 postdoctoral 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.



**Luís Filipe Costa Machado**  
Predoctoral researcher

Luís 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.



**Arantazu Sierra Ramírez**  
Predoctoral researcher

Arantazu Sierra Ramírez has a bachelor in Biology (2016) from the Autonoma University of Madrid. She studied a Master in cell signaling and therapeutic targets (2017) in Alcalá 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 project in PharmaMar S.A., a Biopharmaceutical Company specialised in discover of new antitumoral molecules. There she worked in the mechanism of action of Plitidepsin, a new molecule for multiple mieloma. She joined to Metabolic Syndrome Group in Imdea Food, as a predoctoral researcher. She is going to study new approaches to understand Cellular Senescence and the role of the protein Sirt3 in hepatocarcinoma.



**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 Torrealblanca 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.

**Students**

**Marión Martínez.**  
Universidad Pierre et Marie Curie (Sorbone)

**Claudia Vales-Villamarín Fernández.**  
Universidad Autónoma de Madrid

**Benjamín Brito Fernández.**  
Universidad Autónoma de Madrid

**Pilar Jiménez López.**  
Universidad Autónoma de Madrid

**Simone van Gertman.**  
Wageningen University

**Alexia Gómez Rodríguez.**  
ENS Lyon



## most relevant publications

- Link W#, Fernandez-Marcos PJ#. **FOXO transcription factors at the interface of metabolism and cancer.** International Journal of Cancer 2017. #: corresponding authors.
- Lopez-Guadamillas E, Muñoz-Martin M, Martinez S, Pastor J, Fernandez-Marcos PJ, Serrano M. **PI3K $\alpha$  inhibition reduces obesity in mice.** Aging 2016 (Albany. NY).
- Mosteiro L, Pantoja C, Alcazar N, Marión RM, Chondronasiou D, Rovira M, Fernandez-Marcos PJ, Muñoz-Martin M, Blanco-Aparicio C, Pastor J, Gómez-López G, De Martino A, Blasco MA, Abad M & Serrano M.. **Tissue damage and senescence provide critical signals for cellular reprogramming in vivo.** Science 2016.
- Lopez-Guadamillas E, Fernandez-Marcos PJ, Pantoja C, Muñoz-Martin M, Martínez D, Gómez-López G, Campos-Olivas R, Valverde AM, Serrano M. **p21Cip1 plays a critical role in the physiological adaptation to fasting through activation of PPAR $\alpha$ .** Sci Rep. 2016.
- Maraver A\*, Fernandez-Marcos PJ\*, Cash TP, Mendez-Pertuz M, Dueñas M, Maietta P, Martinelli P, Muñoz-Martin M, Martínez-Fernández M, Cañamero M, Roncador G, Martinez-Torrecedrada JL, Grivas D, de la Pompa JL, Valencia A, Paramio JM, Real FX, Serrano M. **Notch pathway inactivation promotes bladder cancer progression.** JCI. 125(2):824-30 (2015). \*: authors contributed equally to this work.

## main research grants

**Principal Investigator:** Pablo J. Fernandez-Marcos

**Project Title:** Characterization of the molecular mechanisms of short-term fasting as an enhancer of chemotherapy

**Date:** 2018-2021

**Funded by:** Ministry of Economy, Industry and Competitiveness

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**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

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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

The Nutritional Interventions Group applies the knowledge gained in model organisms to translate nutritional interventions to improve or delay the decline of function that occurs with aging. We utilize whole body physiological and tissue-specific molecular approaches to investigate effects of nutritional interventions on basic mechanisms of aging and age-related diseases.

## group

# Hepatic Regenerative Medicine

Group leader: [Dr. Manuel Alejandro Fernández Rojo](#)



## objectives

The research conducted in the Hepatic Regenerative Medicine Group aims to provide 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 led 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.

# Hepatic Regenerative Medicine



**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 PGC1 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**  
Independent researcher

Dr. Maria Ikonomopoulou joined IMDEA-Food Institute in September 2017 as a "Marie Curie" AMAROUT Fellow to lead the "Translational Venomics" Project. In brief, Maria obtained her BSc in Animal Production at the Technological Educational Institute of Western Macedonia in Greece and did part of her degree in the Biotechnology Department at the Teagasc-Moorepark Research Centre in Ireland. Afterwards, she was awarded a MSc in Zoology at the University of Tasmania before completing her PhD in the School of Biomedical Sciences at the University of Queensland in Australia. In 2010, Maria found her research niche in "Venomics", biodiscovery and drug discovery. Her primary focus lies on the identification, characterization & development of anticancer-venom derived compounds. However, her research interests also include the study of venom-compounds with diverse pharmacology such as senolytic and immunomodulatory properties. Currently, since her arrival at the IMDEA-Food institute and due to her innovative research approaches, she has attracted the Biopharma industry and has rapidly expanded her national and international network of collaborations.





## most relevant publications

- Fernández\*\*\*, et al., Manuel A. **Caveolin-1 is Essential for Liver Regeneration**. *Science*, 2006 Sep 15; 313 (5793): 1628-32. Citations: 155

# Recommended in the field of Gastroenterology and Hepatology by the F1000 Faculty.

## Selected as “The Editor’s Choice” by *Science* (SM, Hurtley, *Sci STKE*, 2006), Commented in *Perspectives in Cell Biology* by DL Brasaemle, 2006: “A metabolic push to proliferate”,

- Fernandez-Rojo MA, et al., **Caveolin-1 orchestrates the balance between glucose and lipid-dependent energy metabolism: implications for liver regeneration**. *Hepatology* 2012 May;55(5):1574-84. Citations: 23

# Recommended in the field of Gastroenterology and Hepatology by the F1000 Faculty.

- Fernandez-Rojo MA, et al., **Caveolin-1 is necessary for hepatic oxidative lipid metabolism: evidence for crosstalk between Caveolin-1 and bile acid signaling**. *Cell reports*. 2013, Jul 25;4(2):238-47. Citations: 14

# Recommended in the field of Gastroenterology and Hepatology by the F1000 Faculty.

### Reviews

- Fernandez-Rojo MA\* and Ramm GA.. **Caveolin-1 in hepatocyte biology in liver physiology and disease**. *Trends in Molecular Medicine* 2016. Oct;22(10):889-904.

\*Corresponding author

- Fernandez-Rojo MA\* and Ramm GA. **Filling the gap on Caveolin-1 in liver cancer**. *Trends in Cancer* 2016.

\*Corresponding author

## 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

**Principal Investigator:** Manuel Fernández Rojo

**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 signaling: 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**



### Dr. Cristina Ramírez Hidalgo

Leader of the  
Posttranscriptional  
Regulation  
of Metabolic Diseases  
Group

Cristina M. Ramírez received 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 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.

## 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, recent discoveries have shown the remarkable role of small non-coding RNAs (microRNAs) and RNA binding proteins (RBPs) in the posttranscriptional regulation of metabolism, and their involvement in 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.



### most relevant publications

- Ramírez CM., Sheng-Lin C., Abdelmohsen K., Goedeke L., Yoon JH., Madrigal-Matute J., Martin-Ventura JL., Vo DT., Uren PJ., Penalva LO., Gorospe M., Fernández-Hernando C. **RNA-binding protein HuR regulates expression of ATP-binding cassette transporter A1**. Journal Lipid Research. 2014, Apr 11; 55(6):1066-1076.
- Yeung F, Ramírez CM., Mateos-Gómez PA., Pinzaru A., Ceccarini , Kabir S., Fernández-Hernando C., Sfeir A. **Non-telomeric role for RAP1 in regulating metabolism and protecting against obesity**. Cell Reports. 2013, 3(6):1847-56.
- Ramírez CM., Goedeke L., Rotllan N., Yoon JH., Cirera-Salinas D., Mattison JA., Suárez Y., de Cabo R., Gorospe M., Fernández-Hernando C. **MicroRNA 33 regulates glucose metabolism**. Mol Cell Biol. 2013, 33(15):2891-902.
- Ramírez CM., Rotllan N., Vlassov AV., Dávalos A., Li M., Goedeke L., Aranda JF, Cirera-Salinas D., Araldi E., Salerno A., Wanschel AC., Zavadil J., Castrillo A., Kim J., Suárez Y., Fernández-Hernando C. **Control of cholesterol metabolism and plasma HDL levels by miRNA-144**. Circulation Research. 2013, 112(12):1592-601. \*Article distinguished at cover page. [Editorial on Circ Res. 2013].
- Ramírez CM., González M., Díaz M., Alonso R., Ferrer I., Sampere G., Puig B., Meyer G. and Marín R. **Porine channel (VDAC) is found in human neuronal caveolae together with estrogen receptor and abundant in dystrophic neurons of Alzheimer 's disease brains**. Mol. Cell. Neurosci. 2009, Nov;42(3):172-83.

### main research grants

**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. Scientist Development Grant AHA “James and Donna Dickenson-Sublett Awardee”

**Principal Investigator:** Carlos Fernández-Hernando  
**IMDEA Food participant researcher:** Cristina Ramírez Hidalgo  
**Project Title:** MIRVAD (Role of secreted microRNAs in cardiovascular disease)

**Date:** 2014-2018

**Funded by:** Foundation Leducq-Transatlantic Networks of Excellence EU

**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 and Scientific Coordinator:** 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. Programa INNOVA Canarias 2020

## program highlight

The Precision Nutrition and Aging Program at IMDEA Food investigates how nutrition impacts on the process of aging. The overarching goal of the groups that compose this Program is to understand the molecular mechanisms that connect nutrition and aging, and eventually design scientifically-based nutritional strategies for healthy aging.

Our research cover a wide range of biological topics: from the discovery and development of new bioactive products active against aging-related pathologies, to the dissection of molecular mechanisms involved in degenerative pathologies.

The Program is composed by four Groups, all led by outstanding scientists with a brilliant international career in the field of metabolism and aging-related diseases.

### **Nutritional Interventions Group**

This Group applies the knowledge gained in model organisms to translate nutritional interventions to improve healthy aging. We utilize whole body physiological and tissue-specific molecular approaches to investigate effects of nutritional interventions on basic mechanisms of aging and age-related diseases. Initially, the focus will be on anti-inflammatory compounds, such as disulfiram and polyphenols.

### **Metabolic Syndrome Group**

The main achievement of this Group has been the identification of new bioactive products acting on key nutritional pathways. In particular, it has identified natural products that protect from excessive insulin signalling, and that improve mitochondrial function. Another important focus of this Group is to study the beneficial health effects of metabolic plasticity induced by changes in the nutritional sources, such as ketogenic diets, or transient fasting.

### **Hepatic Regenerative Medicine Group**

This has been an exciting year setting up the foundations of the Group of Hepatic Regenerative Medicine. During these few months, the Group has started to work on liver physiology, liver regeneration and chronic liver diseases. In particular, the Group is focused on the regulation of caveolae in the plasma membrane, which has emerged as a key process for hepatic lipid accumulation.

### **Post-transcriptional Regulation of Metabolism Group**

This Group will start in 2018 and its main focus will be by the role of small non-coding RNAs (microRNAs) and RNA binding proteins (RBPs) in the regulation of metabolism, and their involvement in many pathological states. The goal is to discover and characterize novel molecular mechanisms that underlie dysregulation of lipid metabolism, glucose homeostasis, and inflammation during pathologies such as Alzheimer's disease, diabetes and atherosclerosis.

aging  
nutrition





## research program

# Precision Nutrition and Cancer



### **Dr. Ana Ramírez de Molina**

Deputy Director, 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 scientific 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 Programme 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 extraordinary 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

According to the most recent data published by leading authorities, a high percentage of cancer cases may be preventable. Diet and life style are key factors in cancer prevention, but also exert essential function as coadjutants for cancer patients during and after therapy. Metabolic reprogramming is a hallmark of cancer in which nutritional strategies might play a key role. Thus, it is necessary to develop personalized treatments based in molecular and metabolic alterations, combining complementary precision medicine and nutrition. We understand Precision Nutrition for cancer as highly efficiency products and strategies personalized for specific physiological conditions and population groups. This new way of understand Nutritional Sciences addresses different areas of knowledge including the precise (molecular) mechanism of action of bioactive compounds present in foods, the genetic profile and its impact in the personal susceptibility to develop cancer and respond to specific treatments, as well as the development of specific strategies for current personal physiological conditions.





## group

# Molecular Oncology

Group leader: [Dr. Ana Ramírez de Molina](#)



## objectives

The group is currently focused on two 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 and analyzing 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 fu-

ture cancer therapies, as well as the genetic basis of the relationship between obesity, associated metabolic disorders and cancer.

2. Activity and mechanism of action of bioactive compounds as potential effective dietary supplements in cancer prevention and treatment.

We evaluate the activity and molecular mechanism of action of bioactive compounds that may have a therapeutic use in cancer, either alone or in combination with existing chemotherapy. The aim is to establish the scientific basis for the development of nut.



**Dr. Teodoro Vargas Alonso**  
Postdoctoral researcher

He obtained his PhD in Biochemistry and Molecular Biology at Universidad Complutense de Madrid in 2010 and has joined to IMDEA Food in 2011 in the Molecular Oncology Group for the study of the effects of bioactive components of food on cancer prevention in the research project "Identification of bioactive compounds with anti-tumoral activity in human cancer". Actually, he has working in the identification of genetic markers as predictive factors in the prognosis/diagnosis of patients with cancer and in the identification of bioactive compound with anti-tumoral activity for therapeutic use. In the last years he has published 18 articles in prestigious international journals of his research field, and is co-inventor of 1 patent focused on the development of a genetic signature that was able to predict risk of relapse in colon cancer patients.



**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.



**Dr. Marta Gómez de Cedrón Cardeñosa**  
Postdoctoral researcher

Dr. Marta Gómez de Cedrón, obtained her BSc in Biological Sciences (BSc) at the University of the Basque Country (UPV-EHU). Her PhD training was performed at the National Centre of Biotechnology (CNB-UAM-CSIC) under the supervision of Dr. Juan Antonio García Álvarez (Enzymatic characterization of the cylindrical inclusion protein (CI) of Plum Pox Virus). 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. She investigated the role of Grb7 mutants in the stimulation of angiogenesis in glioblastomas. In 2006, she joined Dr. Marcos Malumbres' group at the Spanish National Cancer Research Centre (CNIO). During this period, she worked in mouse models for depletion (cKO) and overexpression (iKI) of microRNA-203 to investigate its role in skin cancer and leukaemias. She also investigated on the regulation of several important cell cycle regulators by microRNAs. In 2013 she joined Ana Ramírez de Molina's lab at IMDEA Food Institute (Molecular Oncology Group). Her interests are the study of (1) Cell Metabolism alterations (specifically lipid metabolism) in Chronic Diseases related to Nutrition such as Cancer, and (2) the characterization of the Biological Activities of Bioactive Compounds and Plant derived Extracts to be used as supplements in the prevention/treatment in human cancer.



**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 tumorigenesis 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, twelve of them as first author.



**Dr. Clara Ibáñez Ruiz**  
Postdoctoral researcher

Clara Ibáñez Ruiz received her PhD in Chemistry with International Mention from the University of Alcalá (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 metabolic strategies directed towards the search for metabolic biomarkers related to the onset and / or development of different diseases, diagnosis, and preventive 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.



**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 conducive 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.





**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.



**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 Immunology 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.

## Students

**Marta Luengo Redondo.**  
Universidad Autónoma de Madrid

**David Menchen.**  
Universidad Autónoma de Madrid

**Laura Pietrantonio.**  
Universidad Autónoma de Madrid

**Liz Alejandra Ponce Morales.**  
Universidad Autónoma de Madrid

**Amanda Sousa Ruz.**  
Universidad Autónoma de Madrid

**Pablo Mata Martínez.**  
Universidad CEU San Pablo

**Paula Cortés Torres.**  
Universidad Autónoma de Madrid

**Lidia Yamile Jiménez Batista.**  
Universidad Autónoma de Madrid

**Pablo Mata Martínez.**  
Universidad CEU San Pablo

**Ester Sánchez Martín.**  
Universidad de Castilla La Mancha

**Ester Díez Sáinz.**  
Universidad Autónoma de Madrid

**Sara Gutiérrez Pelaz.**  
Instituto de Neurociencias de Castilla y León

**Claudia Flavia García Martín.**  
Universidad Francisco de Vitoria



### most relevant publications

- 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. **J Targeting the metabolic axis ACSL/SCD in colorectal cancer progression by therapeutic miRNAs: miR-19b-1 role.** Lipid Res. 2018 Jan;59(1):14-24.
- 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. 2017 Dec 21;9(5):5919-5930.
- Gómez de Cedrón M, Acín Pérez R, Sánchez-Martínez R, Molina S, Herranz J, Feliu J, Reglero G, Enríquez JA, Ramírez de Molina A. **MicroRNA-661 modulates redox and metabolic homeostasis in colon cancer.** Mol Oncol. 2017 Dec;11(12):1768-1787. doi: 10.1002/1878-0261.
- Sánchez-Martínez, Cruz-Gil S2, García-Álvarez MS, Reglero G, Ramirez de Molina A. **Complementary ACSL isoforms contribute to a non-Warburg advantageous energetic status characterizing invasive colon cancer cells.** Scientific Reports. 2017 Sep 11;7(1):11143.
- Aguirre-Portolés C, Fernández LP, Ramírez de Molina A. **Precision Nutrition for Targeting Lipid Metabolism in Colorectal Cancer.** Nutrients. 2017 Sep 28;9(10). Cover .

### 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)

**Principal Investigators:** Guillermo Reglero Rada and Ana Ramírez de Molina  
**Industrial coordinator:** Galletas Gullón S.A.  
**Project Title:** Personalización de la nutrición para llevar al mercado alimentos de alta eficacia (PRIMICIA)  
**Date:** 2015-2017  
**Funded by:** Programa CIEN, Centro para el Desarrollo Tecnológico Industrial. Ministerio de Economía y Competitividad

## group

# Clinical Oncology

Group leaders: **Dr. Enrique Casado Sáenz** 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 re-

search 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.



**Dr. Enrique Casado Sáenz**  
Associate researcher, IMDEA Food. Group leader of the Clinical Oncology Group

Enrique Casado finished his undergraduate 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 de Madrid and a Coordinating Professor of Oncology in the Universidad Europea de Madrid. 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 Autónoma 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 Moffitt Comprehensive 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 Immunoncology 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) since 3 years ago. She had published several papers and has participated in different translational oncology projects, some of them with public support, as FIS and Plan Nacional.



**Dr. Ana María Jiménez Gordo**  
Associate researcher,  
IMDEA Food

Graduated in Surgery and Medicine at Universidad Autónoma Madrid (1994). Specialty in Medical Oncology at Hospital Universitario La Paz (1998). PhD in Medicine at Universidad Autónoma 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). Hospital Infanta Sofía from 2013. Pfizer Foundation Prize, Clinical Investigation 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 Guidelines. Recently she collaborates in clinical development of the IMDEA Project "Clinical Formulation for individualized nutrition of cancer patients".



**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 scientific journals, and has taken part in international clinical trials in breast and gynecological cancer.



**Dr. Juan Moreno Rubio**  
Postdoctoral researcher,  
IMDEA Food

Currently Coordinator of the Precision Oncology Laboratory (POL) of the Infanta Sofía University Hospital (ISUH), and Researcher in the Group of Molecular Oncology and Nutritional Genomics of Cancer of IMDEA Food. Degree in Molecular Biology and Biochemistry from the Autonomous University of Madrid in 2004, and Doctorate in Biochemistry, Molecular Biology and Biomedicine (Outstanding 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 (LPUH, IdiPaz, group 32). Author or co-author in more than 25 articles in international journals, registered 3 patents and researcher in multiple studies and competitive clinical and translational projects.





