ANNUAL REPORT 2014

ciberobn

Centro de Investigación Biomédica en Red

Fisiopatología de la Obesidad y Nutrición

Index

1. ORGANIZATION

The fundamental goal of the Centro de Investigación Biomédica en Red-Fisiopatología de la Obesidad y Nutrición (Physiopathology of Obesity and Nutrition (CIBERobn)) is to find answers and solutions that allow controlling obesity and associated pathologies and improving people's quality of life through the study of nutrition.

The Centre collaborates with basic and clinical research groups, and the challenge to its activity is to find the causes and mechanisms that condition the development of obesity and other eating behaviour disorders. The purpose is to detect and deal with the main therapeutic targets that allow controlling and containing diseases derived from being overweight, a condition that is considered today as the epidemic of the 21st century. Recent epidemiological data show 23% prevalence of obesity for Spain in adult individuals and 15-18% prevalence in children and adolescents.

Interaction with healthcare professionals, the food and pharmaceutical industry and patients is key in carrying out this clearly translational research for scientific progress to reach those that are affected as well as to gather their proposals and know their needs.

Therefore, CIBEROBN has conducted and conducts research (basic, clinical, epidemiological and health services research) and technological development activities, in relation to the following:

- Obesity, nutrition and physical activity
- Genetics of obesity
- Body weight homeostasis regulating factors
- Intracellular signalling in tissues and organs
- Mediterranean diet and prevention of metabolic disorders
- Physiopathological factors in nutrition. Epidemiology of obesity
- Childhood obesity and effect of gender on obesity
- Complications (morbidity and mortality) associated with obesity

Mission and visión

CIBERobn's mission is to promote the understanding of mechanisms contributing to the development of obesity in order to reduce its occurrence and prevalence as well as its complications, in addition to nutrition-related diseases.

Through leadership in translational biomedical research, CIBERobn integrates basic, clinical, epidemiological and public health research, provides medical care and promotes public awareness about obesity and nutrition, to become a reference research centre that has the competitive potential of being internationalised and to provide R&D&I consulting services to pharmaceutical companies, food companies and the nation's health authorities.

Through its work in physiopathology of obesity and nutrition and related diseases, the consortium CIBERobn seeks to:

- Gain national and international recognition;
- Organize a well-established network of research groups and associates for the purpose of achieving maximum scientific benefit.
- Increase scientific knowledge and be a useful tool for a health care transformation in our society.

RESEARCH GROUPS AND CONSORTIUM INSTITUTIONS

ISCII IP	Full Name	Institution
CB06/03/0022	Argente Oliver, Jesús	Servicio Madrileño de Salud
CB12/03/30037	Aros Borau, Fernando	Fundación Vasca de Innovación e Investigación Sanitarias
CB06/03/0052	Botella Arbona, Cristina	Universidad Jaume I
CB06/03/0003	Casanueva Freijo, Felipe	Servicio Gallego de Salud
CB06/03/0035	Corella Piquer, Dolores	Universidad de Valencia
CB06/03/1012	De la Osada García, Jesús	Universidad de Zaragoza
CB06/03/0023	Diéguez González, Carlos	Universidad de Santiago de Compostela
CB06/03/0019	Estruch Riba, Ramon	Hospital Clínico y Provincial de Barcelona
CB06/03/0034	Fernández Aranda, Fernando	Fundación IDIBELL
CB06/03/0010	Fernández-Real Lemos, José Manuel	Fundación Instituto de Investigación Biomédica de Girona
CB06/03/0043	Fiol Sala, Miguel	Universidad de las Islas Baleares
CB06/03/0028	Fitó Colomer, Monserrat	Consorci Mar Parc Salut De Barcelona
CB06/03/1014	Frühbeck Martínez, Gema	Universidad de Navarra
CB12/03/30020	Lamuela Raventós, Rosa María	Universidad de Barcelona
CB06/03/0099	Lapetra Peralta, José	Fundación Pública Andaluza para la Gestión de la Investigación en Salud de Sevilla
CB06/03/0021	Lasunción Ripa, Miguel Ángel	Servicio Madrileño de Salud
CB06/03/0047	López Miranda, José	Fundación para la Investigación Biomédica de Córdoba (FIBICO)
CB06/03/0039	Lurbe Ferrer, Empar	Consorcio Hospital Gral. Universitario Valencia
CB12/03/30017	Martínez González, Miguel Ángel	Universidad de Navarra
CB12/03/30002	Martínez Hernandez, José Alfredo	Universidad de Navarra
CB06/03/0060	Palou Oliver, Andreu	Universidad de las Islas Baleares
CB12/03/30012	Pinto Sala, Xavier	Fundación IDIBELL
CB12/03/30007	Portillo Baquedano, María del Puy	Universidad del País Vasco
CB06/03/0001	Remesar Betlloch, Xavier	Universidad de Barcelona
CB06/03/0017	Ros Rahola, Emilio	Hospital Clínico y Provincial De Barcelona
CB12/03/30019	Ruíz Gutiérrez, Valentina	Agencia Estatal Consejo Superior de Investigaciones Científicas
CB07/03/2004	Salas Salvadó, Jordi	Fundación Instituto de Investigación Sanitaria Pere Virgili
CB12/03/30022	Serra Majem, Lluís	Universidad de las Palmas de Gran Canaria
CB06/03/0020	Tena Sempere, Manuel	Universidad de Córdoba
CB06/03/0018	Tinahones Madueño, Francisco	Fundación Pública Andaluza para la Investigación de Málaga en Biomedicina y Salud (FIMABIS)
CB12/03/30038	Tur Marí, Josep Antoni	Universidad de las Islas Baleares
CB06/03/0025	Villarroya Gombau, Francesc	Universidad de Barcelona

Structure and Objectives

CIBERobn is a networking cooperative structure consisting of 34 groups located in some of the most important research centres in Spain. These groups are divided into eight Research Programmes in which projects are carried out. Through multidisciplinary work, we are able to pool our efforts, optimize resources and take maximum advantage of generated knowledge to transfer it to clinical practice and, ultimately, to offer it to patients and to society as a whole.
Specific goals of CIBERobn consist of:

- Conducting joint research, development and innovation programmes in obesity and nutrition
- Contributing to solving healthcare issues relating to this field
- Promoting participation in national research activities, especially those included in the European Framework Programmes for R&D&I
- Favouring the transfer of the results of research processes to society in general and to the productive sector particularly
- Fomenting the dissemination of activities and training of researchers in the field of Physiopathology of Obesity and Nutrition

Organization

As defined in the Articles of Association, governance and administration of CIBERobn shall be the responsibility of the following authorities: the Governing Board and its Permanent Commission and the management authorities represented by the Steering Committee, the Scientific Director and General Management.

Governing Board

The Board consists of three representatives of the Instituto de Salud Carlos III and one for each of the consortium institutions. The President of the Governing Board is the Director of the Instituto de Salud Carlos III, and the Consortium Manager acts as Secretary of the Board.

Permanent Commission

The Permanent Commission consists of the President of the Governing Board, or the person appointed by him/her, the Scientific Director of the Consortium, the Manager of the Consortium, who will act as Secretary, and four members representing consortium institutions.

External Advisory Scientific Committee

This body provides general scientific support and counselling for the Governing Board. It consists of important international scientists from the health sciences field who stand out given their professional or scientific trajectory consistent with Consortium's objectives.

The Committee comprises a President, who is appointed by the President of the Governing Board, approved by the mentioned Governing Board, and at least four members, appointed by the Governing Board. The President will have a renewable 4-year term. The remaining members will have an initial 2-year term that can later be renewed for variable time periods. Members of the External Advisory Scientific Committee shall appoint, among themselves, a Vice President and Secretary.

The members of the External Advisory Scientific Committee are:

Prof. Xavier Pi-Sunyer
Department of Medicine, St. Luke's/ Roosevelt Hospital Center

Prof. Antonio Vidal-Puig
University of Cambridge Metabolic Research Laboratories, Institute of Metabolic Science

Prof. José C. Florez
Center for Human Genetic Research/ Diabetes Unit Massachusetts General Hospital

Prof. José M. Ordovás
Professor Nutrition and Genetics JM-USDA-HNRCA at Tufts University

Prof. Lluis Fajas
Research Director Metabolism and Cancer Laboratory - Montpellier - France

Steering Committee

The CIBERobn Steering Committee is responsible for handling management tasks.

It is a collegial body that must assure that the CIBER is managed taking into account group needs and strategic group objectives.

Mr. Felipe Casanueva Freijo
Scientific Director of CIBEROBN

Mr. Manuel Sánchez Delgado
Manager of the CIBER

Mr. Ramón Estruch
Nutrition Programme

Ms. Rosa Mª Lamuela
Nutrition Programme

Ms. Gema Frühbeck
Adipobiology Programme

Mr. Francisco Tinahones
Obesity Complications Programme

Mr. Fernando Fernández Aranda
Neurocognition and Environmental-Biological Factors Programme

Mr. Andreu Palou
New Strategies and Biomarkers Programme

Mr. Francesc Villarroya
Body Weight Homeostasis Physiopathology Programme

Mr. Manuel Tena Sempere
Training Programme and Platforms

BUDGET

INCOME	2014
ISCIII	2.887.230,00
Financial Income	10.000,00
Agreements and Contracts (forecast)	10.000,00
Total Income	2.909.244,00
Transfers	860.003,64
SPENDING LIMIT	**3.769.247,64**

EXPENSES	
Pluriannual Projects	860.003,64
Fully Authorised Groups	2.233.400,00
Associated Groups	0,00
Training	39.000,00
Programmes	140.000,00
Fat Bank	24.000,00
Structural	230.000,00
Technical U.	250.000,00
Scientific A.	50.000,00
Total expenses	3.826.403,64
Previous private projects	36.318,99
TOTAL EXPENSES	**3.862.722,63**

ITEMISED BUDGET	
Staff	2.500.000,00
Fungibles	517.722,63
Inventoriable	95.000,00
Services	750.000,00
TOTAL	**3.862.722,63**

STAFF

Number of employees during the year to December 31 distinguishing by category and gender.