### most relevant publications

- Cejas P, Cavazza A, Yandava C, Moreno V, Horst D, Moreno-Rubio J, Burgos E, Mendiola M, Taing L, Goel A, Feliu J, Shivdasani RA. **Transcriptional regulator CNOT3 defines an aggressive colorectal cancer subtype.** Cancer Res. 2017 Feb 1;77(3):766-779.
- Cejas P, Li L, O'Neill NK, Duarte M, Rao P, Bowden M, Zhou CW, Mendiola M, Burgos E, Feliu J, Moreno-Rubio J, Guadajajara H, Moreno V, García-Olmo D, Bellmunt J, Mullane S, Hirsch M, Sweeney CJ, Richardson A, Liu XS, Brown M, Shivdasani RA, Long HW. **Chromatin immunoprecipitation from fixed clinical tissues reveals tumor-specific enhancer profiles.** Nat Med. 2016 Jun;22(6):685-91.
- Casado E, García VM, Sánchez JJ, Blanco M, Maurel J, Feliu J, Fernández-Martos C, de Castro J, Castelo B, Belda-Iniesta C, Sereno M, Sánchez-Llamas B, Burgos E, García-Cabezas MÁ, Manceñido N, Miquel R, García-Olmo D, González-Barón M, Cejas P. **A combined strategy of SAGE and quantitative PCR provides a 13-gene signature that predicts preoperative chemoradiotherapy response and outcome in rectal cancer.** Clinical Cancer Research. 17 - 12, pp. 4145 - 4154. AACR, 2011.
- Ramírez de Molina A, Sarmentero-Estrada J, Belda-Iniesta C, Tarón M, Ramírez de Molina V, Cejas P, Skrzypski M, Gallego-Ortega D, de Castro J, Casado E, García-Cabezas MA, Sánchez JJ, Nistal M, Rosell R, González-Barón M, Lacal JC. **Expression of choline kinase alpha to predict outcome in patients with early-stage non-small-cell lung cancer: a retrospective study.** The Lancet oncology. 8 - 10, pp. 889 - 897. Elsevier, 2007.
- Belda-Iniesta C, Perona R, de Castro Carpeno J, Chattopadhyay S, Casado E, Cejas P, Fresno Vara JA, Moreno Guerra C, Gonzalez Baron M. **Do beta-tubulin pseudogenes really matter?.** The Lancet Oncology. 5 - 5, pp. 271 - 272. Elsevier, 2004. Impact Factor: 31,194. Q1, D1.

### 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

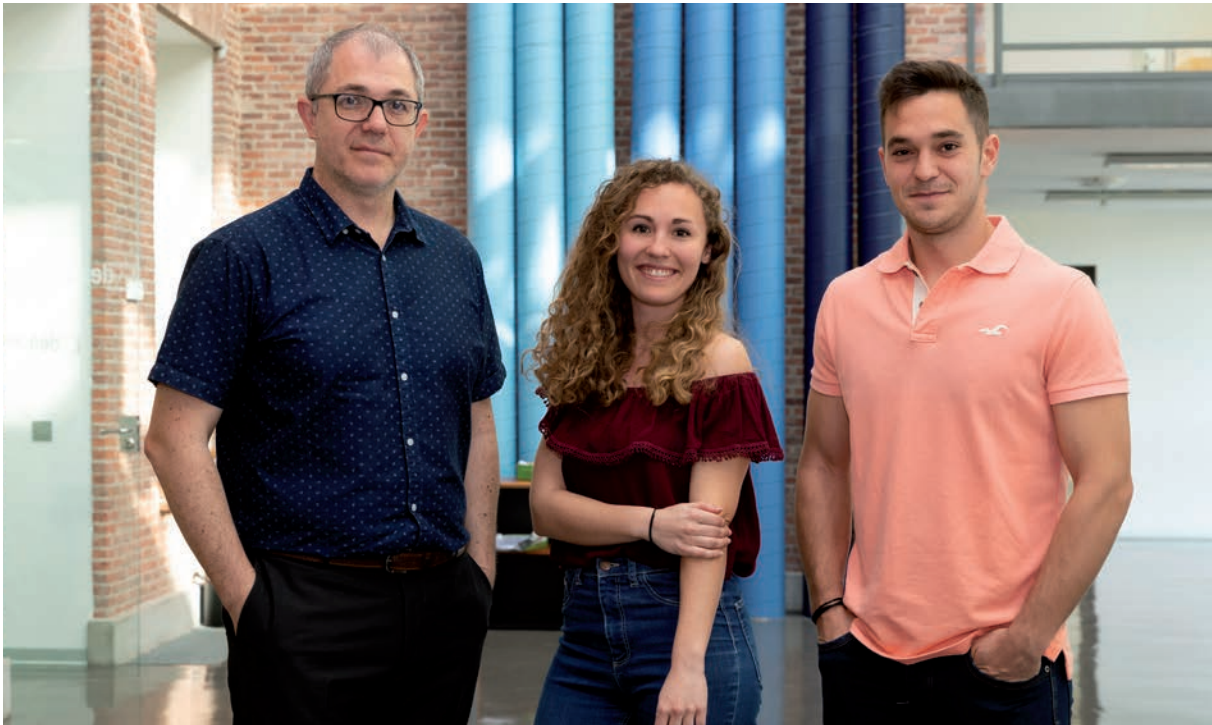
**Principal Investigator:** Jaime Feliu Batlle  
**Project Title:** Análisis de biomarcadores relacionados con la eficacia de las terapias dirigidas al cáncer colorrectal (FIS PI13/01659)  
**Date:** 2014-2017  
**Funded by:** Instituto de Salud Carlos III

**Principal Investigator:** Guillermo Reglero  
**Co-Participant Institutions:** Hospital Universitario Infanta Sofía Hospital Universitario La Paz  
**Project Title:** 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

# Molecular Immunonutrition

Group leader: **Dr. Moisés Laparra Llopis**



## objectives

Immunonutritional-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.



**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 suppression.



**Adriana Quijada Freire**  
Predoctoral researcher

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 sincytial 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.



**Mario Fernández de Frutos**  
Predoctoral researcher

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 the group of Endocrine and Nervous System Pathophysiology at the Biomedical Research Institute "Alberto Sols" (IB-CSIC), where he was responsible for the characterization of double knock out mice model for future studies of the Allan-Herndon-Dudley syndrome, a rare disease with serious neurologic alterations due to deficit of thyroid hormone transport during embryo development. He joined the Molecular Immunonutrition in Cancer group at IMDEA Food as a Ph candidate, focused on new precision therapeutic interventions based on molecular immunonutrition to activate innate immunity in the hepatocellular carcinoma.



**Bartosz Fotschki**  
Visiting researcher, Polish  
Academy of Sciences

Dr. Bartosz Fotschki started his scientific career when he obtained a Master of science in Biotechnology at University of Warmia and Mazury in 2012. After that, he continued his training by obtaining a PhD in Food Science at Polish Academy of Sciences in 2016. During his PhD he received funding from National Science Center in Poland to perform project about raspberry bioactive compounds from pomace and their potential health promoting properties as an additive to diet. Part of the project was done during his internship in the Institute of Food Research in Norwich where he was investigating effect of the raspberry bioactive compounds on liver bile acids synthesis. In 2017 he obtained funding supported from Polish Scientific Consortium "KNOW" to perform a postdoctoral research stage in the Molecular Immunonutrition Group supervised by Dr. Moisés Laparra Llopis in the IMDEA Food Institute. His focus of interest is the effect of diet constituents on the functioning of the alimentary tract, usability of various nutritional interventions in health prophylaxis and verification of their efficacy in reducing liver metabolic disorders related with regulation of the bile acid synthesis and lipid metabolism.

## Visiting researchers

**Dr. Bartosz Fotschki.**  
Polish Academy of Sciences

## Students

**Lorena Alejandra Lee Pellecer.**  
Universidad Autónoma  
de Madrid

**Sandra Lozano Pacual.**  
Universidad Autónoma  
de Madrid

**Angela Mera.**  
Universidad Autónoma  
de Madrid

**Sara Vivas.**  
Universidad Autónoma  
de Madrid

**Laura Lorente Romeral.**  
Universidad Autónoma  
de Madrid

**Nuria Zalckwar Diment.**  
Universidad Autónoma  
de Madrid

**Lucía Martínez Carreras.**  
U. Francisco de Vitoria -  
Fundacion AECC





## most relevant publications

- Kaliszewska A, Martinez V, Laparra JM. **Proinflammatory responses driven by non-gluten factors are masked when they appear associated to gliadins.** Food Chem Toxicol. 2016, 95:89-95.
- Alemany L, Barbera R, Alegría A, Laparra JM. **Plant sterols from foods in inflammation and risk of cardiovascular disease: a real threat?** Food Chem Toxicol. 2014, 69:140-9.
- Laparra JM, Olivares M, Sanz Y. **Oral administration of Bifidobacterium longum CECT 7347 ameliorates gliadin-induced alterations in liver iron mobilisation.** Br J Nutr. 2013, 110(10):1828-36.
- Olivares M, Laparra M, Sanz Y. **Oral administration of Bifidobacterium longum CECT 7347 modulates jejunal proteome in an in vivo gliadin-induced enteropathy animal model.** J Proteomics. 2012, 77:310-20.
- Laparra JM, Vélez D, Barberá R, Farré R, Montoro R. **Bio-availability of inorganic arsenic in cooked rice: practical aspects for human health risk assessments.** J Agric Food Chem. 2005, 53(22):8829-33.

## main research grants

**Principal Investigator:** Moisés Laparra Llopis

**Project Title:** Molecular immunonutrition of the metabolic dysfunction and antitumoral response

**Date:** 2016–2021

**Funded by:** Ministerio de Economía y Competitividad. Ayudas para contratos Ramón y Cajal (RYC-2015-18083)

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**Principal Investigator:** Mónica Haros

**IMDEA Food participant investigator:** Moisés Laparra Llopis

**Project Title:** Development of novel ingredients from Quinoa and Chia for food formulation: Evaluation of Nutritional and health features

**Date:** 2016–2019

**Funded by:** Ministerio de Economía y Competitividad. Programa Estatal De Investigación, Desarrollo e Innovación Orientada a los Retos de la Sociedad (AGL2016-75687-C2-1-R)

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**Principal Investigator:** Lisardo Bosca Gomar (UCM)

**IMDEA Food participant investigator:** Moises Laparra Llopis

**Project Title:** Consortium for the study of acute renal dysfunction: physiopathology, novel therapies, biomarkers and experimental models

**Granting date:** December 2017

**Funded by:** Consejería de Educación e Investigación. Comunidad de Madrid (B2017/BMD-3686)

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## group

## Computational Biology

Group leader: **Dr. Enrique Carrillo de Santa Pau**



## objectives

Our group aims to develop and apply integrative bioinformatic analyses to study the impact of nutritional behaviours on health and complex diseases (cancer, cardiovascular diseases,...). Bioinformatics will help us to understand the complexity of the relationships between food, genes and disease, which will allow establishing precision personalized nutrition strategies based on individual molecular background. Our research is focused on:

- The development of bioinformatic tools to integrate large genomic, epigenomic and clinical datasets
- The study of nutrition imprinting in healthy and disease status at genomic, epigenomic and transcriptomic levels
- The application of molecular knowledge acquired into precision personalized nutrition strategies

## Members

**Gonzalo Colmenarejo Sánchez**  
Senior biostatistician

**Roberto García Hernández**  
Bioinformatic,  
predoctoral researcher



### 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.

### most relevant publications

- Isidoro Cobo; Paola Martinelli; Marta Flan-dez; Latifa Bakiri; Mingfeng Zhang; Enrique Carrillo-de-Santa-Pau; Jinping Jia; Liv Thom-mesen; Torunn Bruland; Natalia del Pozo; et al. **Transcriptional regulation by NR5A2 links differentiation and inflammation in the pan-creas.** *Nature*. 10.1038/nature25751, Nature Publishing Group, 2018. Available on-line at: <<http://dx.doi.org/10.1038/nature25751>>
- Enrique Carrillo-de-Santa-Pau\*; David Juan\*; Vera Pancaldi; Felipe Were; Ignacio Martin-Subero; Daniel Rico; Alfonso Valencia; BLUE-PRINT Consortium. **Automatic identification of informative regions with epigenomic changes associated to hematopoiesis.** *Nucleic acids research*. 45 - 16, pp. 9244 - 9259. Oxford University Press, 2017.  
\*Co-First authors
- David Juan\*; Juliane Perner\*; Enrique Carrillo de Santa Pau\*; Simone Marsili\*; David Ochoa; Ho-Ryun Chung; Martin Vingron; Daniel Rico; Alfonso Valencia. **Epigenomic co-localization and co-evolution reveal a key role for 5hmC as a communication hub in the chromatin network of ESCs.** *Cell reports*. 14 - 5, pp. 1246 - 1257. Cell Press, 2016.  
\*Co-First authors
- Vera Pancaldi; Enrique Carrillo-de-Santa-Pau; Biola Maria Javierre; David Juan; Peter Fraser; Mikhail Spivakov; Alfonso Valencia; Daniel Rico. **Integrating epigenomic data and 3D genomic structure with a new measure of chromatin assortativity.** *Genome biology*. 17 - 1, pp. 152 - 152. BioMed Central, 2016.
- Laia Richart; Enrique Carrillo-de Santa Pau; Ana Río-Machín; Mónica P De Andrés; Juan C Cigudosa; Víctor J Sánchez-Arévalo Lobo; Francisco X Real. **BPTF is required for c-MYC transcriptional activity and in vivo tumorigenesis.** *Nature communications*. 7, pp. 10153 - 10153. Nature Publishing Group, 2016.

### main research grants

**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 Consumo. 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 Development of the European Commission (FP7/ No282510)

## program highlight

The final 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.

To that end, the Molecular Oncology 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 potential therapeutic activity (FORCANCER), and the other one included in a multicentric study analyzing the clinical relevance of nutritional habits in breast cancer patients (MAMANUT). The product under the clinical trial of FORCANCER has been interantionally patented (PCT/ES2017/070263) with a preliminar favorable report of the european agency.

In the last few years immunotherapy has become an important part of cancer treatment. 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. In this outstanding area or research, the Molecular Immunonutrition Group aims at developing immunonutritional-based precision intervention strategies 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 immunity's amplitude of signaling within the neuro-immunometabolic axis.

Finally, we have incorporated a Computational Biology Group, since this complex disease requires a multidisciplinary research including applied mathematics, statistics 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.

nutrition





research program

# Precision Nutrition and Obesity



**Prof. José María Ordovás Muñoz**

Director of the Precision Nutrition and Obesity Program and Group leader of the Nutritional Genomics and Epigenomics Group

José M. Ordovás, PhD, is Professor of Nutrition and Genetics and a Senior Scientist at the USDA-HNRCA at Tufts in Boston, and Director of the Nutrition and Genomics Laboratory. Dr. Ordovás graduated from the University of Zaragoza and did postdoctoral work at the MIT, Harvard and Tufts. He has published over 700 scientific articles in peer review journals (h-index 92) and written numerous reviews and books. In this regard, he is considered one of the most distinguished world experts in gene-diet interactions related to cardiovascular traits. Throughout his career, Dr. Ordovás has received multiple honors for his scientific achievements. He has been awarded 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.

## objectives

Diet and exercise play an important role in the development and treatment of obesity and its comorbidities; however, it is well known that there is a dramatic inter-individual variability in the response to any therapeutic diet or physical regime aimed to prevent obesity and/or return to a healthy body weight. In order to understand an individual's susceptibility to becoming obese and their responsiveness to weight loss interventions we need to generate new knowledge at the molecular level using the tools provided by genetics and epigenetics as well as other omics, such as metabolomics. Most important in the current obesity epidemics is the fact that obesity begins early in life; therefore is of paramount importance that we understand the neurobiological factors that drive childhood obesity in order to decrease the current rates both at early ages as in the aging population. It is precisely the later group that is being most seriously affected by the comorbidities of obesity (i.e., diabetes, cardiovascular diseases and cancer); therefore, until such time that the developments of Precision Nutrition, in particular, and precision medicine in general, provide the means to prevent those diseases we need to develop better measures to improve the quality of life of those already in the elderly category and this can be done with the information provided by longitudinal cohorts designed to provide solid information about the current risk factors and facilitate the pathway to a healthy aging.





## 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 how diet is able to modulate the obesogenic epigenome.



**Dr. Lidia A. Daimiel Ruiz**  
Postdoctoral researcher

Dr. Lidia Daimiel Ruiz developed her PhD at Biochemistry–Research department at Hospital Ramón y Cajal, studying the role of cholesterol as regulator of gene expression. She contributed to the development of the Cholestchip™ array tool. She obtained her PhD in Cell Biology and Genetics in 2010 at Universidad Autónoma de Madrid. Then, she joined IMDEA Food as a postdoctoral researcher to study the role of diet and dietary compounds as modulator of epigenetic mechanisms, with a focus on microRNAs related to cardiovascular disease, under the supervision of Prof. José M<sup>o</sup> Ordovás. In 2016 she made an internship at the Carlos Fernández-Hernando's laboratory in the Vascular Biology and Therapeutics program at Yale School of Medicine. She is currently a senior researcher at Prof. Ordovas' group where she is development the PREDIMED-PLUS study with the role of Principal Investigator. In the last years, she has described the dietary-mediated modulation of several microRNAs such as miR-107, miR-192, miR-30c and miR-21. Her studies have also made great contributions to the issue of exogenous plant microRNAs and their role in human physiology. She is currently supervising three thesis projects and plays an active role as supervisor of bachelor and master students from national and international universities.



**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.



**Víctor Micó Moreno**  
Predoctoral researcher

Victor Micó Moreno studied at Complutense University of Madrid where he completed his degree in Human Nutrition and Dietetics (2010). Later, at Balearic Islands University, he completed the Nutrigenomics and Personalized Nutrition Master (2011) where he presented his final project: "Maternal caloric restriction during lactation can affect muscle metabolism in the offspring depending on gender and diet". Finally, at Autónoma University of Madrid, he completed his degree in Food Science and Technology (2013). 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". In April 2014, Víctor joined IMDEA Food Insitute's in the Nutritional Genomics and Epigenomics Group as a predoctoral researcher where he currently studies the effect of Caloric restriction on epigenetic mechanism and their influence on cardiovascular health and healthy aging.



**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 Biolron Meeting, held in Los Angeles, about her master thesis. 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

Bachelor'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 PREDIMED-PLUS "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 Advancement 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 degree in Pathology and Cytology Technician (2015) at the IES San Juan de la Cruz (Madrid). She realized 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 Rúa. 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, where she supports Nutritional genomics and epigenomics group and various projects.

## Students

**Fátima Fernández de la Cerda.**  
Universidad CEU San Pablo

**Ana Llantada Alamin.**  
Universidad CEU San Pablo

**José Antonio Celada Guerrero.**  
Universidad Autónoma de Madrid

**Verónica Onidi.**  
Universidad Autónoma de Madrid

**Lucía Izquierdo Díaz.**  
Universidad Autónoma de Madrid

**María Pastor.**  
Universidad Autónoma de Madrid

**Cristina Jaén Calvo.**  
Universidad Autónoma de Madrid

**Victor Ferrer Sánchez.**  
Universidad CEU San Pablo

**Cristina Jaén Calvo.**  
Universidad Autónoma de Madrid

**Ana M<sup>o</sup> Sánchez Randulfe.**  
Universidad CEU San Pablo

**Carmen Fernández Márquez.**  
Universidad CEU San Pablo

**Javier Tapia Belloso.**  
Universidad de Zaragoza

## most relevant publications

- Canfrán-Duque A, Rotllan N, Zhang X, Fernández-Fuertes M, Ramírez-Hidalgo C, Araldi E, Daimiel L, Busto R, Fernández-Hernando C, Suárez Y. **Macrophage deficiency of miR-21 promotes apoptosis, plaque necrosis, and vascular inflammation during atherogenesis.** *EMBO Mol Med.* 2017 Sep;9(9):1244-1262. doi: 10.15252/emmm.201607492.
- Rosique-Esteban N, Díaz-López A, Martínez-González MA, Corella D, Goday A, Martínez JA, Romaguera D, Vioque J, Arós F, García-Ríos A, Tinahones F, Estruch R, Fernández-García JC, Lapetra J, Serra-Majem L, Pinto X, Tur JA, Bueno-Cavanillas A, Vidal J, Delgado-Rodríguez M, Daimiel L, Vázquez C, Rubio MÁ, Ros E, Salas-Salvado J; **PREDIMED-PLUS investigators. Leisure-time physical activity, sedentary behaviors, sleep, and cardiometabolic risk factors at baseline in the PREDIMED-PLUS intervention trial: A cross-sectional analysis.** *PLoS One.* 2017 Mar 8;12(3):e0172253. doi: 10.1371/journal.pone.0172253.
- Micó V, Martín R, Lasunción MA, Ordovás JM, Daimiel L. **Unsuccessful Detection of Plant MicroRNAs in Beer, Extra Virgin Olive Oil and Human Plasma After an Acute Ingestion of Extra Virgin Olive Oil.** *Plant Foods Hum Nutr.* 2016 Mar;71(1):102-8. doi: 10.1007/s11130-016-0534-9.
- Blanco-Rojo R, Delgado-Lista J, Lee YC, Lai CQ, Perez-Martinez P, Rangel-Zuñiga O, Smith CE, Hidalgo B, Alcalá-Díaz JF, Gomez-Delgado F, Parnell LD, Arnett DK, Tucker KL, Lopez-Miranda J, Ordovas JM. **Interaction of an S100A9 gene variant with saturated fat and carbohydrates to modulate insulin resistance in 3 populations of different ancestries.** *Am J Clin Nutr.* 2016 Aug;104(2):508-17. doi: 10.3945/ajcn.116.130898. Epub 2016 Jul 20.
- Aslibekyan S, Demerath EW, Mendelson M, Zhi D, Guan W, Liang L, Sha J, Pankow JS, Liu C, Irvin MR, Fornage M, Hidalgo B, Lin LA, Thibault KS, Bressler J, Tsai MY, Grove ML, Hopkins PN, Boerwinkle E, Borecki IB, Ordovas JM, Levy D, Tiwari HK, Absher DM, Arnett DK. **Epigenome-wide study identifies novel methylation loci associated with body mass index and waist circumference.** *Obesity (Silver Spring).* 2015 Jul;23(7):1493-501. doi: 10.1002/oby.21111.

## 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



# Predimed-Plus Project

Principal investigator: Lidia Daimiel Ruiz



## objectives

PREDIMED-PLUS is a nutritional interventional clinical trial aimed to study the effect of a combined intervention with **hypocaloric Mediterranean Diet (MedD), Physical Activity (PhA) and behavioral therapy on the primary prevention of Cardiovascular Disease (CVD)** in comparison with a non-intensive intervention based in advises to follow a MedD, given in the context of primary care. PREDIMED-PLUS is a multidisciplinary, multicenter, randomized, paralleled intervention conducted by 23 research centers of Spain that have recruited 6874 participants, men and women (55-75 and 60-75 years old, respectively) with obesity/overweight and Metabolic Syndrome (MetS). Under the direction of Dr. Lidia Daimiel, IMDEA Food is a recruitment and intervention center that has recruited 169 participants thanks to the development of a

collaboration network that includes more than 50 physicians and nurses of 6 Primary Care Centers of Madrid. Along 2017, all participants of PREDIMED-PLUS IMDEA have completed 1 year of intervention. Currently, PREDIMED-PLUS consortium is carrying out cross-sectional analyses at basal time to elucidate how lifestyle factors impact on clinical parameters related, not only with CVD, but also with diabetes or MetS, as well as with cognitive function and quality of life. Additionally, the impact of the intervention on primary and secondary events at short term (6 and 12 months of follow-up) is being analyzing and results will be published in the near future. All information about PREDIMED-PLUS study and protocol can be found at <http://www.predimedplus.com/>

## group

**Neuroendocrinology of Metabolism****Group leader: Prof. Dr. Jesús Argente Oliver**

**Prof. Dr. Jesús Argente Oliver**  
Group Leader

He is 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 Pediatric Endocrinology and Director of the Laboratory of Research at the Niño Jesús University Hospital in Ma-

drid, Spain and 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. Pilar Argente Arizón**  
Postdoctoral researcher

Dr. Pilar Argente Arizón obtained her BSc in Veterinary Sciences at the University of Zaragoza in 2009, then she developed a MSc in the School of Food and Nutritional Sciences at the University of Reading, UK (2011). In 2016, she obtained her PhD in Medicine and Surgery from

the Autonomous University of Madrid (UAM), Spain, under the direction of Prof. Jesús Argente and Dr. Julie A. Chowen. Her Thesis was focused on the effects of early overnutrition and hormonal changes on long term metabolic health and at the cellular level, she investigated how astrocytes respond to specific nutrients to affect metabolism and neuroinflammation. During her PhD training, she enjoyed a research stay in the Neurobiology of Metabolism Program at Yale School of Medicine under the supervision of Prof. T.L. Horvath. Her PhD results generated the publication of more than ten papers in international peer-reviewed journals of high impact. In June 2017, she joined IMDEA Neuroendocrinology of Metabolism Group within the Precision Nutrition and Obesity Program as a Postdoctoral Researcher to investigate the interaction between genetics and nutrition on metabolic and health outcomes.

**objectives**

Our strategic objectives are as follows:

1. To understand the causes of childhood obesities, including epigenetics, genetics, genomics and metabolic influences.
2. To investigate the interaction between genetics and nutrition on metabolic and health outcomes.
3. To analyze comorbidities in children with severe early onset obesity.
4. We use animal models to try to understand the effects of early nutrition and hormonal changes on long-term metabolic health. At a cellular level, we are interested in how the brain, especially glial cells, respond to specific nutrients to affect metabolism and neuroinflammation.





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.



**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 Lopez-García**  
Associate Researcher,  
IMDEA Food

Esther Lopez-García, PhD, MPH, Mh-Pharm 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-García 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-García 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**  
Postdoctoral researcher

David Martínez-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 Education, 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 Martínez-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

- Rodríguez Artalejo F, Lopez Garcia E. **Coffee consumption and cardiovascular disease: a condensed review of epidemiological evidence and mechanisms.** J Agric Food Chem. 2017 Dec 25. doi: 10.1021/acs.jafc.7b04506. [Epub ahead of print]. PMID: 29276945
- Garrido-Miguel M, Caverro-Redondo I, Álvarez-Bueno C, Rodríguez-Artalejo F, Moreno Aznar L, Ruiz JR, Martínez-Vizcaino V. **Prevalence and trends of thinness, overweight and obesity among children and adolescents aged 3-18 years across Europe: a protocol for a systematic review and meta-analysis.** BMJ Open. 2017 Dec 21;7(12):e018241. doi: 10.1136/bmjopen-2017-018241. PMID: 29273660.
- Sánchez-Martínez M, Cruz JJ, Graciani A, López-García E, Rodríguez-Artalejo F, Banegas JR. **Pulse Wave Velocity and Central Blood Pressure: Normal and Reference Values in Older People in Spain.** Rev Esp Cardiol (Engl Ed). 2017 Dec 7. pii: S1885-5857(17)30543-1. doi: 10.1016/j.rec.2017.11.011. PMID: 29233490.
- Andrade-Gómez E, García-Esquinas E, Ortolá R, Martínez-Gómez D, Rodríguez-Artalejo F. **Watching TV has a distinct sociodemographic and lifestyle profile compared with other sedentary behaviors: A nationwide population-based study.** PLoS One. 2017 Dec 5;12(12):e0188836. doi: 10.1371/journal.pone.0188836. eCollection 2017. PMID: 29206883.
- Proctor GB, Andre P, Lopez-Garcia E, Gomez Cabrero Lopez D, Neyraud E, Feart C, Rodriguez Artalejo F, Garcia-Esquinas E, Morzel M. **The SALAMANDER project: SALivAry bioMarkers of mediterranean Diet associated with long-TERM protection against type 2 diabetes.** British Nutrition Foundation Nutrition Bulletin 2017;42: 369–374.



## program highlight

During 2017, the Precision Nutrition and Obesity Research Program has incorporated two Postdoctoral Researchers, one of them through a *Ramon y Cajal* contract; and one predoctoral researcher and one laboratory technician through the *Garantia Juvenil* Program cofounded by the Community of Madrid.

Researchers from the Nutritional Genomics and Epigenomics group published 23 articles in 2017, 65% of these covered by the Q1 del Science Citation Index, achieving an average impact factor of 4.38. Dr. Lidia Daimiel, a researcher from the Nutritional Genomics and Epigenomics group, is the Principal Investigator of the PREDIMED Plus Project (IMDEA Food node), who received in 2017 financing from Instituto de Salud Carlos III (PREDIMED + DM PFIS PI17/00508) to continue this Project. At present, all the subjects participating in the IMDEA Food node of PREDIMED Plus has completed the first year of the intervention.

About the group on Cardiovascular and Nutritional Epidemiology, their researchers have published 33 articles in peer-reviewed Journals during 2017; of them, 20 articles corresponded to Journals within Q1 of the Science Citation Index. Moreover, Dr. Pilar Guallar obtained a competitive grant from the annual FIS call (Instituto de Salud Carlos III, PI17/01709) and the group renewed the funding from the CIBER of Epidemiology and Public Health. Finally, during 2017 this group finished the recruitment of participants in the ENRICA-seniors II study, a cohort of 3.000 community-dwelling older people in Madrid. The second wave of data collection in this cohort will start in the fall of 2018.

highlight





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alimentación

ciencia  
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NYAL  
plataforma de genómica  
nutricional y alimentación

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## research program

# Precision Nutrition and Cardiometabolic Health



### **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 20.000 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 > 60); He has ben 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 PRECISION Program (Personalized Related Energo- mics and Cardiometab- olics: interactions Involving In- heritance Obesity and Nutrition) is focused on:

- Optimize and appraise available resources and databases from Diogenes; Nugenob, Predimed, Worldmethylepi- genome and Preview cohorts to better understand ge- netic and epigenetic outcomes involved in obesity and cardiometabolic adverse traits.
- Analyze and implement newer metabolic biomarkers with diagnostic, prognostic and therapeutical potential value including the design and definition of Precision Nutrition guidelines.
- Investigate with global perspectives the interactions including shared mechanisms and triggering common physiopathological pathways among obesity with liver disease and cancer.
- Integration of nutriomics and metagenomics approaches to understand the phenotypical interactions and respon- ses to specific nutrients and diets involving nutrigenetic and nutri-genomic outcomes.





## group

## Cardiometabolic Nutrition

Group leader: Prof. Alfredo Martínez Hernández

### Students

Pamela Todendi. Universida  
de Federal de Ciências da  
Saude da Porto Alegre/UFCSPA



### 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 genotypical 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 investigation of newer metabolomic biomarkers is essential to progress in the evaluation of patient's metabolic dysfunctions and unhealthy conditions, which will enable to better define health and disease statuses and discriminate responders from non-responders to a given nutritional prescription. 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.

## most relevant publications

- 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. [Epub ahead of print] PubMed PMID: 29580070.
- 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. Epub 2017 Dec 5. PubMed PMID: 29331538.
- San-Cristobal R, Navas-Carretero S, Celis-Morales C, Livingstone KM, Stewart-Knox B, Rankin A, Macready AL, Fallaize R, O'Donovan CB, Forster H, Woolhead C, Walsh MC, Lambrinou CP, Moschonis G, Manios Y, Jarosz M, Daniel H, Gibney ER, Brennan L, Gundersen TE, Drevon CA, Gibney M, Marsaux CFM, Saris WHM, Lovegrove JA, Frewer LJ, Mathers JC, Martinez JA; Food4Me Study. **Capturing health and eating status through a nutritional perception screening questionnaire (NPSQ9) in a randomised internet-based personalised nutrition intervention: the Food4Me study.** *Int J Behav Nutr Phys Act.* 2017 Dec 11;14(1):168. doi: 10.1186/s12966-017-0624-6. PubMed PMID: 29228998; PubMed Central PMCID: PMC5725967.
- Swindell N, Mackintosh K, McNarry M, Stephens JW, Sluik D, Fogelholm M, Drummen M, MacDonald I, Martinez JA, Handjieva-Darlenska T, Poppitt SD, Brand-Miller J, Larsen TM, Raben A, Stratton G. **Objectively Measured Physical Activity and Sedentary Time Are Associated With Cardio-metabolic Risk Factors in Adults With Prediabetes: The PREVIEW Study.** *Diabetes Care.* 2018 Mar;41(3):562-569. doi: 10.2337/dc17-1057. Epub 2017 Nov 20. PubMed PMID: 29158249.
- González-Muniesa P, Martínez-González MA, Hu FB, Després JP, Matsuzawa Y, Loos RJF, Moreno LA, Bray GA, Martínez JA. **Obesity.** *Nat Rev Dis Primers.* 2017 Jun 15;3:17034. doi: 10.1038/nrdp.2017.34. Review. PubMed PMID: 28617414.

## main research grants

**Principal Investigator:** Jose Alfredo Martínez Hernández  
**Project Title:** Nutrición personalizada y biomarcadores nutrigenómicos de la inflamación asociada a la dieta y la obesidad. Papel de nutrientes, adiposidad y edad  
**Date:** 2014-2016  
**Funded by:** MINECO

**Principal Investigator:** University College Dublin  
**Participating Investigator:** Jose Alfredo Martínez Hernández, Universidad de Navarra  
**Project Title:** Food4me. Personalized Nutrition: An integrated analysis of opportunities and challenges for personalised nutrition  
**Date:** 2011-2015  
**Funded by:** FP7-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.

## Students

**Raquel Aguado Puertas.**  
Universidad Autónoma  
de Madrid

**Elena Garicano Vilar.**  
Universidad Autónoma  
de Madrid

**Carlos Rodríguez.**  
Universidad Autónoma  
de Madrid



**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 19 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

M<sup>a</sup> 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. Her publication record shows 13 papers.



### most relevant publications

- Calder P., Bosco N., Bourdet-Sicard R., Capuron L., Delzenne N., Doré J., Franceschi C., Lehtinen M.J., Recker T., Salvioli S., and Visioli F. **Health relevance of the modification of low grade inflammation in ageing (inflammageing) and the role of nutrition.** Ageing Research Reviews (2017) 40:95-119.
- Crespo M.C., Tomé-Carneiro J., Pintado C., Dávalos A., Visioli F., and Burgos-Ramos E. **Hydroxytyrosol restores proper insulin signaling in an astrocytic model of Alzheimer’s disease.** BioFactors (2017) 43:540-548
- Tomé-Carneiro J., Crespo M.C., García-Calvo E., Luque-García J.L., Dávalos A., and Visioli F. **Proteomic evaluation of mouse adipose tissue and liver following hydroxytyrosol supplementation.** Food and Chemical Toxicology (2017) 107(Pt A):329-338.
- 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, in press.
- García-Blanco T., Dávalos A., and Visioli F. **Tea, cocoa, coffee, and affective disorders: vicious or virtuous cycle?.** Journal of Affective Disorders (2017) 224:61-68

### 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

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**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

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

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**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 cognitivo en el envejecimiento  
**Date:** 2018-2020  
**Funded by:** Agencia Estatal de Investigación. Ministerio de Economía, Industria y Competitividad

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## group

# Epigenetics of Lipid Metabolism

Group leader: [Dr. Alberto Dávalos Herrera](#)



## objectives

Our group aims is to understand how different non-coding 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. 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.





**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 atherosclerosis 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. 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 oenological BAL and vineyard ecosystem fungi enzymatic extracts. During her post-doctoral period, first, she evaluated of probiotic and immunomodulatory activity of oenological 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.



**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 miRNAs 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 find 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 Environmental 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.

## **Students**

**Diana Carolina Mantilla Escalante.**

Universidad Autónoma de Madrid

**Andrea del Saz Lara.**

Universidad Castilla La Mancha

**Inés Ruiz Pérez.**

Universidad de Navarra



## most relevant publications

- Tomé-Carneiro J, Crespo MC, Iglesias-Gutierrez E, Martín R, Gil-Zamorano J, Tomas-Zapico C, Burgos-Ramos E, Correa C, Gómez-Coronado D, Lasunción MA, Herrera E, Visioli F, Dávalos A. **Hydroxytyrosol supplementation modulates the expression of miRNAs in rodents and in humans.** J Nutr Biochem. 2016 Aug;34:146-55.
- 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, Martín-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.

## 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 intercellular 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 physiopathological 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:** Rodríguez Canul, R del P.

**Participant Investigator:** Alberto Dávalos

**Project Title:** Anti-inflammatory and healing activity of sea cucumber (*Isostichopus badionotus*) in a mouse model: characterization of its pharmacological activity and molecular mechanism (Intesti-nAhRuNg)

**Date:** 2014-2017

**Funded by:** Consejo Nacional de Ciencia y Tecnología (Conacyt), Mexico. (221734)

**Principal Investigator:** Maria das Graças Tavares do Carmo

**Participant Investigator:** Alberto Dávalos

**Project Title:** Cardiovascular Disorders and Nutrigenomics: relationship between miRNAs and dietary fatty acids in the control of lipid metabolism

**Date:** 2014-2015

**Funded by:** FAPERJ - Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro (Edital FAPERJ N.º 32/2013)

## program highlight

This Precision Program has as its main focus the maintenance of high standards of research related to Precision Nutrition employing genetic, epigenetic, proteomic and metabolomic approaches, always taking into consideration issues related to phenotype, genotype and life-style factors.

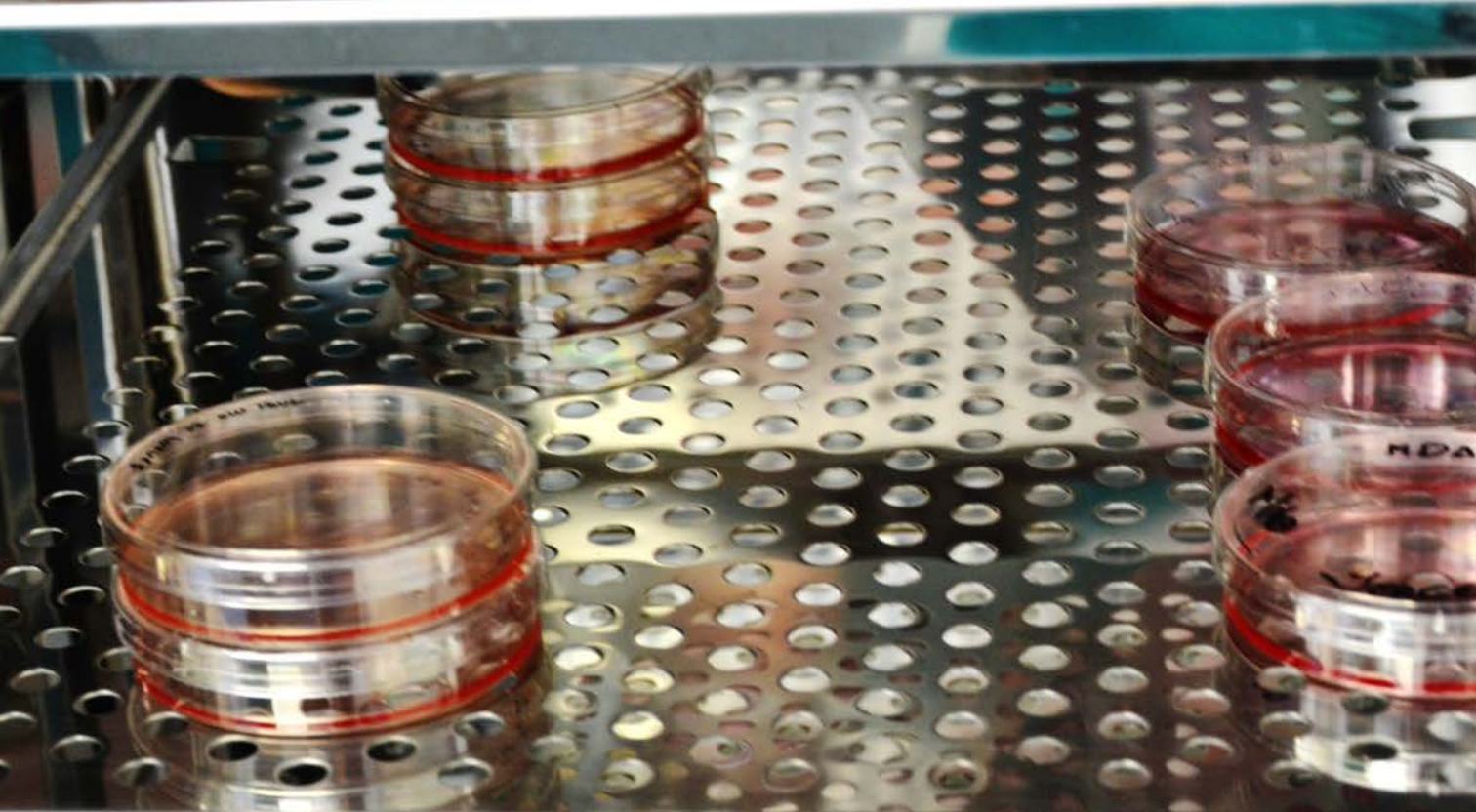
During this period, researchers from the Cardiometabolic Nutrition group have been involved in the development of two awarded European projects: STOP (Science and Technology in childhood Obesity Policy) and SWEET (Better control in Pediatric and Adolescent diabeteS: Working to crEate CEnTers of Reference).