	MEN			Total MEN
	Indefinite	Work & service	Postdoctoral	
CIBEROBN	9	6	1	16
PhD	3	3	1	7
Degree Holder	4	2		6
Diploma Holder	1			1
Technician	1	1		2
Grand total	9	6	1	16

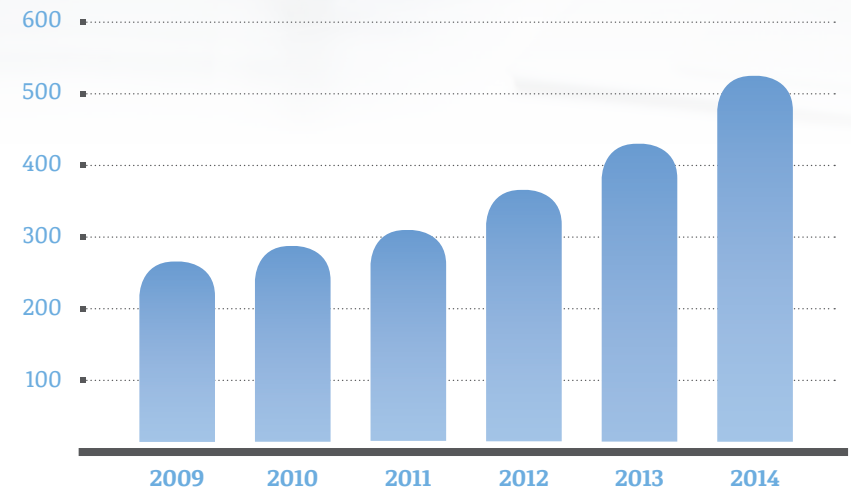
	WOMEN			Total WOMEN
	Indefinite	Work & service	Postdoctoral	
CIBEROBN	29	31	2	62
PhD	2	7	2	11
Degree Holder	14	11		25
Diploma Holder	6	10		16
Technician	7	3		10
Grand total	29	31	2	62

	Indefinite	Work & service	Postdoctoral	Grand total
CIBEROBN	38	37	3	78
PhD	5	10	3	18
Degree Holder	18	13		31
Diploma Holder	7	10		17
Technician	8	4		12
Grand total	**38**	**37**	**3**	**78**

Number of publications per year

It can be seen that the number of publications increases year after year.

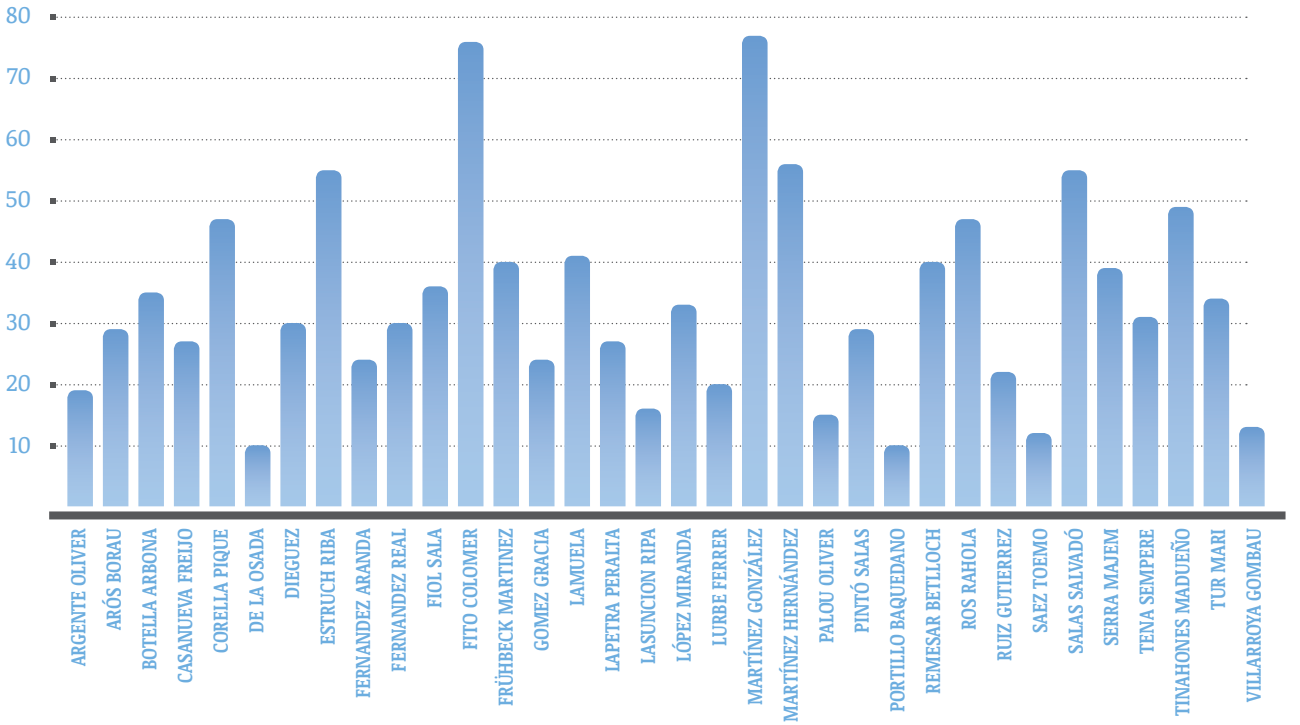
NUMBER OF PUBLICATIONS PER YEAR



Number of publications per group

The total number of publications in 2014 was 531.

NUMBER OF PUBLICATIONS PER GROUP



Journals

The following chart shows the journals with the highest number of publications in 2014:

NUMBER OF PUBLICATIONS PER JOURNAL

Journal	Publications	Impact factor
PloS one	35	3,534
Nutrición hospitalaria	16	1,25
Endocrinology	13	4,644
The British journal of nutrition	11	3,342
Genes and Nutrition	11	3,419
Molecular nutrition & food research	10	4,909
Clinical Nutrition	9	3,94
International journal of obesity	9	5,386
The Journal of clinical endocrinology and metabolism	8	6,31
International Journal of Obesity	8	5,386
Diabetes	7	8,474
European Journal of Nutrition	7	3,84
The American journal of clinical nutrition	7	6,918
Diabetes care	6	8,57
Nutrition, metabolism, and cardiovascular diseases	6	3,875
Anales de pediatría	6	0,722
Molecular and Cellular Endocrinology	6	4,241
Pituitary	5	2,222
Obesity facts	5	1,705
BMC Medicine	5	7,276
Journal of Nutritional Biochemistry	5	4,592
Obesity Surgery	5	3,739
Nutrients	5	3,148
Obesity Facts	5	1,705
European eating disorders review	4	2,252
Hypertension	4	7,632
Journal of agricultural and food chemistry	4	3,107
Metabolism: clinical and experimental	3	3,611

International publications

Publications with at least one international author have been increasing year after year. CIBERobn therefore has greater international relevance.

Year	International publications
2014	163
2013	140
2012	121
2011	100

Patents

It must be pointed out that patents from the year 2010 belonged only to consortium institutions. In 2014, only those patents owned by CIBERobn are taken into account.

	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014
National, filed	3	4	2	2	1
National, granted	1	0	0	0	2
International, filed	2	0	1	0	0
International, granted	1	0	0	0	0

2. SCIENTIFIC PROGRAMMES

Throughout its trajectory, CIBERobn has undergone successive structural and organisational changes all aiming to improve the scientific work efficacy and excellence levels.

The External Advisory Scientific Committee (CACEX) evaluates the activity of this consortium annually, suggesting changes that must be made and particularly the new aspects that must be covered by the scientific research.

The current structure is a set of scientific and structural programmes developed by a conglomerate of different research groups that share common lines and objectives. Therefore, two fundamental types of programmes can be distinguished in CIBER's activity:

1. Scientific Programmes
2. Structural Programmes

Different research groups can participate in each scientific programme, and participation in one programme does not exclude participation in different programmes.

A programme coordinator who will assume the responsibilities of coordinating and representing the programme is appointed from the participating research groups.

The scientific programmes are:

General objectives

The general objective of the CIBERobn nutrition programme is to demonstrate, with the maximum level of scientific proof, the effects of foods and nutrients on the prevention and treatment of diseases, as well as the mechanisms responsible for their effects on health, such that the information that is obtained is useful for making recommendations to patients and the population in general. This programme has been divided into 4 subprogrammes:

- **Mediterranean diet and Cardiovascular Disease:** PREDIMED Study, which seeks to study the effects of a Mediterranean diet supplemented with virgin olive oil or dried fruits and nuts on a set of events consisting of cardiovascular mortality, myocardial infarction and cerebrovascular accident, and to compare them to events resulting from following a diet low in any type of fat.
- **Nutrition and Obesity Genetics:** To learn about the main genetic variants associated with obesity and related phenotypes (dyslipidemias, diabetes, metabolic syndrome, cardiovascular diseases) in different Spanish population groups (the elderly and people with a high cardiovascular risk, the general population, the morbidly obese,...) and to compare them with populations of other countries.
- **Mechanisms of the effects of the different diets, foods and nutrients on health** for the purpose of learning about the protective mechanisms of different dietary patterns, foods and nutrients on different organs and systems of the body in order to make dietary recommendations plausible.
- **Study of weight loss induced by a low-calorie Mediterranean diet and its effects on the risk factors and the incidence of cardiovascular disease in patients who are overweight or obese. PREDIMED II STUDY**: for the purposes of evaluating the effect of an intensive intervention including a low-calorie Mediterranean diet, a physical exercise programme and behavioural therapy on a set of cardiovascular complications, as well as on body weight and adiposity measurements (waist girth) and quality of life.

As a result of the success that the PREDIMED study results have had worldwide, particularly after publication of the main results in the most prestigious international medical journal, The New England Journal of Medicine, edited in Boston (USA), leadership of the group of researchers in the PREDIMED study has been consolidated worldwide. In fact, the main researchers of the study, Dr. Ramón Estruch, Dr. Jordi Salas-Salvadó, Dr. Miguel Ángel Martínez-González, Dr. Emillio Ros, Dr. María Isabel Covas and Dr. Dolores Corella, were invited to present the results at leading medical conferences all over the world, including, for example, the American Heart Association (AHA). The most important paper published in the N Engl J Med was the most downloaded paper in the journal history, and the conventional Mediterranean diet is being included as the basis for dietary treatment in patients with vascular risk, such as in the U.S. Department of Agriculture Dietary Guidelines, the American Heart and Neurology Society guidelines, and the European Society of Hypertension guideline, etc. It was a milestone for it to have such enormous repercussion in both scientific societies and in the mass media, primarily Spanish.