The Bioactive Ingredients Food group has been awarded a Ministry of Health-funded project (in collaboration with the CSIC and the University of Sevilla) to study human milk and its bioactive components. One of the goals is to incorporate such bioactives into formulas for pre-term babies. Moreover, the group completed a former project aimed at assessing the effect of a patented milk fat globule membrane formulation on cognitive decline. Some high-level papers have been published.

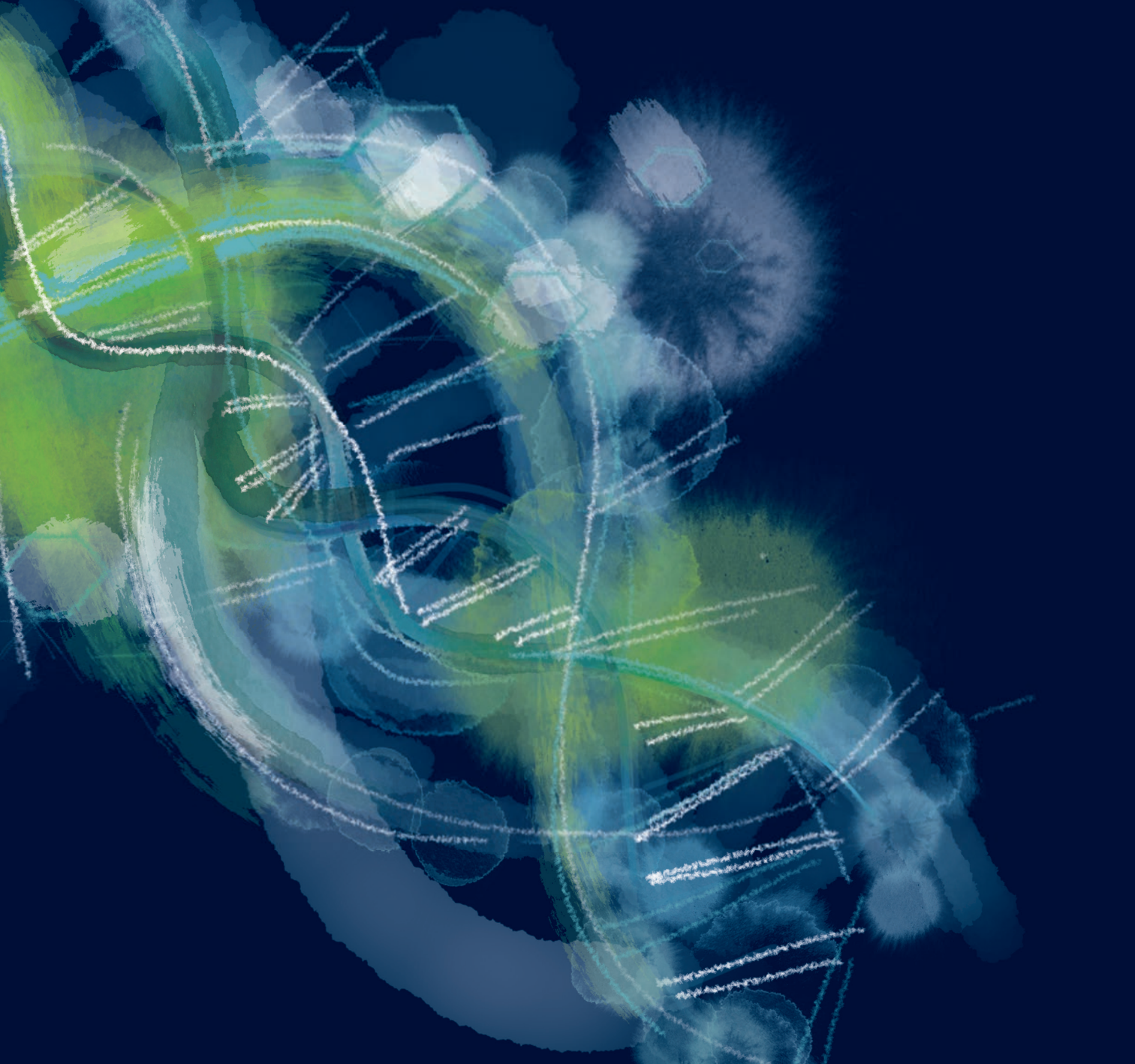
Last but not least, the Epigenetics of Lipid Metabolism group has started a competitive research project financed by the Fundación Ramón Areces on the topic of “exosomes and lipid metabolism”. Our research group has joined the COST Action European Network “Epitrán” to study the role of RNA modifications. Regarding the attraction of scientific talent through competitive programs, this group has been awarded and secured 3 new investigators, two via the Comunidad de Madrid Programmes and one via the Marie Skłodowska-Curie Actions Global Fellowship.

highlight









annual report

2017

[www.food.imdea.org](http://www.food.imdea.org)

# 5.

# technological platforms and technology transfer

1. Innovation & Communication unit [?]

2. GENYAL platform [?]

3. Precision for Health. P4H [?]

# Innovation and Communication Unit



**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 Autónoma 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 Genit 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 260 original research articles and 3 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 Gastronomía 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





# Innovation and Communication Unit

Director: **Guillermo Reglero Rada**

Deputy Director: **Ana Ramírez de Molina**



As a powerful tool to develop the four pillars of this unit – innovation, education, communication and business creation- it conveys and centralizes the integration of the activities developed within the EIT Food business plan.

**EIT Food** constitutes an international association of more than 50 partners which includes institutions belonging to the three pillars of knowledge: academia, industry and research institutions. This integrated infrastructure allows the development of joint innovative food products and services with a customer-centric vision, aiming to provide solutions to grand challenges that the European Food ecosystem needs to face in the coming years, such as:

- Overcoming low consumer trust
- Creating consumer-valued food for healthier nutrition
- Building a consumer-centric connected food system
- Enhancing sustainability through resource stewardship
- Educating to engage, innovate and advance
- Catalyzing food entrepreneurship and innovation

The scientific networking is enhanced through the participation in other international groups of experts such as:

- IberoAmerican network for the integral use of underutilized indigenous foods (ALSUB-CYTED)
- Expert group: Holistic approached to develop alternative strategies that do not rely on additional animal testing. ILSI Europe



In addition, industrial partnership is reinforced through projects such as 2 industrial doctorates which contribute to the development of translational research with the tutoring of PhD students in the development of innovative solutions in the field of precision nutrition. Moreover, the unit integrates the Cooperative R+D+I Activity Laboratory (LACID, according to its Spanish initials), that provides a framework for cooperation between the IMDEA Food Institute and the R+D departments of private companies and public research institutes (Spanish and foreign), in which funding, human resources, spaces and infrastructures can be shared for joint R+D+I projects in nutrition and health.

LACID has the objective of bringing together science and the agrifood industry in order to provide better opportunities for improving competitiveness and social wellbeing for the Region of Madrid and, furthermore, the whole of Spain.



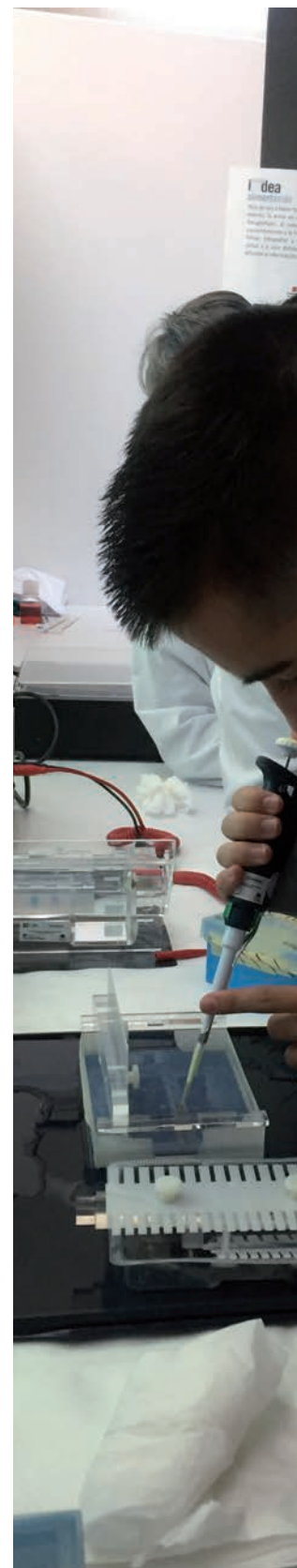
IMDEA Food aims to disseminate the Institute research results through a wide communication activity portfolio that is supported by the Nutrigenomic Interactive Center (CIN), located within the Institute.

CIN is an interactive museum that currently presents the exhibition entitled “Health and Personalised 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.





**Maria Jesús Latasa Sada**  
R&D Education coordinator

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.



**Maria Tabernero Urbieta**  
R&D Innovation coordinator

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.



**Sara Castillo Alonso**  
R&D Communication coordinator

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.





**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.



Nutrigenomic Interactive Center (CIN)





# Innovation and Communication Unit highlight

EIT Food’s **vision** is to put Europe at the centre of a global revolution in food innovation and production, and its value in society. The members of the EIT Food community are world-class players in the international food domain:



EIT Food headquarter is located in Leuven (Belgium), it is structured around five Co-Location Centres (CLCs), each covering several EIT Food partners and partner countries. IMDEA Food, along with Universidad Autónoma de Madrid (UAM) is one of the 11 partners that within 14 innovative start-up companies from Spain, Israel, Italy and Portugal, form the CLC’s South of EIT Food, which is located in Madrid.

IMDEA Food and the UAM act as a single entity, forming the management node for the project. The participation of EIT Food affords IMDEA Food a great opportunity to meet its aim of making scientific discoveries known to industry and the population in general.

Since the designation of consortium, EIT Food has worked on a two-track approach; build a strong foundation and get the real work going. All infrastructure is in place, basic processes are operational, legal structures have been set up and a core lean and efficient management is being recruited and is in full transition.

In September 2017, The Strategic Agenda (2018-2024) and the Business Plan 2018 were approved by the Partner Assembly in Warsaw and successfully submitted to the EIT.

Over the next seven years, the partners will invest close to 1200 million € matched with up to 400 million € financed by the EIT. **Resulting in a total funding budget of over 1.5 billion €.**

### EIT Food is based on four pillars:

- 1. Business Creation:** EIT Food supports entrepreneurs and start-ups through a powerful business creation ecosystem.
- 2. Innovation:** EIT Food’s four innovation programmes target societal challenges through technology-based products and services with breakthrough potential.
- 3. Communication:** EIT Food as innovation community actively encourages the participation of all European Citizens.
- 4. Education:** EIT Food will organise international exchange programmes for students and develop a unique interdisciplinary EIT labelled Food System Master of Science (M.Sc.) for graduates.



## 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 normal-weight, 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 polymorphisms 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 phenotypically 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

- Loria-Kohen V, Marcos-Pasero H, de la Iglesia R, Aguilar-Aguilar E, Espinosa-Salinas I, Herranz J, Ramirez de Molina A, Reglero G. **Multiple chemical sensitivity: Genotypic characterization, nutritional status and quality of life in 52 patients.** *Med Clin (Barc)*. 2017 Aug 22;149(4):141-146. doi: 10.1016/j.medcli.2017.01.022. Epub 2017 Mar 7. English, Spanish.
- de la Iglesia R, Loria-Kohen V, Zulet MA, Martinez JA, Reglero G, Ramirez de Molina A. **Dietary Strategies Implicated in the Prevention and Treatment of Metabolic Syndrome.** *Int J Mol Sci*. 2016 Nov 10;17(11). pii: E1877. Review.
- Loria-Kohen V, Espinosa-Salinas I, Marcos-Pasero H, Lourenço-Nogueira T, Herranz J, Molina S, Reglero G, Ramirez de Molina A. **Polymorphism in the CLOCK gene may influence the effect of fat intake reduction on weight loss.** *Nutrition*. 2016 Apr;32(4):453-60. doi: 10.1016/j.nut.2015.10.013. Epub 2015 Nov 6.
- Crespo MC, Tomé-Carneiro J, Burgos-Ramos E, Loria Kohen V, Espinosa MI, Herranz J, Visioli F. **One-week administration of hydroxytyrosol to humans does not activate Phase II enzymes.** *Pharmacol Res*. 2015 May-Jun;95-96:132-7. doi: 10.1016/j.phrs.2015.03.018. Epub 2015 Mar 30.
- Loria-Kohen V, Espinosa-Salinas I, Ramirez de Molina A, Casas-Agustench P, Herranz J, Molina S, Fonollá J, Olivares M, Lara-Villoslada F, Reglero G, Ordovas JM. **A genetic variant of PPARA modulates cardiovascular risk biomarkers after milk consumption.** *Nutrition*. 2014 Oct;30(10):1144-50. doi: 10.1016/j.nut.2014.02.012. Epub 2014 Mar 12.

## 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

**Andrea Costas Miguélez.** Universidad Autónoma de Madrid

**Lara Cuesta Hervás.** Universidad de Granada

**María Dueñas.** Universidad Autónoma de Madrid

**Andrea Costas Miguélez.** Universidad Autónoma de Madrid

**Paula Arroyo.** Universidad País Vasco



**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, IDipaz. 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 led 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.



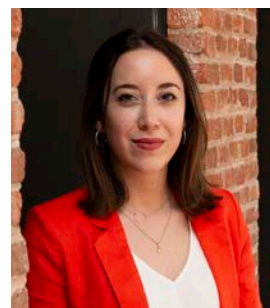
**Dr. Isabel Espinosa Salinas**  
Senior nutritionist

Dr. M<sup>a</sup> 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 eight years of experience as nutritionist in the development of more than 15 clinical trials funded by National Projects grantee and in nutritional intervention studies for companies as Biosearch Life or Capsa Food among others. 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.



**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.

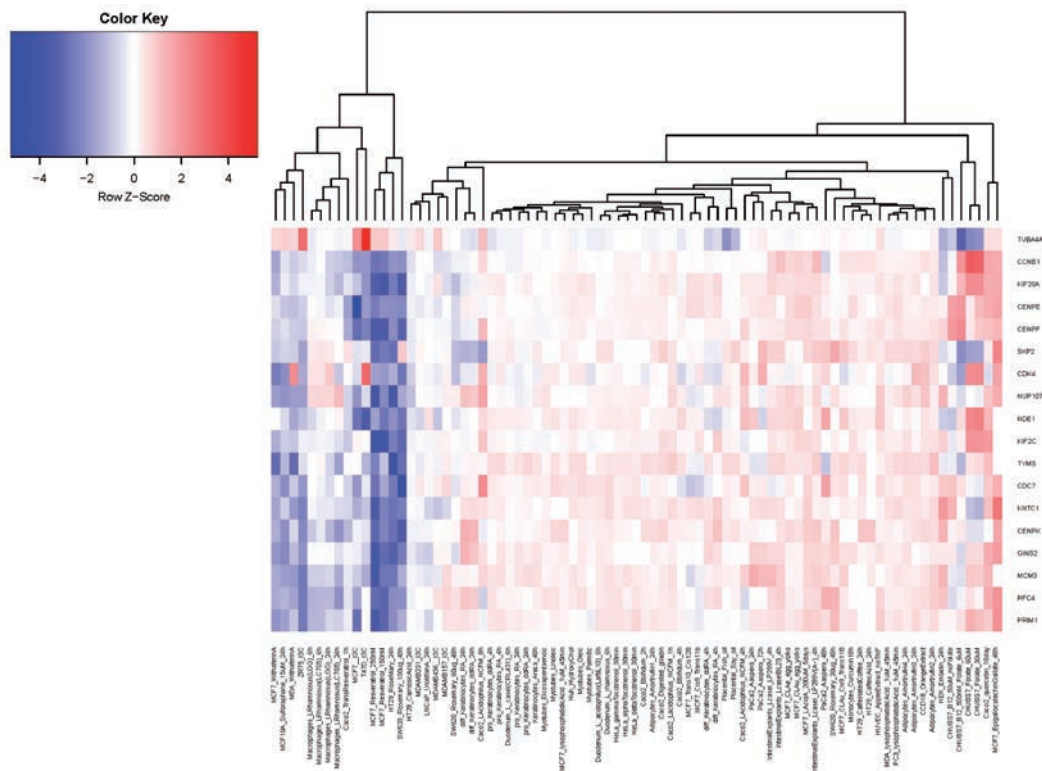
## 1.2. Biostatistics and Bioinformatics Unit

The Unit provides resources and personnel specialized in the analysis of phenotype- genotype associations, the identification of biomarkers, the analysis of gene expression microarray data, real time PCR analysis, the functional analysis of differential expression results, and those obtained by next generation sequencing, etc.

A project control web application has been developed for storing and processing data and monitoring samples pertaining to different nutrition research projects. This application, designed by the IMDEA Food Institute and which uses open source software, can store and manage a large volume of

phenotype and genotype data. It also holds anthropometric, medical and biochemical data, as well as validated nutritional questionnaires that can be filled in on-line (greatly facilitating data entry). The recruitment process can also be managed using this application. The entire system dissociates/ anonymises all data in keeping with Spanish privacy legislation (Ley Orgánica 15/1999 de 13 de diciembre de Protección de Datos de Carácter Personal).

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





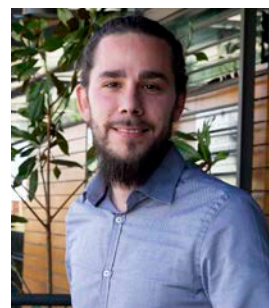
**Gonzalo Colmenarejo Sánchez**  
Biostatistician, senior researcher

Gonzalo Colmenarejo got his PhD in the Biophysics area in the Complutense University of Madrid. Then was a post-doctoral 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 from 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, where 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-led 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.



**Jesús Herranz Valera**  
Biostatistician, senior researcher

Jesús Herranz obtained his degree in Mathematical and Statistical Sciences at the University of Granada. He has worked as Biostatistician to the research Unit of the Clinic Hospital San Carlos in Madrid, in the Molecular Discovery Research GlaxoSmithKline's Basic Research Center in Tres Cantos, and the Molecular and Genetic Epidemiology Group of the Spanish National Cancer Research Center (CNIO). The main research interests of Jesús Herranz are focused on the gene-gene interactions analysis in the GWAS setting, the application of the data mining and statistical learning techniques to genetic data and the extension of these techniques to survival data. He has been Assistant Teacher in the Faculty of Mathematical of the Complutense University of Madrid. Now, he is teaching courses of statistics applied to the biomedical research with R software.



**Roberto Martín Hernández**  
Bioinformatic, predoctoral researcher

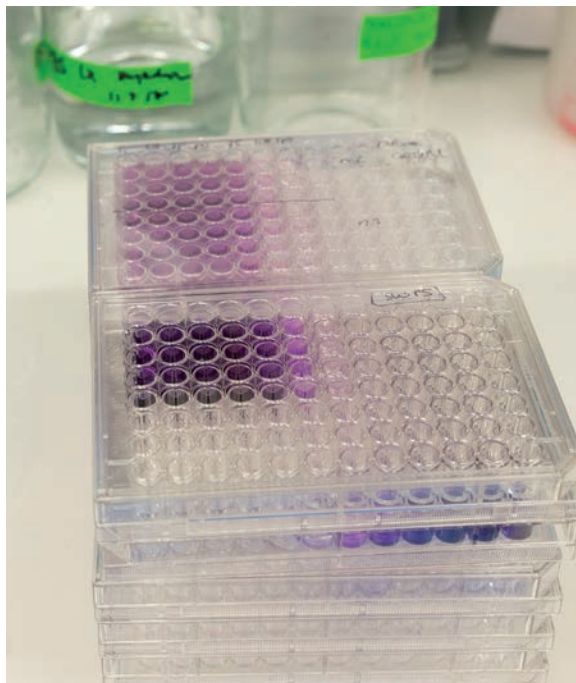
Roberto Martín Hernández obtained his Master's Degree of Science in Biochemistry and Biotechnologies at the Université Paul Sabatier (Toulouse, France). He received wet lab training while working as an assay development scientist at Bayer CropScience division (Lyon, France). In March 2008 he joined the Computers Architecture Department of the Universidad Complutense de Madrid (Spain), where he started working on the statistical analysis of biological data generated by high throughput technologies. Afterwards he joined the R&D Department of the bioinformatics startup Integromics (Madrid, Spain), where he continued working on massive data analysis generated by transcriptomics and genomics platforms. Meanwhile he contributed to the development of professional software packages which are still on the market. He joined the IMDEA Food research institute on May 2012 as a bioinformatics scientist. With a 10 years' experience in bioinformatics, he has co-authored more than 20 scientific research articles. His scientific interests focus on data mining, data integration and genomic data encryption. In addition he is completing the UAM (Madrid) PhD program in Nutrition science as a part-time student.