The PREDIMED study has shown for the first time with a maximum level of scientific evidence (randomised clinical trial, with the analysis of final variables having the highest clinical value) that the conventional Mediterranean diet reduces the incidence of major vascular complications (myocardial infarction, cerebrovascular accident and cardiovascular death) in patients with high vascular risk, in addition to improving the main vascular risk factors such as diabetes mellitus, high blood pressure and dyslipidemia. These results show that a healthy eating pattern rich in unsaturated fat is better for cardiovascular protection than another healthy diet, such as a low-fat diet. We have also shown that it is never too late to improve our diet, because the

effects can be observed in just 3 months after making a lifestyle change, and that supplementing patients with a high vascular risk with healthy foods such as extra-virgin olive oil, dried fruits and nuts, fruits and/or vegetables could be considered. Finally, it should be pointed out that these protective effects are observed in all types and subtypes of evaluated participants (over and under the age of 70 years old, diabetics and non-diabetics, hypertensive and non-hypertensive patients,…), so its effects can generally be applied to the entire population. It is striking that even patients who are carriers of "harmful" polymorphisms benefit from the protective effects of the Mediterranean diet when compared with the negative effects of these polymorphisms on cardiovascular health. Over 75 papers have been published in high-impact journals, including The New England Journal of Medicine, JAMA, Circulation, Annals of Internal Medicine, Archives of Internal Medicine, Diabetes Care and American Journal of Nutrition.

Throughout the study, annual training courses for researchers, nurses and dieticians were given at the beginning of December every year in the Schools of Medicine and Pharmacy at the Universidad de Barcelona in order to provide training for the researchers, nurses and dieticians participating in Predimed 1 and currently in Predimed Plus from Las Palmas de Gran Canarias, Palma de Mallorca, Vitoria, Barcelona, Granada, Malaga, Seville, Madrid, Hospitalet de Llobregat, Gerona, Castellón and Reus. A total of between 175 and 200 people attended each year. Over 10 PhD dissertations have also been defended based on papers relating to the PREDIMED study.

The PREDIMED study has been a collaboration model between clinical, basic applied and basic researchers all across Spain. Predimed 1 included the collaboration of researchers from level-three hospitals, universities, CSIC and the primary care area. Specifically 18 centres from 8 Spanish regions (Catalonia, Basque Country, Navarre, Aragon, Valencia, Balearic Islands, Andalusia, Madrid and Canary Islands). Furthermore, groups from Las Palmas de Gran Canarias, Palma de Mallorca, Vitoria, Barcelona, Granada, Malaga, Seville, Madrid, Hospitalet de Llobregat, Gerona, Castellón and Reus participate in Predimed Plus.

The huge international repercussion of the Predimed 1 results assures the viability and sustainability of Predimed Plus, and therefore the viability of the CIBERobn nutrition programme. The Predimed Plus study seeks to demonstrate that a Mediterranean lifestyle, including intervention with a low-calorie Mediterranean diet, a physical activity programme and behavioural therapy, is effective both in the prevention of cardiovascular complications and in reducing body weight and adiposity parameters. Last year over 1,000 participants were included in Predimed Plus from 10 recruitment centres and at the end of the year, after getting funding, another 12 centres were incorporated, so the recruitment rate will pick up considerably.

P2. ADIPOBIOLOGY

The initially programmed objectives and milestones have been met satisfactorily because all the integrating groups have worked well and with high scientific performance. The assessment of the work plan carried out is very positive because all the objectives proposed in the 3 subprogrammes have been undertaken, responsibly completing the ambitious plan updated for this period. This is reflected in the extremely high number of publications in the first quartile and decile of the specialization, such as Cell Metabolism, Diabetes, Diabetes Care, Circulation, and Nature group, among others.

In the field of Adipobiology, transcriptomic studies have assessed the biological processes and metabolic pathways mainly affected by obesity, as well as by the development of different comorbidities and the specific location of the fatty deposit (omental versus subcutaneous). This work has also allowed identifying new genes, that are initially not linked to obesity, the value of which as therapeutic target candidates is being further studied.

Characterization of the role of integral membrane proteins has been a huge step forward because it gives, in an innovative manner, a relevant function in peripheral energy homeostasis to elements and organelles of the adipocyte (versus the classic notion of unique central control). In this context, the central nervous system is vitally important, but adipose tissue is also a determinant as an extraordinarily dynamic, multicellular (adipocyte and stromal vascular fraction, where macrophage infiltration and the extensive resulting autocrine-paracrine cross-talk stand out) and even "multi-compartmental" endocrine organ of the adipocyte itself (membrane, lipid droplets and cytoskeleton, among others).

In relation to adipo-proteomics, the groups have worked on figuring out the differences in the proteome and secretome in different experimental models, nutritional states and physiopathological conditions in animal and human models. It should be pointed out that this has involved some groups (UCO and Casaneuva) starting up and/or developing highly specialised methodology, turning them into a reference for the remaining members as they have a key study tool that can be applied as a complement in new scientific approaches. It should be mentioned how some of the proteins identified in the different circumstances object of study appear invariably modified, which from the teleological viewpoint is a relevant piece of data as regards its possible use for therapeutic purposes. Likewise, the identification of emerging adipokines and their link to obesity according to low-grade inflammation and the glycaemic status of the individual allow discerning its application in the health care practice in the future as more specific diagnostic biomarkers and follow-up biomarkers of cardio-metabolic risk associated with obesity.

Finally, the analysis of the factors involved in the proliferation and differentiation of adipose tissue in obesity by studying the relationship between hypertrophy and hyperplasia in the context of adipose tissue expansion, as well as the differences existing between the different deposits that can contribute to or impair the development of obesity and its associated complications has also been highly productive. Further study has also been done on distinguishing the characteristics that condition the white versus brown adipocyte phenotype and participation in the energy homeostasis control by further studying the biology of precursor cells and the biology of the mature adipocyte, identifying possible molecular targets for energy homeostasis regulation and metabolic control. In this context, it is necessary to highlight the findings of CIBER groups as authentic global benchmark (Diéguez, Fernández-Real, Tena-Sempere).

In the field of determining the proliferative and adipogenic capabilities of precursor cells of adipocytes from different areas of the body, the progress is also a benchmark both nationally and internationally in discerning the different elements in the progenitor cell population of adipose tissue conditioning the development of comorbidities or that the individual is "metabolically healthy" (Tinahones and Frühbeck).

Finally, the functional differences existing between white and brown adipose tissues have been the object of study in the molecular perspective focusing on the increase in the energy expenditure by means of brown adipose tissue activation and the possible transdifferentiation of white adipocytes into brown adipocytes. In this sense, the Adipobiology Programme has a world reference group in this field that has developed knowledge from the viewpoint of not only obesity, but also of other findings in relation to FGFs and sirtuins (Villarroya).

Another one of the enormous values added to the Adipobiology Programme is its perfect integration and complementarity with the different existing platforms, and more specifically with the Fat-Bank Platform.

The greater interconnection of groups with one another and with other CIBERs must also be pointed out. It has resulted in the possibility of research in which specialization and high-performance equipment not available in other centres could be applied in the integrating collaborations which have synergistically resulted in innovative approaches and achievements far superior to those that could have been attained individually by each of the groups on their own. Likewise, it should be mentioned that this progression with the simultaneous collaboration of a number of groups, as well as with other international groups, is yielding high-impact tangible results in the specialization involving the participation of multiple groups (instead of a couple, which was the tendency when the CIBER began).

In addition, prolific activity of the groups is good evidence of the close and fluid collaboration between the groups, which has furthermore culminated in the generation of new scientific approaches, research strategies and basic clinical expectations, as well as the application of the INTER-CIBER Inflames project, which has been granted. The Adipobiology Programme is fully in line with international trends, handling all the latest topics and CIBER groups deservedly standing out as international benchmark. Apart from the extraordinary training capability of each of the groups individually, it is necessary to point out the enormous advantage offered by short internships of young researchers in other CIBEROBN groups. This directly benefits researchers undergoing training, and it in turn allows establishing closer collaboration ties between groups and developing new technologies and scientific approaches.

REQUESTED AND/OR GRANTED RESEARCH PROJECTS TO BE FUNDED BY THE PROGRAMME OR FROM OTHER RESOURCES:

Besides the characteristic projects in national and industry-backed competitive calls for proposals of the different groups, in the granted European projects section it is necessary to highlight the Diéguez and Tena-Sempere groups, which participate in prestigious European consortiums with maximum funding in both KBBE and HEALTH, and special Programmes such as Marie Curie and Starting Grants to conduct research in the framework of adipobiology. Furthermore, the FP7 Cooperation Work Programme HEALTH (Frühbeck) participates in three projects (DORIAN, SPOTLIGHT and MoodFOOD), which are still being carried out. In addition, it should be pointed out that in this year call for proposals some groups have submitted applications in affiliation with CIBEROBN, but they have not been granted.

Given the eminently basic nature of the Adipobiology Programme, direct transfer of the research results to clinical practice is considerably more difficult than in other programmes. In fact, the arsenal of drugs for a disease that is as prevalent as obesity is extraordinarily limited. Nevertheless, it is to be expected that the consolidation of the programme over time along with the identification of possible therapeutic targets will enable this transfer to be much more obvious, as some groups have already demonstrated (Tinahones, Fernández-Real, Palou, Villarroya and Frühbeck, among others) by conferring translational value to their research work. It is also necessary to point out the value of being able to transfer and translate to clinical practice body composition studies which focus on determining body fat percentage, which have allowed establishing new diagnostic and evolutionary criteria with a broad clinical application, together with the development of clinical guidelines, directly benefiting patients and health systems.

NATIONAL AND INTERNATIONAL EXTERNALISATION INITIATIVES:

In this sense, greater importance of CIBEROBN in general and of the Adipobiology Programme in particular has been seen with participation in national and international congresses, particularly in relation to the European Association for the Study of Obesity, SEEDO and SEEN. This has been particularly evident on an international level, where more CIBEROBN researchers have been invited as speakers, members of Scientific Committees, etc. Furthermore, Dr. Diéguez and Dr. López have coordinated, as guest editors, a special issue of the Mol Cell Endocrinol journal, with the participation of other Adipobiology Programme groups of CIBEROBN.

SOCIETAL DISSEMINATION INITIATIVES:

Most groups have actively collaborated in the tasks of disseminating results to society. They have done this by disclosing scientific advances obtained and their importance for the population in a simple and reasonable manner for the general public through print press and audiovisual mass media, as well as by being available to discuss topics from their area of specialization when the CIBERobn Communication team has requested. Particularly, the findings of the Villarroya, Diéguez, Tinahones and Fernández-Real group have had abundant media coverage on the TV, radio and press in prime time news broadcasts and with considerable media repercussion. In addition, in a collaboration between the European Association for the Study of Obesity, SEEN, SEEDO and CIBERobn, the general population was alerted as to the importance of obesity both for individuals directly affected by the disease and its associated complications and for society as a whole due to the enormous cost it involves in relation to employment and health.

P3. COMPLICATIONS OF OBESITY AND CHILDHOOD OBESITY

Several milestones have been communicated in 2014 in the form of publications resulting from innovative studies with a high clinical applicability.