## 2.3. Genomics Laboratory

**Lab manager:** Dr. Susana Molina Arranz

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

This Laboratory is equipped 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 QuantStudio™ 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 inves- tigation line about nutritional genomics of cancer, as well as in GENYAL Nutri- genomic Laboratory. Her work in the GENYAL Platform includes processing and analyzing samples from the di- fferent intervention studies that are de- veloping in IMDEA Food, but also from external companies and research cen- ters interested in genotyping studies.





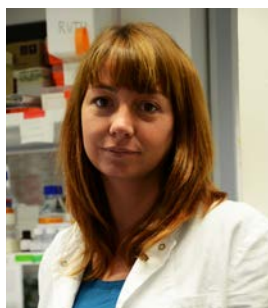
**Mónica Gómez Patiño**  
Laboratory technician

Ms. Monica Gómez Patiño 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 is currently finishing her degree in Chemistry. She has professional experience in the field of pharmaceuticals working in private companies such as Qualicaps Europe and BioMerieux. She also worked in ALK Spain performing various experimental procedures in the field of biochemistry, using different techniques for the identification, quantification and detection of specific proteins as well as immunology related techniques for the investigation of respiratory diseases. She has seven years of experience in Chromatographic techniques, and four years of experience in Genomic and Molecular biology area, acquired in different research centers such as the Institute for Research and Agricultural and Food Technology (INIA) and the Center for Biological Research (Higher Council for Scientific Research (CIB-CSIC)). She currently works in the IMDEA Food Institute, as Head of Biosafety of the Institute and in addition is a laboratory technician of the Platform GENYAL (Genomics and Nutrition). Her contract is funded by the European Social Fundation. State Program of Talent People Promotion from the State Plan of Scientific and Technical and Innovation Research.



**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 Científico de 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.



**Belén García Carrasco**  
Laboratory technician

Belén García Carrasco is a laboratory technician of clinical diagnosis. From 2007 to 2009 she worked at the Polytechnic University of Agriculture of Madrid, in the Department of Biotechnology, in the group of Gabriel Salcedo and Araceli Díaz Perales, performing techniques such as ELISAs, HPLC, FPLC, PCR, affinity columns, filtration, activation of T lymphocytes and TH1 TH 2 later response and protein purification. In 2009 she joined the group of Prof. Jesús Cruces at the Faculty of Medicine of the UAM, Department of Biochemistry, where she developed the characterization of promoter re-9+20. gions, protein expression in different cell lines, and participated in the development of gene amplification for mutational screening programs. She also has experience in handling laboratory mice, both, maintenance and genotyping, different methods of phenotyping, nucleic acid extraction from tissue or cryopreservation samples. Since 2011 she works at IMDEA Food as a lab technician, implement efforts to support different research groups at both laboratory and administrative.



**Elena García Carrascosa**  
Laboratory technician

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.

## GENYAL Platform highlight

The Genyal Project for the Prevention of Childhood Obesity 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.

Many interesting results have already been collected regarding the nutritional status of the children, and the association of this with their environment and genetic characteristics. Plans are being drawn up to increase the sample size and, according to the results obtained, develop new interventions that involve further agents of change in children's lives (the characteristics of the children themselves, the communities in which they live, wider society, governmental bodies, etc.) to combat this problem and its consequences.

genyal



# Precision for Health

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



Precision Forhealth (P4H) is a tecnologia based company of IMDEA Food and the Autonomia 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.

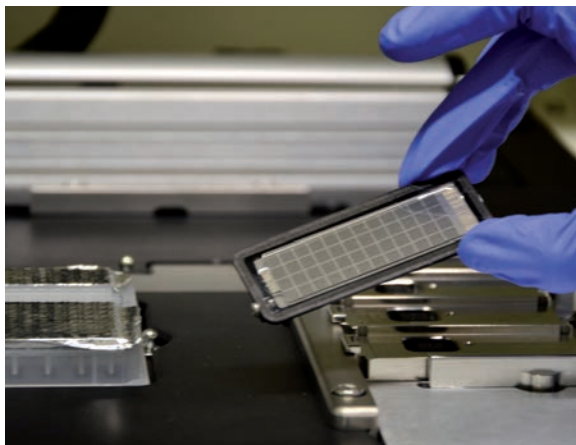
P4H markets actions and strategies for precision advice in the health area. P4H produces customized reports, based on genetic analysis, using validated chips, which predict, with a high degree of reliability, the response of individuals to different physiological situations such as obesity, aging and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

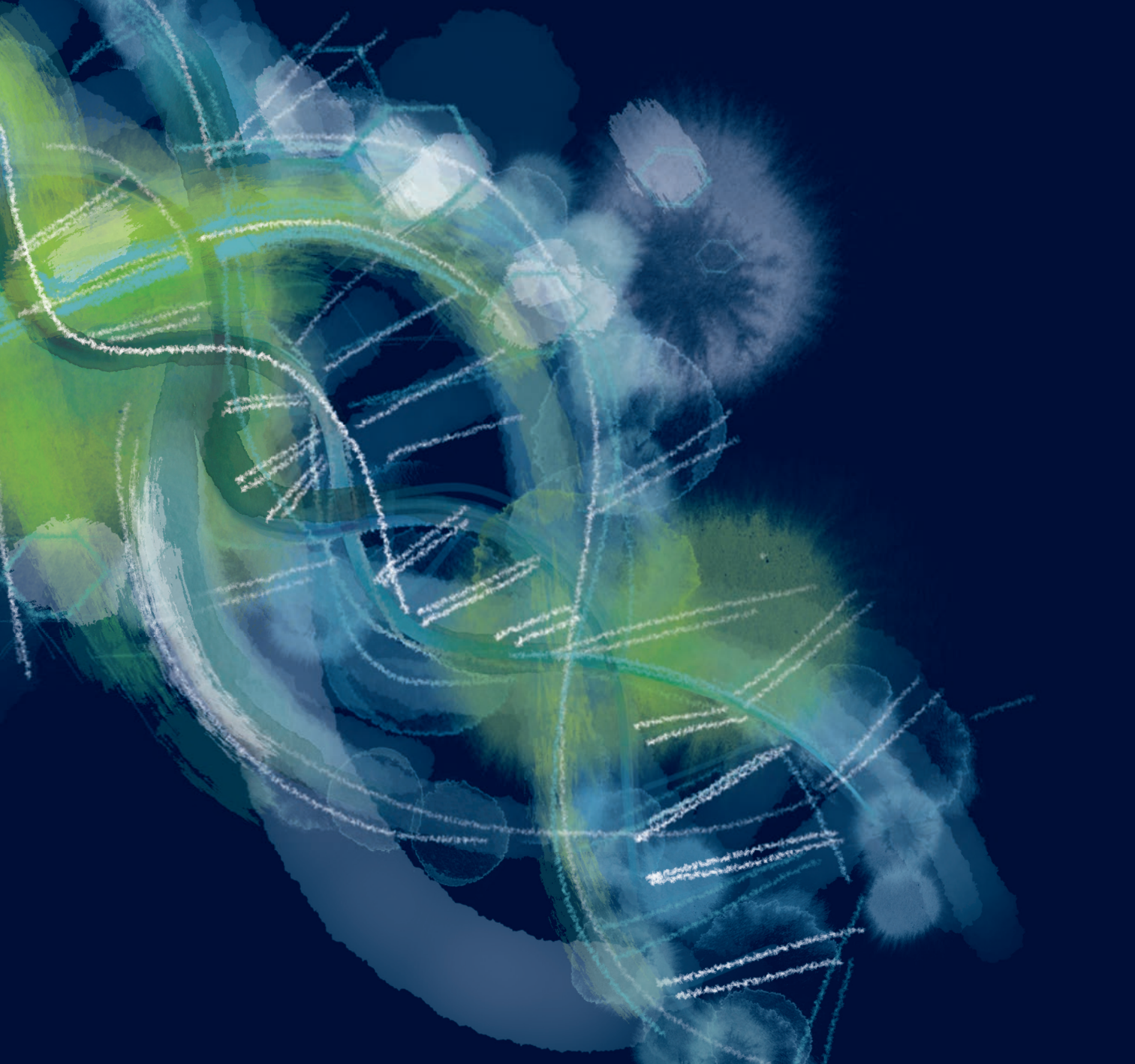
In addition to being tests scientifically validated at a functional level and integrating genetic susceptibility with nutritional recommendations, what differentiates P4H products is the analysis of genetic variants associated to chronobiology, allowing to provide information about the biological clock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





annual report

2017

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# 6.

# research projects, grants and contracts

1. National R&D projects [?]
2. Regional R&D projects [?]
3. International R&D projects and consortia [?]
4. R&D grants [?]
5. Contracts with companies [?]

# 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:** 2015 - 2018

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 Diet 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-associated 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) associated 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, there have been promoted multidisciplinary strategies related to the prevention of chronic diseases associated 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 bioactives (of dairy and marine origin) in the prevention and treatment of cognitive impairment associated 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/O1658)**

**Principal researcher:** José Ramón Quirós García (Fundación Fomento en Asturias de la Investigación Científica Aplicada y la Tecnología)

**IMDEA Food participant researcher:** José M<sup>o</sup> 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.

## European Projects Bureau MADRIMASD - IMDEA Food (EUG2013-C-50806)

**Funded by:** Ministerio de Economía y Competitividad

**Duration:** 2014 - 2016

The European Research Projects Office is an initiative to promote researchers' participation in European funding programs. The project is made up of the following institutions: IMDEA Water, IMDEA Food, IMDEA Energy, IMDEA Materials, IMDEA Nanoscience, IMDEA Networks, IMDEA Software and Madri+d Foundation, which coordinates the project.

The European Research Projects Office is responsible for giving support in the application, giving expert advice in project management and informing researchers about funding opportunities.







## 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.

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## 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.

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## 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.

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## 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.

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### 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 NLRP3-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 multidisciplinary research efforts are performed to arm clinicians and, finally, society with translation strategies to clinical practice.

## 3. International R&D projects and consortia

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

**Principal researcher:** Dr. Guillermo Reglero Rada

**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 Commission

**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.

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## 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.

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## 4. R & D grants

### “Marie Curie” AMAROUT II Europe Programme (Grant Agreement nº 291803)

**Dr. Cristina Aguirre Portolés**

**Type:** Incoming Fellow

**Category:** Experienced researcher

**Funded by:** Comisión Europea. VII Programa Marco I+D

**Duration:** 2015 – 2017

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### “Marie Curie” AMAROUT II Europe Programme (Grant Agreement nº 291803)

**Dr. Almudena García Ruiz**

**Type:** Incoming Fellow

**Category:** Experienced researcher

**Funded by:** Comisión Europea. VII Programa Marco I+D

**Duration:** 2017

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### “Marie Curie” AMAROUT II Europe Programme (Grant Agreement nº 291803)

**Dr. María Ikonopoulou**

**Type:** Incoming Fellow

**Category:** Experienced researcher

**Funded by:** Comisión Europea. VII Programa Marco I+D

**Duration:** 2017

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### Marie Skłodowska-Curie Individual Fellowships (IF-2016/H2020-MS-CA-746435)

**Dr. Almudena García Ruíz**

**Type:** Individual Fellowships

**Funded by:** Comisión Europea

**Granting date:** 17/03/2017

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### Contract for technical support personnel (PTA2013-8144-I)

**Mónica Gómez Patiño**

**Principal researcher:** Dr. Ana Ramírez de Molina

**Funded by:** Ministerio de Economía y Competitividad

**Duration:** 2014 – 2017

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

**Dr. Clara Ibañez Ruiz**

**Funded by:** Ministerio de Economía y Competitividad

**Duration:** 2016 – 2018

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## 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

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## Contracts Ramón y Cajal (RYC2016-201546)

**Dr. David Martínez Gómez**

**Funded by:** Ministerio de Economía y Competitividad

**Granting date:** 13/12/2017

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## 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

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## “José Castillejo” Program. Mobility stays abroad for young doctors (CAS16/00232)

**Dr. Alberto Dávalos Herrera**

**Funded by:** Ministerio de Educación, Cultura y Deporte

**Duration:** 2016 – 2017

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## Grant for research in oncology

**Dr. Pablo José Fernández Marcos**

**Characterization of sirtuins involvement in the development of hematopoietic neoplasm and other tumor types**

**Funded by:** Asociación Española Contra el Cáncer – AECC. Ayudas para Investigación en Oncología

**Duration:** 2015 – 2017

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

**Sonia Wagner**

**Funded by:** Consejería de Educación e Investigación. Comunidad de Madrid

**Duration:** 2017-2019

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### 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

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

**Dr. M<sup>a</sup> del Carmen López de la Hazas**

**Funded by:** Consejería de Educación e Investigación. Comunidad de Madrid

**Tutor:** Dr. Alberto Dávalos Herrera

**Duration:** 2017-2018

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### “Eduardo Gallego” Program

**Dr. Pablo José Fernández Marcos**

**Funded by:** Fundación Francisco Cobos

**Duration:** 2017-2018

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### “José Castillejo” Program. Mobility stays abroad for young doctors (CAS17/00141)

**Dr. Joao Tiago Estevao Tome Carneiro**

**Funded by:** Ministerio de Educación, Cultura y Deporte

**Duration:** 2017

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### 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

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## Contracts for Pre doctoral researchers (PEJD-2017 PRE/BIO 5100)

**Alberto Dávalos Herrera**

**Funded by:** Consejería de Educación e Investigación. Comunidad de Madrid

**Granting date:** 11/12/2017

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## Contracts for Pre doctoral researchers (PEJD-2017 PRE/BMD 4561)

**Tutor:** Pablo José Fernández Marcos

**Funded by:** Consejería de Educación e Investigación. Comunidad de Madrid

**Granting date:** 11/12/2017

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## Contracts for Pre doctoral researchers (PEJD-2017 PRE/BMD 3541)

**Tutor:** Viviana Loria Kohen

**Funded by:** Consejería de Educación e Investigación. Comunidad de Madrid

**Granting date:** 11/12/2017

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## Contracts for Pre doctoral researchers (PEJD-2017 PRE/ SAL 5109)

**Tutor:** José María Ordovás Muñoz

**Funded by:** Consejería de Educación e Investigación. Comunidad de Madrid

**Granting date:** 11/12/2017

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## Contracts for Pre doctoral researchers (PEJD-2017 PRE/ BMD 3394)

**Tutor:** José Moisés Laparra Llopis

**Funded by:** Consejería de Educación e Investigación. Comunidad de Madrid

**Granting date:** 11/12/2017

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## 5. Contracts with companies

### Determination of genetic variants associated with genetic studies

**Principal researcher:** Dr. Ana Ramírez de Molina

**Funded by:** PEACHES, S.L.

**Duration:** 2016 - 2017

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### PolyMicroBio

**Elagitannins 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 seguro (CEBAS - CSIC)

**Duration:** 2016 – 2019

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### 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 – 2017

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### PRIMICIA

**Personalized Nutrition to bring to market high efficiency food (Strategic Program National Business Research Consortia - CIEN)**

IMDEA Food leads the scientific program of the consortium of food companies that carry out the PRIMICIA project, under which six new scientific studies have been developed for the companies:

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### Alvinesa Alcoholera Vinícola S.A.U.

**Principal researcher:** Prof. Guillermo Reglero Rada

**Duration:** 2015 - 2017

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## Grupo Natac S.L.

**Principal researcher:** Prof. Guillermo Reglero Rada

**Duration:** 2015 - 2017

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## Tutti Pasta S.A.

**Principal researcher:** Prof. Guillermo Reglero Rada

**Duration:** 2015 - 2017

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## AMC Innova S.L.

**Principal researcher:** Prof. Guillermo Reglero Rada

**Duration:** 2015 - 2017

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## Dulces y Conservas Helios S.A.

**Principal researcher:** Prof. Guillermo Reglero Rada

**Duration:** 2015 - 2017

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## Galletas Gullón S.A.

**Principal researcher:** Prof. Guillermo Reglero Rada

**Duration:** 2015 - 2017

**Funded by:** Centro para el Desarrollo Tecnológico Industrial. Ministerio de Economía y Competitividad

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## 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:** Guillermo Reglero Rada

**Duration:** 2017-2020

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## GALLETAS GULLÓN S.A.

**Principal Researcher:** Guillermo Reglero Rada

**Duration:** 2017-2020

**Funded by:** Centro para el Desarrollo Tecnológico Industrial. Ministerio de Economía y Competitividad

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## Determination of genetic variants in DNA samples (C7020671)

**Principal Researcher:** Guillermo Reglero Rada

**Funded by:** CIBEROBN

**Duration:** 2017

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## INTALIM

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

**Principal Researcher:** Guillermo Reglero Rada

**Funded by:** SIRO JAEN, SLU y SIRO ANTEQUERA, SLU

**Duration:** 2017-2018

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

**Principal Researcher:** Viviana Loria Kohen

**Funded by:** CIAL-CSIC

**Duration:** 2017-2018

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# 7.

# scientific results

1. Publications [?]
2. Books and chapters of books [?]
3. Thesis directed or in progress [?]
4. Premios [?]
5. Patents [?]

annual report

# 2017

[www.food.imdea.org](http://www.food.imdea.org)



# 1. Publications

In 2017 the researchers of the Institute have published 91 articles in high impact international journals. 55% of the articles published to date are in the first quartile of the SCI (Science Citation Index), which is indicative of the scientific excellence of the Institute.

1. Aslibekyan, S; Do, AN; Irvin, MR; Hidalgo, BA; Zhi, DG; Tiwari, HK; Absher, DM; Ordovas, JM; Arnett, DK. A Methylome-and Transcriptome-Wide Study of Dietary Fructose Intake in Humans. *Circulation*. 2017 Mar; 135 (1) Abstract: P099
2. Hurtado-Roca, Y; Bueno, H; Fernandez-Ortiz, A; Ordovas, JM; Ibanez, B; Fuster, V; Rodriguez-Artalejo, F; Laclaustra, M. Oxidized LDL Is Associated With Metabolic Syndrome Traits Independently of Central Obesity and Insulin Resistance. *Diabetes*. 2017 Feb; 66 (2): 474-482. DOI: [10.2337/db16-0933](https://doi.org/10.2337/db16-0933)
3. Gonzalez-Calvo, L; Dervishi, E; Joy, M; Sarto, P; Martin-Hernandez, R; Serrano, M; Ordovas, JM; Calvo, JH. Genome-wide expression profiling in muscle and subcutaneous fat of lambs in response to the intake of concentrate supplemented with vitamin E. *BMC Genomics*. 2017 Jan; 18 (92). DOI: [10.1186/s12864-016-3405-8](https://doi.org/10.1186/s12864-016-3405-8)
4. Wang Z, Manichukal A, Goff DC Jr, Mora S, Ordovas JM, Pajewski NM, Post WS, Rotter JJ, Sale MM, Santorico SA, Siscovick D, Tsai MY, Arnett DK, Rich S, Frazier-Wood AC. Genetic associations with lipoprotein subfraction measures differ by ethnicity in the multi-ethnic study of atherosclerosis (MESA). *Human Genetics*. 2017 Jun. DOI: [10.1007/s00439-017-1782-y](https://doi.org/10.1007/s00439-017-1782-y)
5. Loria-Kohen V, Marcos-Pasero H, de la Iglesia R, Aguilar-Aguilar E, Espinosa-Salinas I, Herranz J, Ramirez de Molina A, Reglero G. Multiple chemical sensitivity: Genotypic characterization, nutritional status and quality of life in 52 patients. *Medicina Clínica*. 2017 Aug; 149 (4): 141-146. DOI: [10.1016/j.medcli.2017.01.022](https://doi.org/10.1016/j.medcli.2017.01.022)
6. García-Risco MR, Mouhid L, Salas-Pérez L, López-Padilla A, Santoyo S, Jaime L, Ramírez de Molina A, Reglero G, Fornari T. Biological Activities of Asteraceae (*Achillea millefolium* and *Calendula officinalis*) and Lamiaceae (*Melissa officinalis* and *Origanum majorana*) Plant Extracts.