The changes in microbiota that have been taking place over the past few decades as a result of the change in lifestyles is an environmental factor which as of right now is being gauged as the factor that is responsible for causing obesity and metabolic diseases. It has been found that a factor such as intermittent hypoxia, which occurs in many obese patients with sleep apnoea syndrome, is able to modify microbiota, reducing species diversity (Moreno-Indias I et al. Eur Respir J 2014). This loss of diversity has been associated with insulin resistance.

Clinical trials are necessary to obtain evidence as to which is the best therapeutic strategy for patients. When oral therapy fails in type 2 diabetes patients, basal insulin therapy is started. When this therapy also fails, there were two options for treating these patients: adding ultra-fast acting insulin to the main meal or taking two insulin mixtures with basal insulin and fast-acting insulin at breakfast and dinner. There was no evidence as to which of these strategies was better. As a result of a clinical trial in which CIBERobn collaborated in designing it, the two therapeutic alternatives were compared, showing that the two are equally safe and that use of two mixtures has a discreet increase in the efficacy of reducing glycated hemoglobin (Tinahones FJ et al. Diabetes Obes Metab. 2014).

Postprandial hypertriglyceridemia contributes more to cardiovascular risk than fasting triglycerides do, because it is associated with a postprandial inflammatory state, among others reasons. Patients suffering obesity usually have atherogenic dyslipidemia which includes postprandial hypertriglyceridemia, and it has been shown that use of olive oil as a source of fat reduces postprandial inflammation compared to other oils and that it also reduces endotoxemia, a factor that is closely linked to inflammation (Camargo A et al. Food Chem. 2014).

Aging and obesity is one of the lines of research included in this programme. In a multicentre study in which CIBERobn participates (LIPGENE), it has been shown that telomere length is closely related to endothelial dysfunction (González-Guardia L et al. Age (Dordr). 2014).

The study of childhood obesity is a subprogramme within this programme.

Important strides were made this year in this in this area. A prospective study has shown that the weight of children when they are born and postnatal weight gain predict the value of cardio-metabolic parameters assessed at 5 years. This study stresses the importance of excess weight from birth and in the first few months of life, and that the increase is related to cardiovascular risk variables at very early ages of life (E Lurbe et al. Hypertension 2014).

The discovery of a mutation in compound heterozygosity in the RNPC3 gene, affecting the minor spliceosome, generating obesity and familial isolated growth hormone deficiency (EMBO Mol Med 2014), has entailed describing a new syndrome. Specific diagnosis and treatment with biosynthetic growth hormone provides a solution to obesity in patients studied.

The obesity-cancer association right now is undeniable. Within this programme there is a obesity and cancer subprogramme. The recruitment of the series of patients with colon cancer ended in 2014, and colon tumour and healthy tissue samples together with visceral adipose tissue were included in a biobank for epigenetic analysis.

Collaboration with the enterprise GENDIAG in generating a tool, marketed under the name of "Nutri CODE", which applies to clinical practice existing knowledge about the nutrigenomics of obesity and of metabolic syndrome (Dr. López Miranda).

P4-01. Neurocognition, environmental factors and endocrine-metabolic-genetic factors in extreme weight situations.

GENERAL OBJECTIVE:

Analyze neurocognitive, sensory and neurodevelopmental impairments in extreme body weight situations and interaction thereof with environmental and biological (endocrine-hormonal-genetic) factors.

SPECIFIC OBJECTIVES:

- Examine the neuropsychological (executive and attentional functions), environmental, sensory, psychopathological and neurodevelopmental differences in extreme weight situations (different subtypes of EDs, obesity with and without comorbid ED, when compared with healthy control groups).
- Identify the differential patterns of change in circulating levels of endocrine-metabolic and genetic factors related to energy balance in ED and obesity, in relation to control groups.
- Examine the interaction between the endocrine-hormonal-genetic functioning (endocannabinoid and hormonal functioning in energy metabolism, among others), cognitive functioning (neuropsychological performance), sensory functioning (olfactory sensory system), psychopathological functioning (depression and general psychopathology), and exposure to persistent organic compounds (environmental hormone disruptors) based on the Body Mass Index (BMI), and determination of endophenotypes associated with BMI variability and the abnormal intake of food.

MILESTONES:

A.1) Expansion and total collection of clinical samples. Comparative analyses of data concerning psychopathological, emotional, neurocognition, environmental and personality aspects in obese patients, related eating disorders and extreme weight situations. BMI-related phenotypic characterization.

A considerable number of cases and controls have been included in order to conduct studies on a powerful sample size. A total of 394 women in extreme weight situations (108 patients with anorexia nervosa, 20 low-weight controls, 119 normal weight controls, 16 overweight controls, 38 obese women with bulimia nervosa/binging disorder, 51 obese women and 47 morbidly obese women) were included in 2014.

Several studies in the subprogramme, in which neurocognitive and sensory parameters in extreme weight situations are analysed, have been published or were submitted to be published:

- Villarejo C. et al., (2014). Loss of control over eating: a description of the eating disorder/ obesity spectrum in women. Eur Eat Disord Rev. 22(1):25-31
- Baños RM et al., (2014). Relationship between eating styles and temperament in an Anorexia Nervosa, Healthy Control, and Morbid Obesity female sample. Appetite. 76; 76-83 doi: 10.1016/j.appet.2014.01.012.
- Bueno et al., (2014). Late Onset Eating Disorders in Spain: Clinical Characteristics and Therapeutic Implications JOURNAL OF CLINICAL PSYCHOLOGY, Vol. 70(1), 1–17
- Granero et al (2014). Food Addiction in a Spanish Sample of Eating Disorders: DSM-5 Diagnostic Subtype Differentiation and Validation Data. Eur. Eat. Disorders Rev. 22 (2014) 389–396
- Claes et al (2015). Is Non-suicidal Self-injury Related to Impulsivity in Anorexia Nervosa? Results from Self-report and Performance-based Tasks. Eur. Eat. Disorders Rev. 23 (2015) 28–33
- Fernández-Aranda, F. et al. (2015) Smell-taste dysfunctions in extreme weight/eating conditions: analysis of hormonal and psychological interaction - submitted PLOS ONE.

- Sauchelli et al, (2015). Physical activity in anorexia nervosa: how relevant is it to therapy response? - submitted International J Beh Nutrition Phys. Activity
- Islam, MA et al. (2015). Olfaction in ED and Abnormal Eating Behaviour: A Systematic Review - submitted Eur. Eat Dis. review
- Fagundo, AB et al. (2015). Modulation of Higher-order Olfaction Components on Executive Functions in Humans - submitted PLOS One

Preliminary results have been presented in different congresses and symposiums over the last year:

B.1) Characterization of patients with extreme weight situations, and with related EDs, based on endocrine-metabolic-genetic parameters (opioid system, endocannabinoids, hormones and cardiovascular markers) and integrating models.
A number of studies analysing endocrine-metabolic parameters and integrating models have been published, and there are other studies which are being prepared or were submitted to be published:

- Fernández-Aranda et al., (2014). Moderate-Vigorous Physical Activity across Body Mass Index in Females: Moderating Effect of Endocannabinoids and Temperament. PLOS ONE, 9 (8):e104534
- Pardo et al., (2014). Association of Irisin with Fat Mass, Resting Energy Expenditure, and Daily Activity in Conditions of Extreme Body Mass Index. International Journal of Endocrinology: 857270, 9 pages
- Pastor et al., (2014). Analysis of ECs and related compounds in plasma: artifactual isomerization and ex vivo enzymatic generation of 2-MGs. J. Lipid Res. 2014. 55: 966–977
- Puig et al., (2015). Hypothalamic damage is associated with inflammatory markers and worse cognitive performance in obese subjects. J Clin Endocrinol Metab.; 100(2):E276-81
- Nogueiras et al. (submitted). Circulating betatrophin levels are increased in anorexia and decreased in morbid obese women. Submitted to Journal of Clinical Endocrinology & Metabolism.
- Garrido et al. (submitted) An increase in visceral fat is associated with a decrease in the taste and olfactory capacity - Submitted International Journal of Obesity
- Pastor et al., (in preparation). Olfaction capacity is inversely associated with circulating levels of the endocannabinoid 2-arachidonoylglycerol and body mass index.
- Ortega, FJ et al (in preparation). Common genetic variations of taste receptor, type 2, member 38 (TAS2R38) are associated with extreme weight disorders - paper in preparation.
- Ortega FJ et al (in preparation). Extreme weight conditions and olfactomedin 2 (OLFM2) - paper in preparation.

P4-02. Neurocognition and longitudinal analysis under extreme weight conditions: stability of specific endophenotypes and their association with response to treatment

GENERAL OBJECTIVE:

Analyze the stability of neurocognitive functioning under extreme weight conditions (ranging from anorexia nervosa to obesity) during treatment, and analyze the possible factors associated with the therapeutic response.

SPECIFIC OBJECTIVES:

- Analyze possible changes in neurocognitive endophenotypes (executive and attentional functions), neurodevelopmental and sensory endophenotypes (sleep, olfactory-taste), in extreme weight situations (ranging from anorexia nervosa to obesity, including related eating disorders) after usual treatment.
- Examine the interaction between endocrinological and psychological functioning (personality, psycho-

pathology, clinical status and neuropsychological-sensory performance), in extreme weight situations (ranging from anorexia nervosa to obesity, including related eating disorders), after usual treatment.

- Identify predictive clinical, neuropsychological, personality and endocrinological factors of therapeutic efficacy in extreme weight situations (ranging from anorexia nervosa to obesity, including related eating disorders).
- Examine the efficacy of experimental cognitive stimulation (braintraining) treatment in modulation of neurocognitive functioning in extreme weight situations.

MILESTONES:

B.1) Analysis of the stability of psychopathological parameters, neurocognitive parameters and Body Mass Index over time and after a treatment.
Several studies are being prepared, and the following studies have already been published or were submitted to be published:

- Custal et al (2014). Treatment outcome of patients with comorbid type 1 diabetes and eating disorders. BMC Psychiatry 2014, 14:140
- Fagundo et al (2014). Physiological and Brain Activity After a Combined Cognitive Behavioral Treatment Plus Video Game Therapy for Emotional Regulation in Bulimia Nervosa: A Case Report. J Med Internet Res 2014 | vol. 16 | iss. 7 | e183 | p.1
- Agüera, Z. (2015). Changes on body composition in patients with restricting and binge/purging subtypes of anorexia nervosa: predictors of body composition recovery and treatment outcome – Submitted The American Journal of Clinical Nutrition
- Tarrega et al (2014). Explicit and Implicit Emotional Expression in Bulimia Nervosa in the Acute State and after Recovery. PLOS ONE Volume 9 | Issue 7 | e101639

Overall summary

The results and participation of the groups in this programme is being excellent both with regard to intergroup collaboration and with regard to external collaborations with other CIBERs (CIBERSAM, CIBERDEM and CIBERESP) and international collaborations. Dialogue between groups is constant and synergies are being generated both within CIBER and on an international level.
Some of the more prominent results reflecting this positive assessment are:

- Increase in publications and scientific dissemination on the topics object of study of the CIBEROBN (total publications in the programme: 14; this is an increase with respect to 2013: 5; 2014-9; 2015-16).
- Participation in preparing the Pluriannual Guideline for the Ministries of Health in relation to "Actualización sobre el Estado Actual de los Trastornos de la Alimentación en España y Guía de Recomendaciones"- 2014 (Authors: Dr. F Fernández Aranda and Dr. S. Jiménez-Murcia)
- Greater internationalisation through participation in consortiums: Playmancer; GWAS of Anorexia Nervosa and Abnormal Eating Behaviour; GWAS of Psychiatry; COST-EU-BM1105)
- Increase in the application and intake of resources for research: Participation of two groups in our Programme as collaborating groups in the Network of Excellence (26/11/2014)- Secretary of State for Research, Development and Innovation- MINECO/PSI2014-56303-REDT; and grant of an EU project to two members of our Programme (H2020 EhcoButtler- H2020-643566/2014-16); FIS PI14/290.
- Increase in dissemination: Increase in the visibility, general dissemination and social dissemination of the topics object of study of the CIBERobn in the mass media (print press, radio, TV and internet); active participation in the annual meeting of the Semana de la Ciencia, for scholars and the general public, in Madrid, on behalf of CIBERobn; sponsorship of five conferences and foreign professors from within our programme were invited (1 UK; 2 France; 1 Belgium; 1 Italy)

P5. NEW STRATEGIES AND BIOMARKERS IN THE PREVENTION AND TREATMENT OF OBESITY AND EATING DISORDERS

The programme "New Strategies and Biomarkers in the Prevention and Treatment of Obesity and Eating Disorders" is formed by two subprogrammes, one focused on the identification of new biomarkers and technologies for the prediction and prevention of obesity and its complications, and another one more focused on the effects and importance of physical activity, which overlap one another.

subprogramme 1 "IDENTIFICATION AND USE OF NEW BIOMARKERS AND OTHER FACTORS SPECIFIC FOR THE CONTROL OF HEALTHY FUNCTIONS AND IN THE PREVENTION OF OBESITY"

The fundamental objective is the identification of biomarkers, nutrients and other factors that are useful in the prevention of obesity. The search for biomarkers is being carried out to a large extent, but not exclusively, in blood cells.

Huge advances were made in 2014 in this objective, having characterised the usefulness of blood cells in the search for biomarkers in nutrition and obesity studies. So as part of the European project I.FAMILY, markers having a preference for fats and sugars which can be predictive of the development of obesity in children have been identified in blood cells. In studies with animal models, early markers of obesity and impairments of energy homeostasis have been identified using the PBMC blood cell fraction. The description of a methodology for predicting the predisposition to overweight, obesity and their complications that has been developed within the framework of the European project BIOCLAIMS (led by the coordinator of the Programme), based on the combined analysis of a large number of mRNAs in PBMC, and which has been patented by the Universidad de las Islas Baleares and CIBER stands out. It is the first 'nutrigenomic biomarker' described for predicting the predisposition to obesity in early stages of life. It is also useful for identifying those infants that may benefit the most from breastfeeding. In addition, a cohort of children followed from birth has been established for validation in blood samples of the biomarkers of interest identified in humans. At the same time, another work, also in children, is underway which assesses the impact of intrauterine life and postnatal growth on cardiometabolic risk. In adults, collaborations have been instituted to reflect biomarker studies in situations associated with extreme body weight. Furthermore, genetic markers (generally SNPs) and epigenetic marks have been studied as part of this subprogramme, and various markers that can help to determine the most suitable treatment for overweight/obesity and to predict the response to the intervention have been identified. Furthermore, advancements have been made in the identification of nutritional biomarkers, which will be useful for evaluating the functional effects of foods in intervention studies. Specifically, a marker of the consumption of beer and another marker of the consumption of wine have been identified in urine. The start up of a human PBMC culturing system for testing the functional effects of bioactive compounds also stands out.

In addition, new strategies and new bioactive compounds for the prevention and treatment of obesity are being analysed in this subprogramme. One of the strategies consists of increasing the energy dissipating capability, fomenting the conversion of white adipose tissue into brown adipose tissue (browning process), carried out as part of the European project DIABAT. Studies to see how different nutritional treatments, such as for example a combination of polyphenols, are capable of affecting the browning capability and thus contributing to the control of body weight in rodents have been conducted in this period. Another strategy has consisted of identifying compounds with the capability to modulate the activity of AMPk, and it was described that pterostilbene, a resveratrol derivative, reduces lipogenesis in an effect mediated by activation of this protein. It has also been described that the lipogenesis inhibitory effect of resveratrol would be mediated by modulation of miRNAs.

Scientists in this programme are actively involved in food reformulation processes in relation to health claims in foods, having a huge and undeniable economic impact and associated with a foreseeable impact on health (particularly for controlling obesity and the most important food-related chronic diseases). The objective of the BIOCLAIMS project, which ends in 2015, is to provide scientific information in order to allow supporting health claims. This has been associated with participation in other European projects, and in 2014, a budding collaboration in an industrial research business consortium CIEN (SMARTFOODS) (selected for funding by the CDTI).

Subprogramme 2, "NEW KEYS IN THE USE OF PHYSICAL EXERCISE FOR THE TREATMENT OF OBESITY"

The objective is to develop physical exercise programmes for the treatment of obesity and its complications, targeting both the adult population and the child population. The development of computer platforms stands out among the protocols that have been established.

Progress has been made in 2014 in the development of the programme for the Integrated Care of Childhood Obesity (PAIDO), with the introduction of programmes that improve the yield of physical exercise in the prevention/treatment of obesity, supported by modern technologies for evaluating the cardiorespiratory capability of obese children. A technological research unit, PEDITEC, between the UPV and Hospital General de Valencia, has been created to that end. The daily work of health care staff dedicated to managing obesity is done in conjunction with engineers who develop signal sensing software (detecting cardiorespiratory fitness, adrenergic activity, response to exercise) through mobile devices and smart fabrics. One of the projects being developed development has been funded in the FIPSE 2014 call for proposals of Instituto de Salud Carlos III. At the same time as customising therapy for physical exercise, parameters that non-invasively evaluate the vascular phenotype have been obtained as a marker of hemodynamic impairments in these children and their response to the physical exercise programme. In addition, an evaluation protocol has been written for measuring psychological aspects related to the measurement of physical activity in children (subjective fatigue, attentional processes, affection, motivation, barriers, etc.) because there were hardly any adapted instruments in the Spanish sample for evaluating these aspects in children. Furthermore, a search for an extensive sample of children has been conducted in order to validate and analyse the psychometric properties within said sample. These instruments will be used in a series of experiments the objective of which is to study the mechanisms involved when children go from being sedentary to being active. The mechanisms that will be investigated by means of different experiments are: attentional strategies, induction of positive emotions, induction of self-efficiency and use of modelling strategies. At the same time this was being done, two active video game prototypes have been developed to promote physical activity in children who are obese and overweight, and it is currently undergoing validation. Interaction between physical exercise and BMI has been evaluated in adults, extreme weight situations (including obesity and anorexia) being evaluated. Therefore, for example, it has been determined that low physical activity in obese individuals may be due to an interaction between psychological and biological factors: obese individuals show a temperamental profile and endocannabinoid levels different from the controls.

Nutritional intervention studies have been conducted in severely obese adolescents, and it was observed that a low-calorie diet together with a physical activity programme involves a weight reduction and an improvement in plasma inflammatory and endothelial parameters. In obese adolescents, the vascular niche is severely affected and takes much longer to recover, even when the inflammatory parameters normalise. It has already been determined in adults, in an analysis in a Mexican population, that there is no evident relation between the components of metabolic syndrome and the level of physical activity in this population. Furthermore, it has been characterised that regular training increases antioxidant defences and reduces oxidative damage markers, and this effect is enhanced by supplementing with omega-3 fatty acids, which also reduces inflammation markers associated with regular training or with intense physical exercise.

In summary, the proposed objectives, including the creation of new collaborations, which have translated into interesting results in the field of the prevention and treatment of obesity, have been satisfactorily met in 2014. The results, in the form of prevention biomarkers, strategies for increasing the energy dissipating capability and exercise protocols specifically adapted for reducing obesity and cardiometabolic risk, are undoubtedly a huge advancement and will have very relevant applications in the fight against obesity.

P6. PHYSIOPATHOLOGY OF BODY WEIGHT HOMEOSTASIS

This programme is based on conducting multidisciplinary studies in various pre-clinical and clinical models of energy homeostasis impairment as the basis for generating physiological knowledge (about mechanisms for controlling energy balance and related bodily functions) and pathological knowledge (relating to impairments in overweight conditions) that can be transferred to clinical practice for obesity and its associated co-morbidities.

Significant progress has been made in 2014 in the identification of new etiopathogenic mechanisms and therapeutic targets with translational potential in the field of obesity and its complications, essentially by means of studying pre-clinical models. New inter- and intra-cellular signals involved in controlling the energy intake and expenditure, acting both centrally and on peripheral tissues that are particularly relevant on a metabolic level, such as the liver, muscle and adipose tissues, have been identified for this purpose. In addition, emphasis has continued to be placed on establishing interactions of the body weight control mechanisms and their dysfunction with biological determinants (sex, reproductive gestation and breastfeeding processes) by means of pre-clinical experimental models.

This programme consists of four subprogrammes. Important advancements have been made in all of them in 2014, and those aspects that must be pointed out are: a) the existence of a number of publications, several being of the highest international level, covering the work of the programme, and b) the frequent participation of several collaborating groups to conduct these studies, which is an is an unequivocal indicator of the programme's cross-sectoral approach and the collaboration that it (and, in fact, the CIBER as a whole) generates in biomedical research in our area.

Besides the bibliometric data that CIBER possesses as regards scientific production, one or two outstanding publications optimally exemplifying the preceding two points are indicated below for each of the subprogrammes. The number superscripts indicate co-participation of PIs from different groups in that work, thereby showing the collaborative nature within the programme of those contributions.

Subprogramme 1. Influence of gonadal and nutritional factors, early developmental events and transgenerational changes on the development of obesity.

- Sánchez-Garrido MA, Ruiz-Pino F, Manfredi-Lozano M, Leon S, Garcia-Galiano D, Castaño JP, Luque RM, Romero-Ruiz A, Castellano JM, Diéguez C2, Pinilla L, Tena-Sempere M1. Obesity-induced hypogonadism in the male: premature reproductive neuroendocrine senescence and contribution of Kiss1-mediated mechanisms. Endocrinology. 2014 Mar;155(3):1067-79

Subprogramme 2. Gestational and breastfeeding mechanisms in programming obesity in adults.