*Plant foods for human nutrition*. 2017 Mar; 72 (1): 96-102. DOI: [10.1007/s11130-016-0596-8](https://doi.org/10.1007/s11130-016-0596-8)

7. Bernardini, E; Visioli, F. High quality, good health: The case for olive oil. *European Journal of Lipid Science and Technology*. 2017 Jan; 119 (1). UNSP 1500505. DOI: [10.1002/ejlt.201500505](https://doi.org/10.1002/ejlt.201500505)

8. Crespo MC, Tomé-Carneiro J, Pintado C, Dávalos A, Visioli F, Burgos-Ramos E. Hydroxytyrosol restores proper insulin signaling in an astrocytic model of Alzheimer's disease. *Biofactors*. 2017 Jul-Aug; 43 (4): 540-548. DOI: [10.1002/biof.1356](https://doi.org/10.1002/biof.1356)

9. Fernandez-Marcos, PJ; Serrano, M. Young and Lean: Elimination of Senescent Cells Boosts Adaptive Thermogenesis. *Cell Metabolism*. 2017 Feb; 25 (2): 226-228. DOI: [10.1016/j.cmet.2017.01.012](https://doi.org/10.1016/j.cmet.2017.01.012)

10. Rosique-Esteban, N; Diaz-Lopez, A; Martinez-Gonzalez, MA; Corella, D; Goday, A; Martinez, JA; Romaguera, D; Vioque, J; Aros, F; Garcia-Rios, A; Tinahones, F; Estruch, R; Fernandez-Garcia, JC; Lapetra, J; Serra-Majem, L; Pinto, X; Tur, JA; Bueno-Cavanillas, A; Vidal, J; Delgado-Rodriguez, M; Daimiel, L; Vazquez, C; Rubio, MA; Ros, E; Salas-Salvado, J. Leisure-time physical activity, sedentary behaviors, sleep, and cardiometabolic risk factors at baseline in the PREDIMED-PLUS intervention trial: A cross-sectional analysis. *Plos One*. 2017 Mar; 12 (3): e0172253. DOI: [10.1371/journal.pone.0172253](https://doi.org/10.1371/journal.pone.0172253)

11. San-Cristobal R, Navas-Carretero S, Milagro FI, Riezu-Boj JJ, Gurgeaga E, Celis-Morales C, Livingstone KM, Brennan L, Lovegrove JA, Daniel H, Saris WH, Traczyk I, Manios Y, Gibney ER, Gibney MJ, Mathers JC, Martinez JA. Gene methylation parallels between peripheral blood cells and oral mucosa samples in relation to overweight. *Journal of Physiology and Biochemistry*. 2017 Mar; 73 (3): 465-474. DOI: [10.1007/s13105-017-0560-6](https://doi.org/10.1007/s13105-017-0560-6)

12. Cejas P, Cavazza A, Yandava C, Moreno V, Horst D, Moreno-Rubio J, Burgos E, Mendiola M, Taing L, Goel A, Feliu J, Shivdasani RA. Transcriptional regulator CNOT3 defines an aggressive colorectal cancer subtype. *Cancer Research*. 2017 Feb; 77 (3): 766-779. DOI: [10.1158/0008-5472.CCR-16-1346](https://doi.org/10.1158/0008-5472.CCR-16-1346)

13. Diva M, Villalpando, Rocío Navarro, Lara del Campo, Carlota Largo, David Muñoz, María Tabernero, Ramiro Baeza, Cristina Otero, Hugo S. García, Mercedes Ferrer. Docosahexaenoic Acid Supplemented Diet Influences

- the Orchidectomy-Induced Vascular Dysfunction in Rat Mesenteric Arteries. *Plos One*. 2017 Jan; 12 (1): e016884. DOI: [10.1371/journal.pone.0168841](https://doi.org/10.1371/journal.pone.0168841)
14. Freire-Regatillo, A; Argente-Arizon, P; Argente, J; Garcia-Segura, LM; Chowen, JA. Non-Neuronal Cells in the Hypothalamic Adaptation to Metabolic Signals. *Frontiers in Endocrinology*. 2017 Mar; 8 (51). DOI: [10.3389/fendo.2017.00051](https://doi.org/10.3389/fendo.2017.00051)
  15. Chowen J, Argente-Arizon P, Freire-Regatillo A, Argente J. Sex differences in the neuroendocrine control of metabolism and the implication of astrocytes. *Frontiers in Endocrinology*. 2017 May; 48 (Special Edition): 3-12. DOI: [10.1016/j.yfrne.2017.05.003](https://doi.org/10.1016/j.yfrne.2017.05.003)
  16. Serra-Juhé C, Martos-Moreno G, Bou de Pieri F, Flores R, González J, Rodríguez-Santiago B, Argente J, Pérez-Jurado L. Novel genes involved in severe early-onset obesity revealed by rare copy number and sequence variants. *PLoS Genetics*. 2017 May; 13 (5). e1006657. DOI: [10.1371/journal.pgen.1006657](https://doi.org/10.1371/journal.pgen.1006657)
  17. Mouhid L, Corzo-Martínez M, Torres C, Vázquez L, Reglero G, Fornari T, Ramírez de Molina A. Improving In Vivo Efficacy of Bioactive Molecules: An Overview of Potentially Antitumor Phytochemicals and Currently Available Lipid-Based Delivery Systems. *Journal of Oncology*. 2017 May; May: 7351976. DOI: [10.1155/2017/7351976](https://doi.org/10.1155/2017/7351976)
  18. Merino Salvador M, Gómez de Cedrón M, Merino Rubio J, Falagán Martínez S, Sánchez Martínez R, Casado E, Ramírez de Molina A, Sereno M. Lipid metabolism and lung cancer. *Critical Reviews in Oncology Hematology*. 2017 Apr; 112: 31-40. DOI: [10.1016/j.critrevonc.2017.02.001](https://doi.org/10.1016/j.critrevonc.2017.02.001)
  19. González-Muniesa P, Martínez-González MA, Hu FB, Després JP, Matsuzawa Y, Loos RJF, Moreno LA, Bray GA, Martínez JA. *Nature Reviews Disease Primers*. 2017 Jun; 3. UNSP 17034. DOI: [10.1038/nrdp.2017.34](https://doi.org/10.1038/nrdp.2017.34)
  20. Tomé-Carneiro J, Crespo MC, García-Calvo E, Luque-García JL, Dávalos A, Viscioli F. Proteomic evaluation of mouse adipose tissue and liver following hydroxytyrosol supplementation. *Food and Chemical Toxicology*. 2017 Sep; 107: 329-338. DOI: [10.1016/j.fct.2017.07.009](https://doi.org/10.1016/j.fct.2017.07.009)
  21. Link W, Fernandez-Marcos PJ. FOXO transcription factors at the interface of metabolism and cancer. *International Journal of Cancer*. 2017 Jun. DOI: [10.1002/ijc.30840](https://doi.org/10.1002/ijc.30840)
  22. Villanueva-Bermejo, D; Reglero, G ; Fornari, T. Recent advances in the processing of green tea biomolecules using ethyl lactate. A review. *Trends in Food Science & Technology*. 2017 Apr; 62: 1-12. DOI: [10.1016/j.tifs.2016.12.009](https://doi.org/10.1016/j.tifs.2016.12.009)
  23. Soldevilla B, Cuevas-Martín C, Ibáñez C, Santacatterina F, Alberti M, Simó C, Casasnovas C, Márquez-Infante C, Sevilla T, Pascual S, Sánchez-Aragó M, Espinos C2, Palau F, Cuezva JM. Plasma metabolome and skin proteins in Charcot-Marie-Tooth 1A patients. *PLoS One*. eCollection 2017. 2017 Jun; 12 (6): e0178376. DOI: [10.1371/journal.pone.0178376](https://doi.org/10.1371/journal.pone.0178376)
  24. Samuel Fernández-Tomé, Daniel Martínez-Maqueda, María Tabernero, Carlota Largo, Isidra Recio, Beatriz Miralles. Effect of the long-term intake of a casein hydrolysate on mucin secretion and gene expression in the rat intestine. *Journal of Functional Foods*. 2017 Jun; 33: 176-180. DOI: [10.1016/j.jff.2017.03.036](https://doi.org/10.1016/j.jff.2017.03.036)
  25. Martínez-Gómez D, Guallar-Castillon P, Higuera-Fresnillo S, García-Esquinas E, López-García E, Bandinelli S, Rodríguez-Artalejo F. Physical Activity Attenuates Total and Cardiovascular Mortality Associated With Physical Disability: A National Cohort of Older Adults. *Journals Of Gerontology Series A-Biological Sciences And Medical Sciences*. 2017 Jun; 73 (2): 240-247. DOI: [10.1093/gerona/glx117](https://doi.org/10.1093/gerona/glx117)
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  27. Banegas JR, Rodríguez-Artalejo F. The Strong Heart Study: adding biological plausibility to the red meat-cardiovascular disease association. *Journal of Hypertension*. 2017 Sep; 35 (9): 1782-1784. DOI: [10.1097/HJH.0000000000001420](https://doi.org/10.1097/HJH.0000000000001420)
  28. Cavero-Redondo I, Peleteiro B, Álvarez-Bueno C, Rodríguez-Artalejo F, Martínez-Vizcaino V. Glycated haemoglobin A1c as a risk factor of cardiovascular outcomes and all-cause mortality in diabetic and non-diabetic populations: a systematic review and meta-analysis. *BMJ Open*. 2017 Jul 31; 7 (7): e015949. DOI: [10.1136/bmjopen-2017-015949](https://doi.org/10.1136/bmjopen-2017-015949)





29. Ortola R, García-Esquinas E, Galán I, Guallar-Castillón P, López-García E, Banegas JR, Rodríguez-Artalejo F. Patterns of alcohol consumption and risk of falls in older adults: a prospective cohort study. *Osteoporosis International*. 2017 Nov; 28 (11): 3143-3152. DOI: [10.1007/s00198-017-4157-2](https://doi.org/10.1007/s00198-017-4157-2)
30. Monroy-Parada DX, Jácome-González ML, Moya-Geromini MÁ, Rodríguez-Artalejo F, Royo-Bordonada MÁ. Adherence to nutritional recommendations in vending machines at secondary schools in Madrid (Spain), 2014-2015. *Gaceta Sanitaria*. 2017 Jul. DOI: [10.1016/j.gaceta.2017.05.006](https://doi.org/10.1016/j.gaceta.2017.05.006)
31. León-González R, García-Esquinas E, Paredes-Galán E, Ferrero-Martínez AI, González-Guerrero JL, Hornillos-Calvo M, Menéndez-Colino R, Torres-Torres I, Galán MC, Torrente-Carballido M, Olcoz-Chiva M, Rodríguez-Pascual C, Rodríguez-Artalejo F. Health Literacy and Health Outcomes in Very Old Patients With Heart Failure. *Revista Española de Cardiología (Engl Ed)*. 2017 Jul; 71 (3): 178-184. DOI: [10.1016/j.rec.2017.06.010](https://doi.org/10.1016/j.rec.2017.06.010)
32. Higuera-Fresnillo S, Guallar-Castillón P, Cabanas-Sanchez V, Banegas JR, Rodríguez-Artalejo F, Martínez-Gomez D. Changes in physical activity and cardiovascular mortality in older adults. *Journal of Geriatric Cardiology*. 2017 Apr; 14 (4): 280-281. DOI: [10.11909/j.issn.1671-5411.2017.04.009](https://doi.org/10.11909/j.issn.1671-5411.2017.04.009)
33. Campanini MZ, Lopez-Garcia E, Rodríguez-Artalejo F, González AD, Andrade SM, Mesas AE. Agreement between sleep diary and actigraphy in a highly educated Brazilian population. *Sleep Medicine*. 2017 Jul; 35: 27-34. DOI: [10.1016/j.sleep.2017.04.004](https://doi.org/10.1016/j.sleep.2017.04.004)
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## 2. Books and chapters of books

1. Ibáñez C, Ramirez de Molina A. "Carbohydrates and Nutrigenetics" *Principles of Nutrigenetics and Nutrigenomics*. Elsevier 2017
2. Challenges and Opportunities in Targeting the Senior Consumer. *Euronitor International*. Nutritional Guide for Seniors (NUTRIPRECISION Project). Wiley Blackwell
3. Moisés Laparra. "Gluten-free cereals and Pseudocereals". *Reference Series in Phytochemistry. Bioactive Molecules in Food*. Springer Nature 2017. Printed ISBN: 978-3-319-54528-8. On line ISBN: 978-3-319-54528-8
4. María Taberero Urbieto & José C.E. Serrano "Biomarkers for the evaluation of intake of phytochemicals and its bioactive effect". 2017 Oct; 26. DOI: 10.1002/9781119158042.ch26. *Fruit and Vegetable Phytochemicals* (second edition). Ed. Wiley-Blackwell. ISBN9781119157960

## 3. Thesis directed or in progress

During 2017, 13 doctoral theses, directed by IMDEA Food researchers, have been carried out, 2 of which have been defended.

1. Title: *Efecto de compuestos bioactivos como nuevos agentes complementarios como agentes terapéuticos en cáncer*  
PhD student: Jorge Martínez Romero  
Directors: Dr. Ana Ramírez de Molina and Prof. Guillermo Reglero Rada  
University: Autónoma de Madrid  
Date: 2018
2. Title: *Efectos de una restricción calórica basada en la Dieta Mediterránea sobre microRNAs reguladores de procesos moleculares asociados al envejecimiento*  
PhD student: Victor Micó Moreno  
Director: Prof. José María Ordovás Muñoz  
University: Autónoma de Madrid  
Date: 2018
3. Title: *Estudio del papel que desempeñan los micronutrientes en las enfermedades cardiovasculares y neurodegenerativas*  
PhD student: Carmen Crespo Lorenzo  
Director: Prof. Francesco Visioli  
University: Autónoma de Madrid  
Date: 2018
4. Title: *Implicaciones del metabolismo lipídico en la progresión tumoral del cáncer colorrectal y en el pronóstico de la enfermedad*  
PhD student: Silvia Cruz Gil  
Directors: Dr. Ana Ramírez de Molina and Dr. Ruth Sánchez Martínez  
University: Autónoma de Madrid  
Date: 2018
5. Title: *Extractos de origen vegetal para la nutrición personalizada de pacientes con cáncer*  
PhD student: Lamia Mouhid Al Achbili  
Director: Dra. Ana Ramírez de Molina and Prof. Tiziana Fornari Reale  
University: Autónoma de Madrid  
Date: 2018
6. Title: *Desarrollo de una plataforma de minería de datos en Nutri-genómica*  
PhD student: Roberto Martín Hernández  
Directors: Dr. Alberto Dávalos Herrera and Prof. Guillermo Reglero Rada  
University: Autónoma de Madrid  
Date: 2019
7. Title: *Nuevos biomarcadores de pronóstico clínico en cáncer de pulmón no microcítico*  
PhD student: María Merino Salvador  
Directors: Dr. Ana Ramírez de Molina and Dr. María Sereno Moyano  
University: Autónoma de Madrid  
Date: 2018
8. Title: *Papel de los ARNs no codificantes de proteínas en el metabolismo lipídico*  
PhD student: Judit Gil Zamorano  
Director: Dr. Alberto Dávalos Herrera  
University: Complutense de Madrid  
Date: 2018

9. Title: **Identificación, caracterización y desarrollo de compuestos naturales activos contra el síndrome metabólico**

PhD student: Luís Filipe Costa Machado

Director: Dr. Pablo José Fernández Marcos

University: Complutense de Madrid

Date: 2019

10. Title: **Componentes bioactivos de la dieta como moderadores de ARNs no codificantes**

PhD student: Diana Carolina Mantilla Escalante

Directors: Dr. Alberto Dávalos Herrera

University: Autónoma de Madrid

Date: 2020

11. 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: Helena Marcos Pasero

Directors: Viviana Loria Kohen and Guillermo Reglero rada

Date: 2020

### 3. 1. Defended Thesis

1. Title: **Identificación de SNPs implicados en la diferente respuesta a componentes de la dieta y asociación con enfermedades relacionadas con la alimentación: estudios nutrigenéticos**

PhD student: Isabel Espinosa Salinas

Directors: Dr. Ana Ramírez de Molina and Dr. Viviana Loria Kohen

University: Autónoma de Madrid

Fecha de lectura: 17/03/2017

2. Title: **Hábitos alimentarios y problemática nutricional en niños con alergia y/o asma en comparación con niños sanos**

PhD student: Elena Aguilar Aguilar

Directors: Dr. Rosa María Ortega Anta, Dr. Ana María López Sobaler and Dr. Elena Rodríguez Rodríguez

University: Complutense de Madrid

Fecha de lectura: 19/06/2017

## 4. Premios

### Prof. Dr. Jesús Argente Oliver

Primer Premio Merck-Serono de la FSEEP. Early onset metabolomic alterations in insulin resistant obese children. Int J Obes 2016; 40(10):1494-1502. DOI: 10.1038/ijo.2016.92. Mastrangelo A, Martos-Moreno GÁ, García A, Barrios V, Rupérez FR, Chowen JA, Barbas C, Argente J.

### Prof. Dr. Jesús Argente Oliver

Accésit Merck-Serono de la SEEP. Metabolic hormone signaling in astrocytes. Progress Neurobiology 2016; 144:68-87 DOI: 10.1016/j.pneurobio.2016.03.001. Chowen JA, Argente-Arízón P, Dreire A, Frago LM, Horvath TL, Argente J.

### Prof. Dr. Jesús Argente Oliver

Accésit Merck-Serono de la SEEP. PAPP-A2 mutations cause short stature due to decreased IGF-I availability. EMBO Mol Med 2016; 8(4):363-374. DOI: 10.15252/emmm.201506106. Dauber A, Muñoz-Calvo MT, Barrios V, Kloverpris S, Serra-Juhé C, Desikan V, Pozo J, Muzumdar R, Martos-Moreno GÁ, Hawkins FG, Domené H, Jasper H, Yakar S, Hwa V, Chowen JA, Oxvig C, Rosenfeld RG, Pérez-Jurado LA, Argente J. Jesús Argente

### Prof. Dr. Jesús Argente Oliver

Nominación Premio Jaime I de Medicina Clínica

### Carmen Crespo Lorenzo

2017 Wiley-Blackwell BioFactors Young Investigator Award for being first author of the paper "Hydroxytyrosol restores proper insulin signaling in an astrocytic model of Alzheimer's disease." By Crespo, M. Carmen; Tomé-Carneiro, Joao; Pintado, Cristina; Dávalos, Alberto; Visioli, Francesco; Burgos-Ramos, Emma

### IMDEA Food GENIAL Platform

Nestlé Nutrition Institute and Nutrition Journal: 17th John M. Kinney Awards. The Award for Nutrition and Metabolism: "Polymorphism in the CLOCK gene may influence the effect of fat intake reduction on weight loss" Viviana Loria-Kohen Ph.D.a, \*, Isabel Espinosa-Salinas Ph.D. student, Helena Marcos-Pasero Ph.D. student, Thais Loureno-Nogueira Ph.D.b, Jesús Herranz B.Sc.a, Susana Molina Ph.D.a, Guillermo Reglero Ph.D.a, c, Ana Ramirez de Molina Ph.D.a





**Dr. Moisés Laparra Llopis**

Inmunonutrition 2017. Best communication Award

**Prof. Alfredo Martínez Hernández**

Medalla al Mérito del Consejo General de Colegios Oficiales de Farmacéuticos

**Prof. Alfredo Martínez Hernández**

Nomination: IUNS President (International Union of Nutritional Sciences)

**Prof. Dr. Jesús Argente Oliver**

Member of the Royal Medicine Accademy. Universidad de Zaragoza.

## 5. Patents

The institute already has two granted and two new patents applied for in 2017, one internationally and one in Spain. Two of them have been transferred to a company through the granting of an exclusive license to develop, use and market the products in the territory and in the field of application, and negotiations are underway to license a third one.

The creation of an EBT (technology-based company) owned by IMDEA Food has been approved and the creation of another EBT is about to be completed.

**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: P201630560 (Licensed)**

**Title: *Uso de combinaciones sinérgicas de lípidos portadores bioactivos y otros principios bioactivos para el desarrollo de fórmulas destinadas a la nutrición dirigida a pacientes oncológicos***

**Owners:** IMDEA Food, Universidad Autónoma de Madrid

**Inventors:** Carlos Torres, Luis Vázquez, Pablo Arranz, Marta Corzo, Guillermo Reglero, Ana Ramírez de Molina

**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

**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.

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 [?]
2. Congress, invited conferences and courses [?]

annual report

2017

[www.food.imdea.org](http://www.food.imdea.org)



The IMDEA Food Institute has organized 30 seminars and dissemination events. IMDEA Food's researcher have performed 46 communications in congresses, 37 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.

## 1. Organization of conferences and seminars

### 1. Title: The hope of Immunonutrition

**Author:** Moisés Laparra Llopis

**Venue:** IMDEA Food, Spain

**Date:** 17/1/2017

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### 2. Title: Searching for antitumour agents with a protein

**Author:** Arantxa Taberero Urbieto, Instituto de Neurociencia de Castilla Castilla León (INCYL), USAL

**Venue:** IMDEA Food, Spain

**Date:** 31/1/2017

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### 3. Title: Macrophage regulation of the Skin Stem Cell Niche in homeostasis and cancer

**Author:** Mirna Pérez Moreno, Epithelial Cell Biology Group, Cancer Cell Biology Programme, CNIO

**Venue:** IMDEA Food, Spain

**Date:** 14/2/2017

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### 4. Title: Obesity and microbiota: role of polyphenols

**Author:** J. Alfredo Martínez Hernández, Department of Nutrition, Food Science and Physiology, UNAV

**Venue:** IMDEA Food, Spain

**Date:** 8/3/2017

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### 5. Title: Mitochondrial dysfunction in metabolic diseases

**Author:** María P. Monsalve Pérez, Department of Metabolism and Cell Signaling, IIBM

**Venue:** IMDEA Food, Spain

**Date:** 14/3/2017

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### 6. Title: Identification of SNPs involved in the response to different dietary components and association with food-related diseases: Nutrigenetic studies

**Author:** M<sup>o</sup> Isabel Espinosa Salinas, Platform for Clinical Trials in Nutrition and Health (GENYAL), IMDEA Food

**Venue:** IMDEA Food, Spain

**Date:** 14/3/2017

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### 7. Title: Postdoc trainee: a journey into my age-related research interest

**Author:** Alberto Díaz-Ruiz, National Institute on Aging, NIH-USA

**Venue:** IMDEA Food, Spain

**Date:** 24/3/2017

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### 8. Title: Translational Gerontology and Geroscience; progress and pitfalls

**Author:** Rafael de Cabo, National Institute on Aging NIH-USA

**Venue:** IMDEA Food, Spain

**Date:** 28/3/2017

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### 9. Title: I Reunión Científica Fundación Teófilo Hernández-CIAL-IMDEA Alimentación

**Author:** Guillermo Reglero, IMDEA Food. Antonio García, IFTH

**Venue:** IMDEA Food, Spain

**Date:** 1/3/2017

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### 10. Guided visit to the IMDEA Food Nutrigenomic Interactive Center (CIN)

60 visitors from the Lycée Fernand et Nadia LEGER, Argenteuil (France)

Conference, visit to the Nutrigenomic Interactive Center and hands-on experiments with students

**Venue:** Nutrigenomic Interactive Center (CIN), IMDEA Food, Spain

**Date:** 29/3/2017

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**11. Guided visit to the IMDEA Food Nutrigenomic Interactive Center (CIN)**

20 visitors from the IES Rosa Chacel, Colmenar Viejo, Madrid, Spain

Conference, visit to the Nutrigenomic Interactive Center and hands-on experiments with students

**Venue:** Nutrigenomic Interactive Center (CIN), IMDEA Food, Spain

**Date:** 29/3/2017

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**12. Guided visit to the IMDEA Food Nutrigenomic Interactive Center (CIN)**

30 visitors from the IES Wenceslao Benítez, San Fernando de Cádiz, Cádiz, Spain

Conference, visit to the Nutrigenomic Interactive Center and hands-on experiments with students

**Venue:** Nutrigenomic Interactive Center (CIN), IMDEA Food, Spain

**Date:** 4/4/2017

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**13. Title: Micro and nanofabrication at the CEI UAM+CSIC**

**Author:** Daniel Granados Ruiz. Center of Nanofabrication, IMDEA Nanoscience (CEI UAM+CSIC)

**Venue:** IMDEA Food, Spain

**Date:** 20/4/2017

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**14. Title: Secondary cardiovascular prevention in the elderly**

**Author:** Jose María Castellano Vázquez, Cardiovascular Imaging and Population Studies, CNIC

**Venue:** IMDEA Food, Spain

**Date:** 16/5/2017

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**15. Title: Diabetes, adipokines and vascular damage**

**Author:** Concepción Peiró Vallejo, Department of Pharmacology, Faculty of Medicine, UAM

**Venue:** IMDEA Food, Spain

**Date:** 30/5/2017

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**16. Title: From PREDIMED to PREDIMED-PLUS: What we have learnt and what we will learn**

**Author:** Jordi Salas, Human Nutrition Unit, IISPV Department of Medicine and Surgery, Rovira i Virgili University

**Venue:** IMDEA Food, Spain

**Date:** 6/6/2017

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**17. Title: TP73 in cancer: Negative regulation of its oncogenic variants by B-cryptoxanthin**

**Author:** Gemma Domínguez Muñoz, Department of Cancer Biology, IIBM

**Venue:** IMDEA Food, Spain

**Date:** 15/6/2017

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**18. Title: Long live FOXO: FOXO transcription factors in ageing and cancer**

**Author:** Wolfgang Link, Department of Biomedical Sciences and Medicine University of Algarve, Portugal

**Venue:** IMDEA Food, Spain

**Date:** 26/6/2017

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**19. Title: Comparative study between dietary habits and nutritional problems in children with allergy and/or asthma and healthy children**

**Author:** Elena Aguilar Aguilar, Platform for Clinical Trials in Nutrition and Health (GENYAL), IMDEA Food

**Venue:** IMDEA Food, Spain

**Date:** 19/9/2017

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**20. European Researchers Night IMDEA Food event**

**Title:** Do you know Nutrigenomics?

Participant researchers: Silvia Cruz Gil, Sonia Wagner, María Taberner Urbieta, Helena Marcos Pasero, Rocío de la Iglesia González

**Venue:** IMDEA Food, Spain

**Date:** 29/9/2017

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**21. European Researchers Night IMDEA Institutes event**

Participant researchers: Isabel Espinosa Salinas, Susana Molina Arranz

**Venue:** Residencia de Estudiantes, CSIC, Spain

**Date:** 29/9/2017

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**22. Guided visit to the IMDEA Food Nutrigenomic Interactive Center (CIN)**

24 visitors from the ULRIKSDALSSKOLAN School, Suecia Conference, visit to the Nutrigenomic Interactive Center and hands-on experiments with students

**Venue:** Nutrigenomic Interactive Center (CIN), IMDEA Food, Spain

**Date:** 3/10/2017

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**23. Title: Nutrition, metabolism and associated pathologies**

**Author:** Pablo Fernández Marcos, IMDEA Food; María Mittelbrunn, CNIO; Eva Porlan, CBM; Alejo Efeyan, CNIO

**Venue:** IMDEA Food, Spain

**Date:** 10/10/2017

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**24. Title: The HD-ENRICA program: an instrument to collect nutritional information in populations**

**Author:** Pilar Guallar-Castillón, Cardiovascular and Nutritional Epidemiology Group, IMDEA Food

**Venue:** IMDEA Food, Spain

**Date:** 20/10/2017

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**25. IMDEA Food 2017 Science Week**

Conference, visit to the Nutrigenomic Interactive Center and hands-on experiments with students

**Venue:** Nutrigenomic Interactive Center (CIN), IMDEA Food, Spain

**Date:** 6-7/11/2017

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**26. Guided visit to the IMDEA Food Nutrigenomic Interactive Center (CIN)**

20 Master students. Master de Nutrición, Universidad Complutense de Madrid, Spain

Conference, visit to the Nutrigenomic Interactive Center and hands-on experiments with students

**Venue:** Nutrigenomic Interactive Center (CIN), IMDEA Food, Spain

**Date:** 17/11/2017

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**27. Title: ICAM-1 mediates H-ferritin-induced inflammasome activation in hepatic stellate cells: Unravelling novel targets against chronic liver diseases**

**Author:** Manuel Fernández-Rojo, Hepatic Regenerative Medicine Group, IMDEA Food

**Venue:** IMDEA Food, Spain

**Date:** 22/11/2017

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**28. Title: Dietary modulated microRNAs with a key role in CVD: miR-21 and the progression of the atherosclerotic plaque**

**Author:** Lidia Daimiel Ruiz, Nutritional Genomics and Epigenomics Group, IMDEA Food

**Venue:** IMDEA Food, Spain

**Date:** 15/12/2017

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**29. Title: Childhood obesity in Madrid schools research**

Chaired by Rafael van Grieken, Counsellor of Education and Research, Madrid Regional Government, Spain

**Venue:** Juan de Zaragüeta school, Madrid, Spain

**Date:** 11/12/2017

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**30. Title: Dissecting NOTCH1-controlled transcriptional and metabolic oncogenic programs in T-ALL**

**Author:** Daniel Herranz Benito, Department of Pharmacology, Rutgers Cancer Institute, USA

**Venue:** IMDEA Food, Spain

**Date:** 20/12/2017

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## 2. Congress, invited conferences and courses

### 2.1. Congress communications

**1. Author/s:** Cristina Aguirre-Portolés, Lara P. Fernández, Jaime Feliu, Guillermo Reglero, Ana Ramírez de Molina  
**Title:** ABCA1 genetic variation and gene expression: implications in colorectal cancer treatment and prognosis  
**Communication:** Poster  
**Event:** Cancer Genomics 2017. European Association for Cancer Research  
**Venue:** Cambridge, UK  
**Date:** 25-28/5/2017

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**2. Author/s:** Mendiola M, Heredia-Soto, Herranz J, Martín R, Zamora P, Castelo B, Pinto A, Miguel M, Crespo R, Ramírez de Molina A, Hardisson D, Espinosa E, Redondo A  
**Title:** Micro-RNA profile in advanced metastatic breast cancer as a predictive tool for response to bevacizumab-paclitaxel  
**Communication:** Poster  
**Event:** ESMO 2017 Congress-Integrating science into oncology for a better patient outcome  
**Venue:** Madrid, Spain  
**Date:** 8-12/9/2017

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**3. Author/s:** Alfredo Martínez Hernández  
**Title:** Cellular and Molecular Nutrition  
**Communication:** Chairman  
**Event:** Nutrition Society Summer Conference 2017: Improving nutrition in metropolitan areas. King's College London  
**Venue:** London, UK  
**Date:** 10/7/2017

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**4. Author/s:** Alfredo Martínez Hernández  
**Title:** Obesity and Inflammation: personalized nutrition  
**Communication:** Oral  
**Event:** 10th Anniversary of the International Symposium on Immunonutrition  
**Venue:** Madrid, Spain  
**Date:** 17-19/7/2017

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**5. Author/s:** Alfredo Martínez Hernández  
**Title:** Tecnologías ómicas y tratamiento de la obesidad  
**Communication:** Oral  
**Event:** IX Seminario sobre Alimentación y estilos de vida saludables. Workshop CIBER. Obesidad y Cáncer  
**Venue:** Tarragona, Spain  
**Date:** 17-19/7/2017

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**6. Author/s:** Alfredo Martínez Hernández  
**Event:** PREVIEW 6th General Assembly Meeting  
**Venue:** Swansea, UK  
**Date:** 23-25/8/2017

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**7. Author/s:** Prof. Alfredo Martínez Hernández  
**Title:** Opening course  
**Communication:** Oral  
**Event:** Curso de Verano de la UPV «Taste, Behaviour and Health Gastronomy»  
**Venue:** San Sebastián, Spain  
**Date:** 29/8/2017

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**8. Author/s:** Prof. Alfredo Martínez Hernández  
**Title:** Precision Nutrition for Obesity Management  
**Communication:** Oral  
**Event:** 14th Brazilian Congress for Food and Nutrition. Brazilian Society for Food and Nutrition  
**Venue:** Sao Paulo, Brazil  
**Date:** 29-31/8/2017

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**9. Author/s: Prof. Alfredo Martínez Hernández**

**Title: Omics Applications for Obesity Management**

**Communication:** Oral

**Event:** 11th Congress of the International Society of Nutrigenetics and Nutrigenomics

**Venue:** Los Ángeles, USA

**Date:** 15-21/9/2017

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**10. Author/s: Prof. Alfredo Martínez Hernández**

**Title: "Regulation of autophagy by resveratrol in liver from rats fed an obesogenic diet" and "Exosomes from LPS-activated macrophages induces changes in adipocyte gene expression but not in cell differentiation and insulin-dependent glucose uptake"**

**Communication:** Oral

**Event:** 14th French-Spanish Meeting CTPIOD

**Venue:** Zaragoza, Spain

**Date:** 27-28/9/2017

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**11. Author/s: Corredor-Andrés B, Muñoz-Calvo Mt, Calero O, Calero M, Argente J**

**Title: Disbetalipoproteinemia familiar asociada a una nueva en el gen APOE**

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**12. Author/s: Muñoz-Calvo Mt, Barrios V, Pozo-Román J, Martos-Moreno Gá, Pérez-Jurado La, Argente J**

**Title: Respuesta al tratamiento con rhIGF-I durante dos años en pacientes con deficiencia en PAPP-A2**

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**13. Author/s: Corredor-Andrés B, Márquez-Rivera M, Muñoz-Calvo Mt, Azorín-Cuadrillero D, González-Meli B, Argente J**

**Title: Características del fibroadenoma gigante de mama en adolescentes**

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**14. Author/s: Márquez-Rivera M, Travieso-Suárez L, Corredor-Andrés B, Muñoz-Calvo Mt, Pozo-Román J, Argente J**

**Title: Feocromocitoma en la infancia**

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**15. Author/s: Travieso-Suárez L, Corredor-Andrés B, Márquez-Rivera M, Martos-Moreno Gá, Pozo-Román J, Argente J**

**Title: Síndrome de Cushing por hiperplasia suprarrenal micro-nodular pigmentaria**

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**16. Author/s: Martos-Moreno Gá, Martínez-Villanueva J, González Leal R, Sirvent-Cerdá S, Hawkins F, Argente J**

**Title: Comorbilidades metabólicas en 1300 niños y adolescentes obesos: Influencia de la etnia y de la distribución de la grasa corporal**

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**17. Author/s:** Martos-Moreno Gá, Martínez-Villanueva J, González Leal R, Argente J

**Title:** Las alteraciones glucémicas en obesidad infantil asocian patrones diferenciales de secreción de insulina: Estudio de 808 tests de tolerancia oral a la glucosa

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**18. Author/s:** González Leal R, Argente J, Martos-Moreno Gá  
**Title:** Eficacia, seguridad y efectos metabólicos de la restricción de hidratos de carbono en la dieta para el tratamiento de la obesidad en adolescentes

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**19. Author/s:** Martínez-Villanueva J, Martos-Moreno Gá, Pérez-Jurado La, Argente J

**Title:** Síndrome de Drayer (DEL15q26-qTER): Una forma inusual de haploinsuficiencia del receptor de IGF-I

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**20. Author/s:** Herrero-Espinet J, Sol P, Corripio R, Soriano-Guillén L, Escribano A, Castro-Feijóo L, Espino R, Labarta-Aizpún Ji, Cañete-Estrada R, Argente J

**Title:** Pubertad precoz central en el varón en España. Análisis descriptivo de datos del registro español PUBERE

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**21. Author/s:** Jiménez-García P, De Randamie R, Donnay S, Chueca M, Argente J, Moreno-Navarro Jc

**Title:** Cáncer familiar papilar de tiroides: Identificación de defectos genéticos hereditarios a través de un panel dirigido de NGS

**Communication:** Oral

**Event:** XXXIX Reunión de la Sociedad Española de Endocrinología Pediátrica

**Venue:** Málaga, Spain

**Date:** 10-12/5/2017

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**22. Author/s:** Muñoz-Calvo Mt, Barrios V, Pozo-Román J, Martos-Moreno Gá, Pérez-Jurado La, Oxvig C, Frystyk J, Argente J

**Title:** Response to recombinant human insulin-like growth factor-1 after two years of therapy in two patients with PAPP-A2 deficiency (Oral FC5)

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-17/9/2017

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**23. Author/s:** Martos-Moreno Gá, Serra-Juhé C, F. Bou, B. Rodríguez-Santiago, R. Flores, Pérez-Jurado La, Argente J

**Title:** Identification of rare genetic variants in patients with non-syndromic early-onset obesity using a pooled DNA sequencing approach (Oral FC65)

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**24. Author/s:** Rubio-Cabezas O, Flanagan Se, Stanescu H, García-Martínez E, Caswell R, Lango-Allen H, Antón-Gamero M, Argente J, Bussell Am, Brandli A, Chreshire C, Crowne E, Dumitriu S, Drynda R, Hamilton-Shield Jp, Hayes W, Hofherr A, Iancu D, Issler N, Jefferies C, Jones P, Johnson M, Kesselheim A, Klootwijk E, Koettgen M, Lewis W, Martos Jm, Mozere M, Norman J, Patel V, Parrish A, Pérez-Cerdá C, Pozo J, Rahman Sa, Sebire N, Tekman M, Turnpenny Pd, Van't Hoff





**W, Viering Dhm, Weedon Mn, Wilson P, Guay-Woodford L, Kleta R, Ellard S, Böckenhauer D, Hussain K. A**

**Title: A novel syndrome of hyperinsulinaemic hypoglycaemia and polycystic kidneys due to a promotor mutation in PMM2 (Oral FC87)**

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**25. Author/s: Mastrangelo A, Martos-Moreno Gá, Barrios V, García A, Chowen Ja, Rupérez Fj, Barbas C, Argente J.**

**Title: Novel markers of hyperinsulinemia in obese children and metabolomics (P3-1107)**

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**26. Author/s: González-Leal R, Argente J, Martos-Moreno Gá**

**Title: Effectiveness, safety and metabolic effects of carbohydrate restriction in the management of obesity in adolescents after 1 year follow-up (P3-1124)**

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**27. Author/s: Mastrangelo A, García A, Muñoz-Calvo Mt, Martos-Moreno Gá, Barrios V, Pozo J, Rupérez Fj, Chowen Ja, Pérez-Jurado La, Barbas C, Argente J**

**Title: Profiling the effects of PAPP-A2 deficiency on the human serum metabolome (P2-801)**

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**28. Author/s: Noer Pr, Guerra S, Barrios V, Martos-Moreno Gá, Chowen Ja, Frystyk J, Oxvig C, Argente J.**

**Title: Serum stanniocalcin (STC)2 levels are increased in pre-pubertal obese children (P2-802)**

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**29. Author/s: Martos-Moreno Gá, Martínez-Villanueva J, González R, Barrios V, Sirvent S, Hawkins F, Argente J.**

**Title: Metabolic comorbidities in 1300 obese children and adolescents: Influence of race, body composition and adipokine levels (P3-1123)**

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**30. Author/s:** Martos-Moreno Gá, Martínez-Villanueva J, González-Leal R, Argente J

**Title:** Late hyperinsulinemic response in the OGTT is associated to lower insulin sensitivity and a worse metabolic profile in obese children (P1-1119)

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**31. Author/s:** Cruz-Rojo J, Barreda-Bonis Ac, Martos-Moreno Gá, Garzón-Lorenzo L, Ezquieta B, Ros-Pérez P, González-Casado I, Barrio R, Sánchez Del Pozo J, Argente J

**Title:** Adult height in patients with non-classical congenital adrenal hiperplasia due to 21-hydroxylase deficiency diagnosed in the pediatric age (P2-113)

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**32. Author/s:** Guerra S, Díaz F, Ros P, Freire-Regatillo A, Barrios V, Oxvig C, Frystyk J, Argente J, Chowen Ja

**Title:** The circulating insulin-like growth factor system in response to high fat diet (P1-811)

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**33. Author/s:** Corredor B, Jerónimo Dos Santos T, De Rojas T, Alonso Ja, Moreno L, Muñoz-Calvo Mt, Argente J

**Title:** Endocrine outcomes and follow-up in pediatric medulloblastoma (P2-1000)

**Communication:** Oral

**Event:** 10th Joint Meeting of Pediatric Endocrinology. ESPE-PES-APEG-APPES-ASPAE-JSPE-SLEP

**Venue:** Washington DC, USA

**Date:** 14-15/9/2017

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**34. Author/s:** Ruth Sánchez-Martínez, Silvia Cruz-Gil, María Soledad García-Álvarez, Guillermo Reglero, Ana Ramírez de Molina

**Title:** Complementary ACSL isoforms contribute to a non-Warburg advantageous energetic status characterizing invasive colon cancer cells