- Palou M, Priego T, Romero M, Szostaczuk N, Konieczna J, Cabrer C, Remesar X2, Palou A1, Pico C1. Moderate calorie restriction during gestation programs offspring for lower BAT thermogenic capacity driven by thyroid and sympathetic signaling. Int J Obes (Lond). 2015 Feb;39(2):339-45.
- Martínez de Morentin PB, Lage R, González-García I, Ruíz-Pino F, Martins L, Fernández-Mallo D, Gallego R, Fernø J, Señarís R, Saha AK, Tovar S, Diéguez C1, Nogueiras R1, Tena-Sempere M2, López M. Pregnancy Induces Resistance to the Anorectic Effect of Hypothalamic Malonyl-CoA and the Thermogenic Effect of Hypothalamic AMPK Inhibition in Female Rats. Endocrinology. 2015 Mar;156(3):947-60

Subprogramme 3. UNDERLYING MECHANISMS OF BARIATRIC SURGERY, IDENTIFYING PROCESSES FOR THE DEVELOPMENT OF NEW, NON-SURGICAL THERAPEUTIC STRATEGIES.

- Lancha A, Moncada R, Valentí V, Rodríguez A, Catalán V, Becerril S, Ramírez B, Méndez-Giménez L, Frühbeck G, Gómez-Ambrosi J. Effect of sleeve gastrectomy on osteopontin circulating levels and expression in adipose tissue and liver in rats. Obes Surg. 2014 Oct;24(10):1702-8

Subprogramme 4. AFFERENT AND EFFERENT SIGNALS INVOLVED IN THE CONTROL OF ENERGY AND METABOLIC HOMEOSTASIS. INTEGRATION IN THE CENTRAL NERVOUS SYSTEM.

- Beiroa D, Imbernon M, Gallego R, Senra A, Herranz D, Villarroya F3, Serrano M, Fernø J, Salvador J, Escalada J, Diéguez C1, Lopez M, Frühbeck G2, Nogueiras R1. GLP-1 agonism stimulates brown adipose tissue thermogenesis and browning through hypothalamic AMPK. Diabetes. 2014 Oct;63(10):3346-58.
- Martínez de Morentin PB, González-García I, Martins L, Lage R, Fernández-Mallo D, Martínez-Sánchez N, Ruíz-Pino F, Liu J, Morgan DA, Pinilla L, Gallego R, Saha AK, Kalsbeek A, Fliers E, Bisschop PH, Diéguez C1, Nogueiras R, Rahmouni K, Tena-Sempere M2, López M1. Estradiol regulates brown adipose tissue thermogenesis via hypothalamic AMPK. Cell Metab. 2014 Jul 1;20(1):41-53.

The successful scientific activity described would not have been possible without the transverse initiatives of the programme. Initiatives such as the programme for supporting the incorporation of pre-clinical models for shared use in CIBERobn and the maintenance and update of the of pre-clinical model database have continued and been further developed in 2014.

The programme has also held an annual coordination meeting which discussed scientific and organisational aspects, consistent with what was done in previous years, with a very positive assessment. Specifically, the 2014 meeting was held on 19 December in the Universidad de Barcelona and consisted of two parts: a) an open scientific symposium ("Metabolism and adipose tissue, at the core of disease") with the participation of PIs from the programme and scientists from abroad as honourable guests (S. Enerback, Göteborgs Universitet, Sweden; C. Wolfrum, ETH, Switzerland), and b) a meeting of only PIs from the programme and collaborators, where scientific and organisational aspects for 2015 were discussed.

In summary, the assessment of the programme's activity and compliance with objectives was very satisfactory in 2014, and the prospects for 2015 are extremely promising.

Group	P1 R. Estruch, R. Lamuela	P2 G. Frühbeck	P3 F. Tinahones	P4 F. Fdez. Aranda	P5 A. Palou	P6 F. Villarroya
Argente Oliver	10		80		10	
Arós Borau	100					
Botella Arbona				50		50
Casanueva Freijo		30	40	10		20
Corella Piquer	80		20			
De La Osada García	80					20
Diéguez González		60	10			30
Estruch Riba	100					
Fernández Aranda	10			80	10	
Fernández-Real Lemos		30	30	30	10	
Fiol Sala	50		50			
Fito Colomer	50			50		
Frühbeck Martínez		80	10	10		
Gómez Gracia	100					
Lamuela Raventós	100					
Lapetra	70		30			
Lasunción Ripa	30	30				40
Lurbe Ferrer			50		50	
Martínez González	100					
Martínez Hernández	100					
López-Miranda	40	30	30			
Palou Oliver			20		70	10
Pinto Sala	100					
Portillo Baquedano	100					
Remesar Betlloch				10	20	70
Ros Rahola	80		20			
Ruíz Gutiérrez	100					
Saez Tormo	100					
Salas Salvadó	70		30			
Serra Majem	100					
Tena Sempere		30	40			30
Tinahones Madueño	10	10	60	10	10	
Tur Marí	100					
Villarroya Gombau		40				60

List of Coordinators and participation of groups in the programmes

3. TRANSVERSAL PROGRAMMES

The CIBERobn Training Programme targets all members of its groups given that the need for continuous training is universal. However, due to the profile of the programme and considering the budgetary availability, the fundamental focus of the programme has been the younger members of the teams. The objectives are to train researchers (particularly new researches and those that are in the process of becoming established researchers) in obesity and nutrition, to favour their mobility and to help them establish their professional career as independent researchers in this area.

Given the nature of this programme, the members of the groups forming CIBEROBN could request funding under this budget item for funding only those training activities that facilitate research (basic, clinical, epidemiological and health services) relating to the lines of research of the subjects comprised in CIBEROBN. Consistent with the trajectory to date, the main training activities have been carried out by funding training internships in other research groups both within CIBER and outside CIBER (both national and international).

In any case, and although it is considered that the activities described above have allowed covering part of CIBEROBN'S training mission in the fields of obesity and nutrition, consistent with the basis of its formation as a Networking Research Centre, a series of initiatives that seek to further promote this idea is currently being studied and developed, allowing the implementation of a more ambitious and comprehensive Training Programme which serves as a tool for turning CIBEROBN into a national and eventually international example, in relation to training activities in the field of obesity and nutrition applied to health.

Structure and activities conducted throughout the year

Consistent with the experience accumulated in previous years, CIBEROBN has maintained funding for training and mobility activities particularly targeting young researchers and those who are in the process of becoming established researchers, consisting of financial aid for training internships in other CIBEROBN groups, other CIBER groups and groups not attached to the CIBER structure (both national and international). It must be pointed out that these internships are extremely productive for the programmes because young researchers receive training for specific techniques that they can then immediately apply to studies in their CIBER group, which shows that the investment in training yields significant returns in very little time.

Specifically, there was total of 8 CIBEROBN researcher internships in 2014, with a mean duration of about 55 days (the maximum are 3 months), and a global funding of 16750 EUR. Although the level of use of funding is somewhat lower than the previous year, the fact that a high internationalisation percentage (75% of the internships were in renowned centres in other countries) and a longer mean internship duration (almost 2 months) were maintained stand out. These factors are of particular interest from the viewpoints of knowledge acquisition and the development of training.

When seen in perspective, it can be considered that the CIBEROBN training and mobility programme is well-established and that due to its flexibility, it is a valuable tool not only in the professional development of researchers (particularly young researchers) that are included in this CIBER area, but also in reinforcing in the international connections and collaborations of groups forming it. In this context, this programme has notably contributed to reinforcing the interest and synergies of the combination in CIBER of universities and hospitals, offering very good results with respect to research staff training (measured by indicators such as PhD dissertations that are defended; see more below). Likewise, and though not included under the funding terms, the training programme has had post-doctoral researcher internships in consortium centres of our CIBEROBN, as well as PhD candidate interns that received a grant from other countries to do their PhD dissertation work in CIBEROBN groups.

Review and future considerations:

Due to the budgetary restrictions, certain limitations have been applied in recent years to assure access to and distribution of funding between the different CIBEROBN groups. These same limitations have impeded funding internships lasting for more than 3 months, with the duration of internships supported by the

programme lasting between 1 and 3 months and maximum of 3000 EUR/group and year. However, after analysing the level of use of funding in the 2011-2014 period, with a mean funding level per year of about 20,000 EUR, it is advisable to update said limits and to allow groups to justifiably request funding for internships exceeding the conditions indicated above.

In addition, the availability of funding would allow providing for other items in the CIBEROBN strategic Training Programme. In this context, and considering budgetary availability and the strategic interest in maintaining funding for the mobility programme, an objective that is considered for implemention next year is the development of the CIBEROBN higher training activity programme. Development of this programme has already begun through at least one annual international scientific meeting, which was held in El Escorial 20 and 22 November 2014, with the participation of national speakers (belonging to CIBEROBN, other CIBER areas and areas not linked to the CIBER) and international speakers (top level). Along the same line, funding, after a justified request, is considered being given to conduct post-graduate training activities in areas that are relevant to biomedical research (training to work with experimental animals, training to handle non-encapsulated radioactive sources, etc.).

In addition, it should be pointed out that in relation to training, the annual training courses were maintained in 2014 (held at the beginning of December in the Faculty of Medicine and the Faculty of Pharmacy at the Universidad de Barcelona) for researchers, nurses and dieticians participating in the PrediMed/PrediMed Plus studies, with a limit consistent with the mean number of attendees at the same course held in previous years (between 175 and 200 people each year).

Likewise, and as a training element of the utmost importance, a total of 62 PhD Dissertations (3 of which were international) were defended in 2014. This is a very significant increase with respect to previous years, doubling the number of dissertations defended in 2011.

COMUNICATION PROGRAMME

Communication is a key element that provides exposure to an entity that is not exclusively limited to informing, but rather hopes to establish its identity as a feature that distinguishes it in its field of operation and against competition. This comprises two aspects: external communication, which defines a company's relationship with the outside world; and internal communication, which refers to the information circulating within the enterprise.