**Communication:** Poster

**Event:** Beatson International Cancer Conference. FEEDING THE BEAST. The Metabolic Landscape of the Tumour and its Host

**Venue:** Glasgow, UK

**Date:** 2-5/7/2017

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**35. Author/s:** Silvia Cruz-Gil, Ruth Sanchez-Martinez, Marta Gomez de Cedron, Roberto Martin-Hernandez, Teodoro Vargas, Susana Molina, Jesus Herranz, Alberto Davalos, Guillermo Reglero, Ana Ramirez de Molina

**Title:** Targeting the metabolic axis ACSL/SCD in colorectal cancer progression by therapeutic miRNAs: miR-19b-1 role

**Communication:** Poster

**Event:** Beatson International Cancer Conference. FEEDING THE BEAST. The Metabolic Landscape of the Tumour and its Host

**Venue:** Glasgow, UK

**Date:** 2-5/7/2017

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**36. Author/s:** Lorena Lee Pellecer, Marta Gómez de Cedrón, Ana Ramírez de Molina, José Moisés Laparra-Llopis

**Title:** Immunonutritional protease inhibitors from cereals promote liver inflammation and driven polarization of macrophages

**Communication:** Poster

**Event:** IUNS ICN 2017 Buenos Aires

**Venue:** Buenos Aires, Argentine

**Date:** 15-20/10/2017

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**37. Author/s:** Lorena Lee Pellecer, Marta Gómez de Cedrón, Ana Ramírez de Molina, José Moisés Laparra-Llopis

**Title:** Discerning the role of nutritional protease inhibitors in hepatoblastoma cells and macrophages' phenotype

**Communication:** Poster

**Event:** 10th ANNIVERSARY ISIN MADRID 2017

**Venue:** Madrid, Spain

**Date:** 17-19/7/2017

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**38. Author/s:** Lara P. Fernández, Ricardo Ramos-Ruiz, Jesús Herranz, Roberto Martín-Hernández, Jaime Feliu, Ana Ramírez de Molina

**Title:** Transcriptional and Mutational Analysis of Lipid Metabolism-Genes in Colorectal Carcinoma

**Communication:** Poster

**Event:** 3rd EACR Conference: Cancer Genomics

**Venue:** Cambridge, UK

**Date:** 25-28/6/2017

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**39. Author/s:** Moisés Laparra-Llopis

**Title:** The hope of immunonutrition

**Communication:** Oral

**Event:** 8th European Immunology Conference

**Venue:** Madrid, Spain

**Date:** 29-1/7/2017

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**40. Author/s:** Moisés Laparra Llopis

**Title:** Discerning the role of immunonutritional protease inhibitors in hepatoblastoma cells and macrophages' phenotype

**Communication:** Oral

**Event:** 10th Anniversary International Symposium on Immunonutrition

**Venue:** Madrid, Spain

**Date:** 17-19/7/2017

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**41. Author/s:** Crespo MC, Tomé-Carneiro J, Burgos-Ramos E, García-Serrano A, Venero C, Visioli F, Dávalos A, Fontecha J

**Title:** Dietary supplementation with buttermilk fat and krill oil concentrates phospholipids influence hippocampus insulin resistance and synaptic signaling

**Communication:** Poster

**Event:** Life Science Symposium

**Venue:** Ecublens, Switzerland

**Date:** 24-26/10/2017

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**42. Author/s:** R. Martín-Hernandez, G. Reglero, A. Dávalos

**Title:** Mining the effect of healthy food nutrients at genomic level: general approach and perspectives

**Communication:** Poster

**Event:** EPFL Life Sciences - EMBO Press Symposium: Frontiers in Metabolism

**Venue:** Lausanne, Switzerland

**Date:** 24-26/10/2017

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**43. Author/s:** Alfredo Martínez Hernández

**Title:** Microbiota and Obesity

**Communication:** Oral

**Event:** IUNS 21st International Congress of Nutrition (ICN)

**Venue:** Buenos Aires, Argentine

**Date:** 15-20/10/2017

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**44. Author/s:** Martínez J.A., Abete I., Milagro F.I, Zulet M.A, Van Ommen B

**Title:** Precision Nutrition Based on Omics Knowledge

**Communication:** Oral

**Event:** IUNS 21st International Congress of Nutrition (ICN)

**Venue:** Buenos Aires, Argentine

**Date:** 15-20/10/2017

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**45. Author/s:** Jose Ignacio Riezu-Boj, Fermin I. Milagro, J. Alfredo Martinez

**Title:** Epigenetics of undernutrition and Obesity

**Communication:** Oral

**Event:** IUNS 21st International Congress of Nutrition (ICN)

**Venue:** Buenos Aires, Argentine

**Date:** 15-20/10/2017

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**46. Author/s:** J Alfredo Martinez, Omar Ramos-Lopez

**Title:** Nutrición de precisión basada en tecnologías "ómicas"

**Communication:** Oral

**Event:** I Congreso de Alimentación, Nutrición y Dietética. El Dietista-Nutricionista: pro-motor de salud

**Venue:** Zaragoza, Spain

**Date:** 10-11/11/2017

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## 2.2. Ponencias invitadas

**1. Author/s:** Viviana Loria Kohen, Guillermo Reglero Rada  
**Title:** Presentación de Resultados Estudio de Caracterización Fenotípica y Genotípica en Pacientes de SQM  
**Venue:** Madrid, Spain  
**Date:** 31/3/2017

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**2. Author/s:** Viviana Loria Kohen  
**Title:** Investigando para la nutrición del futuro  
**Venue:** Madrid, Spain  
**Date:** 25/1/2017

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**3. Author/s:** Ana Ramírez de Molina  
**Title:** Casos Prácticos: Del laboratorio a la clínica  
**Event:** Sociedad Española de Inmunología. Pangea, The Travel Store. Máster en Terapias Avanzadas de la Universidad Francisco de Vitoria  
**Venue:** Madrid, Spain  
**Date:** 9/3/2017

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**4. Author/s:** Ana Ramírez de Molina  
**Title:** La Nutrigenética y el cáncer de mama. Importancia de la alimentación personalizada  
**Event:** Curso Experto "Nutrición y Cáncer de Mama". Facultad De Ciencias Económicas. UNED  
**Venue:** Madrid, Spain  
**Date:** 25/3/2017

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**5. Author/s:** Ana Ramírez de Molina  
**Title:** Obesidad y Cáncer  
**Event:** IV Curso Avanzado sobre Avanzado Obesidad y Síndrome Metabólico. Colegio de Farmacéuticos de Madrid  
**Venue:** Madrid, Spain  
**Date:** 29/3/2017

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**6. Author/s:** Jose María Ordovás Muñoz  
**Title:** Nutrición para una vida saludable: presente y futuro  
**Event:** Semana de la Salud. Banco Santander  
**Venue:** Madrid, Spain  
**Date:** 16/2/2017

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**7. Author/s:** Jose María Ordovás Muñoz  
**Title:** Hacia una alimentación personalizada: realidad o expectativa  
**Event:** 14º Congreso AECOC de Seguridad Alimentaria y Calidad  
**Venue:** Madrid, Spain  
**Date:** 21/2/2017

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**8. Author/s:** Jose María Ordovás Muñoz  
**Title:** La nutrigenómica en la práctica clínica: el futuro se hace presente  
**Event:** II Congreso Internacional de la Sociedad Española de Nutrición y Medicina Ortomolecular  
**Venue:** Madrid, Spain  
**Date:** 31/03/2017

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**9. Author/s:** Jesús Argente Oliver  
**Title:** Nuevas dianas genéticas del crecimiento humano  
**Event:** 39 Congreso Anual de la Sociedad Española de Endocrinología Pediátrica (SEEP)  
**Venue:** Málaga, Spain  
**Date:** 11/05/2017

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**10. Author/s:** Jesús Argente Oliver  
**Title:** Aspectos genéticos de la obesidad  
**Event:** 39 Congreso Anual de la Sociedad Española de Endocrinología Pediátrica (SEEP)  
**Venue:** Málaga, Spain  
**Date:** 11/05/2017

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**11. Author/s:** Jesús Argente Oliver  
**Title:** Genetics and growth in the clinical setting. How to deal with it  
**Event:** Second 360 GHEUR 2017 Growth Hormone Diseases  
**Venue:** Barcelona, Spain  
**Date:** 9/06/2017

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**12. Author/s: Jesús Argente Oliver**

**Title: New genetics insights in Primary IGF Deficiency Syndrome**

**Event:** European User Meeting on “Best practice sharing on severe primary IGF-1 deficiency”

**Venue:** Barcelona, Spain

**Date:** 13/06/2017

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**13. Author/s: Jesús Argente Oliver**

**Title: Summary and take home messages**

**Event:** European User Meeting on “Best practice sharing on severe primary IGF-1 deficiency”

**Venue:** Barcelona, Spain

**Date:** 13/06/2017

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**14. Author/s: Jesús Argente Oliver**

**Title: Aproximación clínico-diagnóstica a la talla baja en el niño**

**Event:** 3er Curso Internacional de Endocrinología Pediátrica. Pontificia Universidad Católica de Chile

**Venue:** Santiago de Chile, Chile

**Date:** 16/06/2017

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**15. Author/s: Jesús Argente Oliver**

**Title: Tratamiento con hormona de crecimiento y factor de crecimiento semejante a la insulina tipo I (IGF-I): Realidades y mitos**

**Event:** 3er Curso Internacional de Endocrinología Pediátrica. Pontificia Universidad Católica de Chile

**Venue:** Santiago de Chile, Chile

**Date:** 16/06/2017

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**16. Author/s: Marta Gómez de Cedrón**

**Title: Targeting energetic metabolism in cancer treatment**

**Event:** Agilent Seahorse XF Users Group Meeting. Enabling Advancements In Cell Metabolism Research

**Venue:** Madrid, Spain

**Date:** 26/04/2017

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**17. Author/s: Clara Ibáñez Ruiz**

**Title: Aplicaciones de la Metabolómica al estudio del vino**

**Event:** Curso de posgrado “Tendencias actuales de la investigación en enología”. CIAL, CSIC-UAM

**Venue:** Madrid, Spain

**Date:** 26/04/2017

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**18. Author/s: Jesus Argente Oliver**

**Title: Obesidades en la infancia: Aproximación diagnóstica**

**Event:** 3er Curso Internacional de Endocrinología Pediátrica. Pontificia Universidad Católica de Chile

**Venue:** Santiago de Chile, Chile

**Date:** 16/06/2017

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**19. Author/s: Jesus Argente Oliver**

**Title: Novel genetic modulators of growth**

**Event:** EDGE Meeting

**Venue:** Bilbao, Spain

**Date:** 24/06/2017

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**20. Author/s: Jesus Argente Oliver**

**Title: Obesidades en la Infancia: Nuevas direcciones**

**Event:** Master “Obesidad y sus comorbilidades”. Clínica Universitaria, Universidad Rey Juan Carlos

**Venue:** Madrid, Spain

**Date:** 30/06/2017

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**21. Author/s: Jesus Argente Oliver**

**Title: Unravelling the genetic basis to disorders of pediatric growth**

**Event:** Endocrinology First Global Summit

**Venue:** Athens, Greece

**Date:** 26-27/10/2017

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**22. Author/s: Ana Ramírez de Molina**

**Title: Obesity and Cancer**

**Event:** Colegio de Farmacéuticos de Madrid

**Venue:** Madrid, Spain

**Date:** 14/6/2017

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**23. Author/s: Ana Ramírez de Molina**
**Title: The role of alterations in lipid metabolism**
**Event:** 1st Workshop on Nutrition, diet, physical activity-Cancer for trainees, dietitians, nutritionists, physical activity specialists, nurses and oncologists. ONCONET Project

**Venue:** Portugal

**Date:** 8/9/2017

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**24. Author/s: Viviana Loria Kohen**
**Title: Alimentación y creencias. Trabajar la empatía con el paciente. Alimentación Kosher**
**Event:** VI Jornada Addinma y I Jornada CODINMA

**Venue:** Madrid, Spain

**Date:** 29-30/9/2017

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**25. Author/s: Jose María Ordovás Muñoz**
**Title: Nutrigenetics knowledge as a useful tool in several diseases**
**Event:** 10th Anniversary of the International Symposium on Immunonutrition

**Venue:** Madrid, Spain

**Date:** 18/7/2017

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**26. Author/s: María Taberero Urbietta, Ana Ramírez de Molina**
**Title: Precision Nutrition and Health Platforms for Cancer Patients**
**Event:** ONCO Emergence Forum

**Venue:** Montpellier, France

**Date:** 14-15/12/2017

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**27. Author/s: María Taberero Urbietta**
**Title: From-Omic Sciences to Molecular Precisión Nutrition**
**Event:** Máster Universitario en Ingeniería Biomédica, Universidad Politécnica de Madrid

**Venue:** Madrid, Spain

**Date:** 13/11/2017

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**28. Author/s: Lidia Daimiel Ruiz**
**Title: Genómica nutricional: hacia el abordaje personalizado de la intervención nutricional**
**Event:** Universidad Autónoma de Madrid

**Venue:** Madrid, Spain

**Date:** 12/12/2017

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**29. Author/s: Jesús Argente Oliver**
**Title: Desarrollo y pubertad en el ser humano**
**Event:** Primera Jornada sobre Avances en Pubertad. Sociedad Española de Endocrinología Pediátrica

**Venue:** Madrid, Spain

**Date:** 17/11/2017

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**30. Author/s: Jesús Argente Oliver**
**Title: Avances en genética de la obesidad infantil**
**Event:** Reunión CIBEROBN-CIBERDEM. Instituto de Salud Carlos III

**Venue:** Madrid, Spain

**Date:** 20/11/2017

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**31. Author/s: Francesco Visioli**
**Title: Micronutrienti ed invecchiamento**
**Event:** XXXVIII National Meeting of the Italian Nutrition Society (SINU)

**Venue:** Torino, Italy

**Date:** 20-22/11/2017

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**32. Author/s: Jose María Ordovás Muñoz**
**Title: XVIII aniversario de las becas de investigación Manuel de Oya**
**Event:** Becas Manuel de Oya de Investigación. Facultad de Medicina, UCM

**Venue:** Madrid, Spain

**Date:** 25/10/2017

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**33. Author/s: Jose María Ordovás Muñoz**

**Title: Nutrición personalizada en enfermedades raras, papel del big data**

**Event:** Simposio internacional enfermedades raras y big data: de la investigación a la práctica clínica

**Venue:** Barcelona, Spain

**Date:** 26-27/10/2017

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**34. Author/s: Jose María Ordovás Muñoz**

**Title: La dieta personalizada y el estudio de los genes y el microbioma**

**Event:** Conferencia extraordinaria “La ciencia en su semana”. Fundación Alimentación Saludable. UCM

**Venue:** Madrid, Spain

**Date:** 21/11/2017

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**35. Author/s: Guillermo Reglero Rada**

**Title: Pildoras de innovación**

**Event:** Alibetopías 2017

**Venue:** Madrid, Spain

**Date:** 14/11/2017

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**36. Author/s: Guillermo Reglero Rada**

**Title: Oportunidades de la investigación en alimentación y salud en el CEI UAM+CSIC**

**Event:** #Innoalimentación: La alimentación del futuro. FUAM, Fundación Parque Científico de Madrid

**Venue:** Madrid, Spain

**Date:** 17/10/2017

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**37. Author/s: Guillermo Reglero Rada**

**Title: Opening sesión**

**Event:** Special Cook. Tu salud en el plato

**Venue:** Madrid, Spain

**Date:** 4/11/2017

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## 2.3. Courses

**1. Title: Estadística aplicada a la investigación biomédica con R (3er edition)**

**Researcher:** UAM + IMDEA Food (Biostatistics Unit)

**Date:** 07/09/2017 - 01/12/2017

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**2. Title: Experto en tratamiento dietético del sobrepeso y la obesidad IL3. Instituto de Formación Continua de la Universitat de Barcelona**

**Researcher:** Viviana Loria Kohen

**Date:** 2017 (online)

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**3. Title: Nutrigenética del tiempo: alimentando al reloj molecular. Grado de Nutrición Humana y Dietética. Universidad Autónoma de Madrid**

**Researcher:** Lidia Daimiel Ruiz

**Date:** 14/11/2017

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**4. Title: Chia y Quínoa, los nuevos alimentos: Ciencia, Tecnología y Gastronomía. Escuela Politécnica Superior de Orihuela (Murcia)**

**Researcher:** Moisés Laparra Llopis

**Date:** 18-21/7/2017

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9.

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2017

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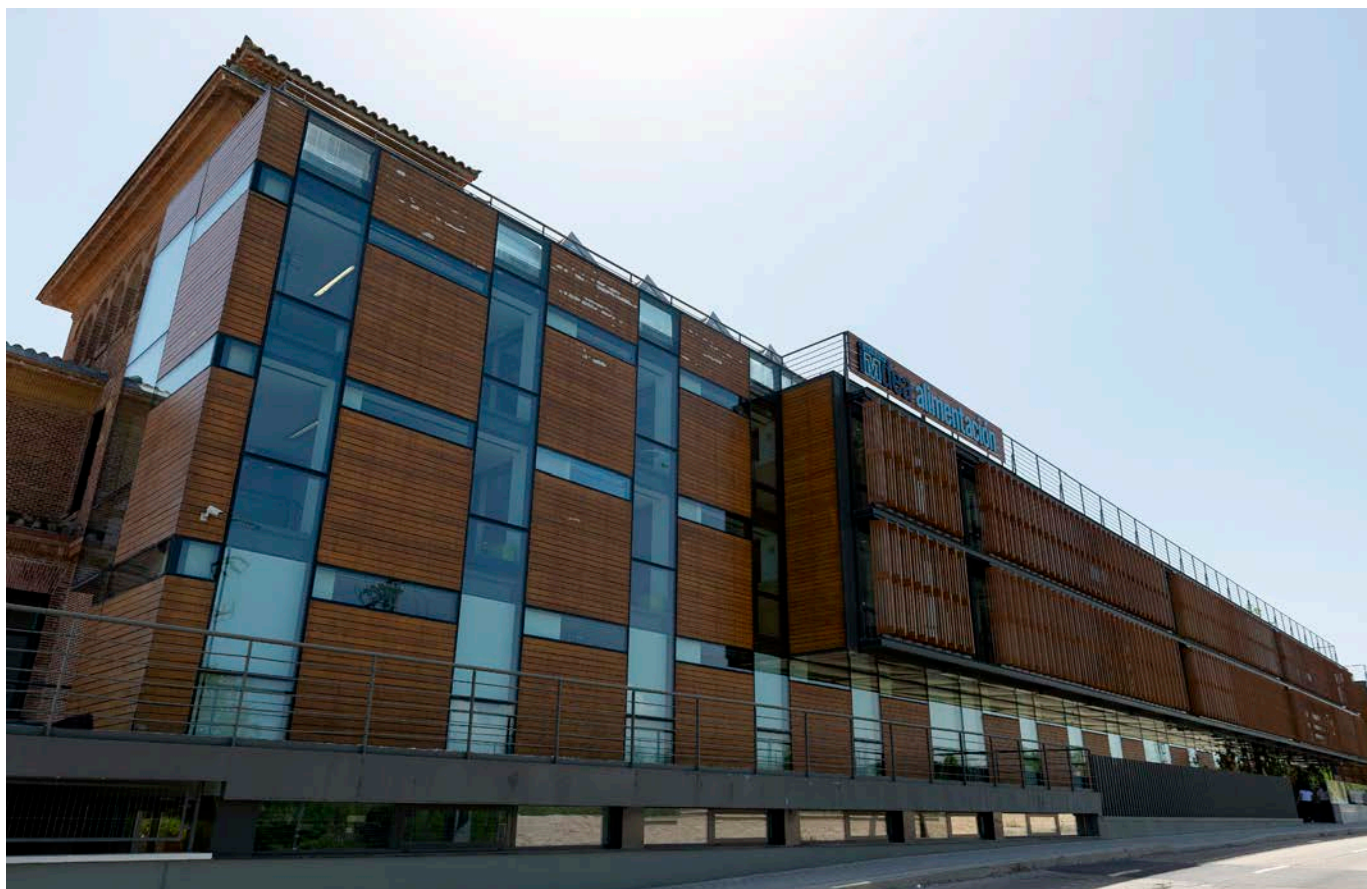
## 1. Headquarters

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 m<sup>2</sup> 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 Infrastructures 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 nucleofector 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 QuantStudio™ 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.