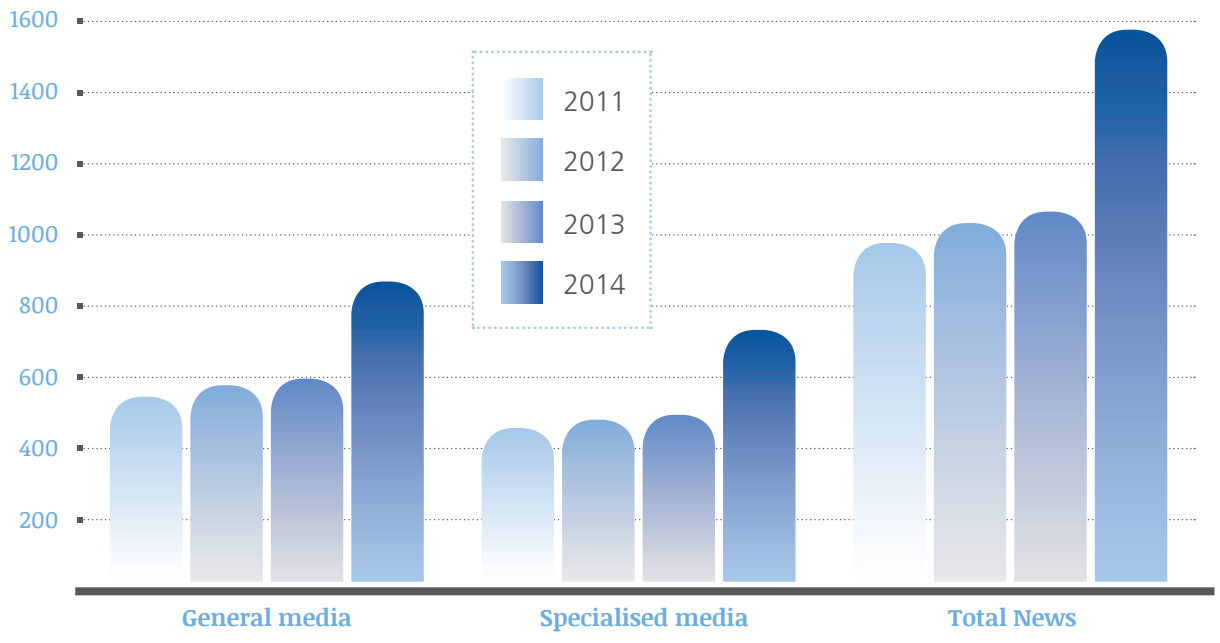
The first thing that has to be done is to identify the features of its personality. Once this has been done, the next step will be to design the most appropriate strategy to give expression to such features. This is where the Communication Plan comes into play. This plan is the approach to problems, wants or needs of an entity/organisation, with possible solutions. It also includes all the data needed to implement said solutions.

The current situation of the entity, in this case CIBERobn, the objectives to be met, the public to be taken into account (who are affected, who can help us meet our objectives, who must be addressed, etc.), the strategies and techniques that will define the initiatives to be followed, the planning of said initiatives, the budget to be invested, assessment of the plan and, finally, the end results obtained, must be defined.

To meet the established objectives, CIBERobn must have communication instruments that allow it to show its intentions. These instruments include printed media (announcements and information published by the press), direct (professional and personal) contacts with journalists and directors of the press, and those disclosing initiatives which transfer CIBERobn technical-scientific activity to society as a whole.

The general objectives of the communication programme are:

- To make CIBERobn capable of transmitting to its internal and external spokespersons the abilities which define its identity and purpose.
- To position a public, internal and external image that generates the ideas of power, innovation, efficacy, efficiency, competence and quality all used to perform research.
- To enhance public exposure and awareness through communication, dissemination and disclosure of the research studies being conducted.



The CIBERobn Twitter account was started up in 2014 **https://twitter.com/CIBER_OBN**

	December 2014
Updates	220
Followers	227
Klout (level of influence, between 1 and 100)	41

Furthermore, the CIBER newsletter was started up in mid-2014, including relevant content both in relation to CIBERobn and to the remaining areas. The newsletter is sent bimonthly through the Mailchimp platform to a total of 4,240 subscribers. Three CIBER newsletters were written and distributed in 2014.
http://www.ciberisciii.es/comunicacion/boletines

Participation in dissemination events

SEMANA DE LA CIENCIA. ACTIVITY: TAPACONCIENCIA.

CIBERobn participated in the dissemination activity "TapaConCiencia" in the Semana de la Ciencia in Madrid with 250 participants. Eight research projects corresponding to the subject areas of the CIBER were disclosed in the activity and used as a source of inspiration for Chef Jorge Cuéllar to design 8 elaborate "tapas".
Researcher José López Miranda represented CIBERobn, explaining his research on the "Benefits of Olive Oil for Health", which was accompanied by "Gazpachuelo virgen extra con moluscos, mariscos y brotes marinos" prepared by the chef.
The act raised a lot of interest among the general public as well as among the general media, scientific specialists and gastronomy specialists who interviewed the researchers participating in the activity.

FINDE CIENTÍFICO 2014

This science fair, organised by the Fundación Española para la Ciencia y la Tecnología (FECYT), in collaboration with the Museo Nacional de Ciencia and Tecnología (MUNCYT), was held in October 2014 and brought together educational centres, museums and research centres for the common purpose of promoting the scientific culture and bringing science closer to society. CIBERobn researchers participated in the following informative workshops relating to some of the research that is representative of the CIBER within the Instituto de Salud Carlos III:

- **"APRENDE A CUIDARTE JUGANDO Y COMIENDO"**.

  Zaida Agüera, Cristina Giner and Fernando Fernández Aranda.

  Presentation of a therapeutic video game that seeks to intervene in disorders relating to impulsivity, such as eating disorders and obesity; and a demonstration of the video game "Playmancer" as a therapeutic tool in children and adolescents.

- **"EL FUTURO YA ESTÁ AQUÍ. CAMISETAS INTELIGENTES PARA CONOCER LA CONDICIÓN FÍSICA"**

  Empar Lurbe, Julio Álvarez and Pau Redón.

  Attendees to this workshop could learn about a t-shirt capable of measuring the physical conditions of children and adolescents as a support tool for professionals for determining which type of physical exercise is advisable for each person. It is a clear example of innovation in health through the application of Information and Communication Technologies of the Information and the Communications (ICTs) to health issues associated with childhood obesity.

Selection of the most important news of 2014

DIARIO MEDICO.COM

RELACIÓN ENTRE LA IRISINA Y LA INSULINO-RESISTENCIA

Las dietas 'yo-yó' predisponen a desarrollar diabetes tipo 2

Un estudio ha demostrado que los pacientes que vuelven a coger peso peso tras seguir una dieta de adelgazamiento son más susceptibles de padecer resistencia a la insulina y, a la larga, desarrollar diabetes tipo 2.

Una reciente investigación del Instituto de Investigación Biomédica en red-Fisiopatología de la Obesidad y la Nutrición (CIBERobn), publicado en *Metabolism Clinical and Experimental*, ha demostrado la predisposición a desarrollar diabetes tipo 2 en pacientes que han vuelto a coger peso tras haberlo perdido en un programa dietético hipocalórico.

Ana B. Crujeiras, autora principal del estudio, ha insistido en priorizar los análisis personalizados en terapias contra el sobrepeso y realizar una evaluación previa de los valores de irisina en pacientes obesos antes de someterlos a una diera baja en calorías. "Una comprobación previa de los niveles de esta hormona podría predecir una alteración futura en la glucosa corporal del paciente, que podría provocar que sufran diabetes tipo 2", explica.

El equipo de investigadores ha estudiado a 136 pacientes obesos que siguieron una dieta hipocalórica de ocho semanas para bajar peso. Entre cuatro y seis meses después de ese tratamiento, fueron reevaluados para ver si habían conseguido ese objetivo. "Se atendió, de forma especial, a los niveles de irisina, leptina y adiponectina. De los 136 pacientes analizados, el 50 por ciento recuperó el peso perdido y, después de comprobar sus analíticas y observar altos niveles de irisina en sangre, fueron clasificados como resistentes a la insulina", concluye Crujeiras.

Este hallazgo evidencia la importancia de pautar dietas individualizadas amparadas en la nutrigenómica y la necesidad de buscar biomarcadores de respuesta a tratamientos nutricionales antiobesidad.

ABC

La dieta mediterránea ayuda a que un nuevo gen protega frente al infarto de miocardio

Este hallazgo permitirá diseñar dietas «más personalizadas» para la prevención cardiovascular

Investigadores del Centro de Investigación Biomédica en Red-Fisiopatología de la Obesidad y la Nutrición (CIBERobn), dependiente del Instituto de Salud Carlos III, y en colaboración con el Centro de Investigación en Nutrición Humana de Boston, han descubierto que la dieta mediterránea es clave para que un nuevo gen, el MLXIPL, relacionado con los triglicéridos, proteja frente a la hipertrigliceridemia y el infarto de miocardio.

A juicio de los expertos, los resultados, publicados en la revista «Circulation Cardiovascular Genetics», han supuesto otro avance «muy significativo» para la nutrigenética al identificar un nuevo marcador genético, validado en un ensayo clínico, y que permitirá diseñar dietas «más personalizadas» para la prevención cardiovascular. En concreto, este descubrimiento asienta su base en el trabajo publicado en 2008 en «Nature Genetics» tras identificar por primera vez el MLXIPL como un nuevo gen candidato asociado con las concentraciones de triglicéridos en humanos.

Posteriormente, los autores formularon la hipótesis de que la asociación de este gen con las concentraciones de triglicéridos se podría modular con la dieta mediterránea, y postularon que este gen se asociaría no sólo con triglicéridos, sino también con eventos cardiovasculares. A partir de este hallazgo, realizaron el análisis genético de la principal variante funcional encontrada en el gen MLXIPL, denominada rs3812316, en 7166 participantes en el estudio «PREDIMED».

De ellos, un 17 por ciento fue portador de la variante genética «G», mientras que los demás fueron homocigotos CC. Ahora bien, el descubrimiento más relevante de esta investigación, liderada por la doctora Dolores Corella, se ha encontrado tras seguir a los participantes en el estudio durante un promedio de unos 5 años y observar que aquellas personas con la variante genética «G», que recibían intervención con dieta mediterránea en el ensayo clínico ,tuvieron un 60 por ciento menos incidencia de infartos, que las personas homocigotas CC en el mismo grupo de dieta mediterránea.

GACETA MÉDICA.com

La evolución en el peso postnatal determina el futuro riesgo CV

El Centro de Investigación Biomédica en Red-Fisiopatología de la Obesidad y la Nutrición (CIBERobn), dependiente del Instituto de Salud Carlos III, ha llevado a cabo un estudio prospectivo desde el momento del nacimiento hasta los primeros cinco años de vida en el que se asocia el peso al nacer y la rapidez en el aumento de peso con un mayor riesgo de desarrollar enfermedades cardiometabólicas en etapas posteriores de la vida.

De este modo, las condiciones de la vida intrauterina como es una deficiencia en el crecimiento en el útero y el patrón de crecimiento en los primeros meses de vida, se revelan factores determinantes en el desarrollo posterior de enfermedades propias de adultos.

Los resultados del estudio acaban de publicarse en *Hypertension*, revista que dedica un editorial al respecto, acentuando la importancia de su aportación sobre los orígenes de la infancia en el posterior desarrollo de enfermedades crónicas.

El estudio, realizado en colaboración con el servicio de Pediatría del Hospital General Universitario de Valencia, ha evaluado a 139 sujetos sanos, 76 niños y 63 niñas, que nacieron a término después de un embarazo sin complicaciones. "El objetivo era analizar el impacto del peso al nacimiento y el aumento del peso después del parto sobre la presión arterial y el perfil metabólico de estos niños durante sus cinco primeros años de vida", explica la investigadora del CIBERobn, Empar Lurbe.

Para ello, se dividieron en tres grupos según su tamaño al nacer: pequeño, apropiado y grande para su edad gestacional. Después de la evaluación inicial en el segundo día de vida, los bebés fueron seguidos a los 6 meses, 2 años y 5 años. En cada revisión se les midió la presión arterial y los parámetros antropométricos (peso, talla e índice de masa corporal). Al cumplir los cinco años, además de esas mediciones se les realizó un test metabólico, a partir de un análisis de sangre en el que se midieron los niveles de glucosa e insulina, ácido úrico y perfil lipídico.

Durante el estudio se observó que las diferencias de peso y altura en los tres grupos establecidos se mantenían a los 6 meses de vida. Sin embargo, a los 2 años, los pequeños ya habían igualado a los medianos y a los 5 años el 27 por ciento de los niños incluidos en este estudio eran obesos.

EL PAIS

El aceite de oliva reduce hasta un 66% los problemas circulatorios en extremidades

Científicos del Cinerobn demuestran los beneficios de la dieta mediterránea

El hallazgo se enmarca en el estudio Predimed, el principal ensayo clínico dietético de España

La dieta mediterránea es beneficiosa para la salud. Al menos eso hemos oído, pero ¿hasta qué punto? La respuesta está cada vez más clara gracias a Predimed, el principal ensayo clínico de intervención dietética en España y uno de los mayores del mundo. El último fruto de esta investigación, publicado este miércoles en JAMA, la revista de la Asociación Médica Americana, es que el riesgo de sufrir problemas circulatorios en las extremidades se reduce hasta un 66% con el consumo de aceite de oliva virgen.

más información

- En España también se hacen las cosas bien
- Un trabajo ejemplar
- Un vaso de vino al día reduce el riesgo de tener una depresión
- La dieta mediterránea reduce los infartos e ictus un 30%
- La dieta mediterránea contrarresta un riesgo de ictus

Durante 10 años, varios equipos de toda España, integrados en el Centro de Investigación Biomédica en Red de la Obesidad y la Nutrición (Ciberobn), han seguido a unas 7.500 personas, de entre 55 y 80 años, para comprobar el efecto protector de la dieta mediterránea en las enfermedades cardiovasculares. "Hemos publicado más de 100 investigaciones y en ninguna habíamos encontrado una asociación tan fuerte entre la dieta mediterránea y la arteriosclerosis", explica en entrevista telefónica Miguel Ángel Martínez-González, profesor de Medicina Preventiva de la Universidad de Navarra y uno de los investigadores responsables del nuevo descubrimiento.

El análisis se llevó a cabo mediante la separación de los pacientes en tres grupos. En el primer conjunto, donde se proporcionaba gratuitamente aceite de oliva virgen, se redujo a la tercera parte —66%— el riesgo de desarrollar arteriopatía periférica: una enfermedad que se manifiesta cuando las arterias de las piernas o los brazos se estrechan u obstruyen, dificultando el paso de sangre y oxígeno a los tejidos. Este fue el grupo donde se observó una reducción más potente, pero no el único. Los pacientes del segundo, que consumían frutos secos, se beneficiaron también de una reducción del riesgo en la mitad de los casos en comparación con el grupo control, que seguía una dieta baja en grasas, según las recomendaciones de la *American Health Association*.

EL MUNDO

Aceite de oliva virgen extra para prevenir la arritmia más común

- Una dieta mediterránea rica en aceite reduce el riesgo de fibrilación auricular

La publicación del estudio PREDIMED marcó un antes y un después en la constatación del poder protector de la dieta mediterránea. Los principales resultados de la investigación con sello español demostraron que el patrón alimenticio, suplementado con aceite de oliva o frutos secos, era capaz de reducir la incidencia de infartos e ictus en un 30% en una población de riesgo .

Estudios secundarios han plasmado también sus efectos beneficiosos para el cerebro, la diabetes o la enfermedad vascular periférica, entre otros. Porque la lista parece seguir creciendo. La revista Circulation recoge esta semana los resultados de un análisis que demuestra que seguir una dieta mediterránea acompañada de aceite de oliva virgen extra ayuda a mantener alejada la fibrilación auricular , la más común de las arritmias cardiacas.

"Supone una auténtica epidemia emergente y hasta ahora no sabíamos mucho sobre cómo prevenirla", explica Miguel Ángel Martínez, catedrático de la Universidad de Navarra, investigador del CIBERobn y principal firmante de la investigación.

Impulsados por la hipótesis de que la fibrilación auricular podría tener mucho que ver con procesos inflamatorios y de oxidación, el equipo de Martínez quiso analizar el efecto de la alimentación en la prevención del problema cardiaco.

Para ello, partieron de la muestra reclutada en el PREDIMED y estudiaron la aparición de fibrilación auricular en un subgrupo de 6.705 pacientes. Después de casi cinco años de seguimiento, un total de 246 personas desarrollaron el trastorno.

Al analizar los datos, los investigadores comprobaron que la incidencia era más baja entre los participantes a los que se les asignó una dieta mediterránea suplementada con aceite de oliva virgen extra (los otros dos grupos tomaban dieta mediterránea suplementada con frutos secos o una dieta baja en grasas).

Según Martínez, estos beneficios asociados únicamente al grupo suplementado con aceite pueden deberse "al efecto antiinflamatorio y antioxidante del aceite de oliva virgen extra" en el contexto de una dieta mediterránea. A los participantes, subraya, se les indicó que tomaran al menos cuatro cucharadas soperas al día de esta sustancia y la reducción del riesgo de fibrilación auricular observada rondaba el 38%.

DIARIO MEDICO.COM

EN PERSONAS CON DETERMINADA GENÉTICA

La dieta mediterránea, la epigenética y la genética podrían prevenir el ictus

Han encontrado una nueva vía para prevenir el ictus en personas con una genética determinada mediante la combinación de la epigenética, la dieta mediterránea y la genética, según habría descubierto investigadores del Ciberobn.

Un equipo de científicos del Centro de Investigación Biomédica en Red-Fisiopatología de la Obesidad y la Nutrición (Ciberobn) dentro del proyecto Predimed, habría descubierto que una combinación de la epigenética, la genética y la dieta mediterránea en individuos con una determinada genética podría prevenir el ictus.

Este estudio, publicado en la revista *American Journal of Clinical Nutrition*, habría descubierto el efecto protector en el riesgo de sufrir un ictus del polimorfismo rs13702T C que está regulado por el microARN-410. "Es el primer trabajo en el que el microARN tiene un papel regulador muy importante", según ha afirmado Dolores Corella catedrática de la Universidad de Valencia y una de las investigadoras principales.

La investigación se ha realizado partiendo de un trabajo previo de José María Ordovás,director del Laboratorio de Nutrición y Genómica de la Universidad de Tufts en Boston, Estados Unidos, en el que se había estudidado la influencia de los microARN en los triglicéridos. Sin embargo, el presente descubrimiento, ha ido más allá y ha revelado que el polimorfismo rs13702T C en el lugar de unión del microARN en el gen de la lipoproteinlipasa se puede regular a través de la alimentación.

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TRAS UN NUEVO ESTUDIO

El Ciber de Obesidad insta a los pediatras a combatir el exceso de peso antes de los 5 años

El Centro de Investigación Biomédica en Red-Fisiopatología de la Obesidad y la Nutrición (Ciberobn) llama a los pediatras para concienciarles de la necesidad de combatir el exceso de peso en menores de cinco años para rebajar sus posibilidades de que lleguen a ser obesos.

El Centro de Investigación Biomédica en Red-Fisiopatología de la Obesidad y la Nutrición (Ciberobn), dependiente del Instituto de Salud Carlos III, hace un llamamiento a los pediatras para concienciarles de la necesidad de combatir el exceso de peso en niños menores de cinco años para rebajar sus posibilidades de que lleguen a convertirse en obesos en un futuro. Y lo hace a raíz de un estudio publicado *The New England Journal of Medicine*, recogido por CF, y que alerta del riesgo de que la obesidad en la primera infancia se mantenga en los años posteriores y de la proliferación de la obesidad entre los menores estadounidenses que empiezan en los jardines de infancia.

"Hoy en día disponemos de numerosa documentación científica sobre la obesidad en la pubertad, pero hace faltan datos sobre su incidencia antes de la adolescencia para poder entender los factores que están provocando su aparición en los primeros años de vida de los niños", explica el Felipe F. Casanueva, director científico del Ciberobn y presidente de la Sociedad Española para el Estudio de la Obesidad (Seedo).

El estudio, de la Universidad de Emory, en Atlanta, se realizó a partir de una muestra de 7.738 participantes de 5-6 años que estaban en jardines de infancia durante los años 1998-1999 en Estados Unidos. Se midió su peso y altura hasta en siete ocasiones desde 1998 a 2007, descubriendo que la tasa de obesidad aumentó más rápidamente en los dos primeros cursos, pasando del 13 a casi el 19 por ciento. El estudio reveló además que alrededor del 32 por ciento de los niños que tenían sobrepeso cuando entraron en la guardería se convirtieron en obesos a los 14 años, frente al 8 por ciento de los niños que empezaron con peso normal.

De ello se desprendió que los niños que presentaron sobrepeso a los cinco años de edad eran cuatro veces más propensos a ser obesos a los 14 años que los que empezaron la guardería con un peso saludable. "No podemos empezar a atajar el problema de la obesidad infantil en la adolescencia, es importante empezar en años preescolares para que el impacto sea mayor", afirma Casanueva.

DIARIO MEDICO.COM

TRATAMIENTO CONTRA EL SOBREPESO

Camisetas inteligentes, en vez de calorímetros, contra la obesidad infantil

Las prendas incorporan sensores en su tejido que recogen continuamente parámetros cardiacos y respiratorios tanto en situación basal como durante la práctica de ejercicio físico.

El programa de Ejercicio Físico del Centro de Investigación Biomédica en Red-Fisiopatología de la Obesidad y la Nutrición ha obtenido nuevos y satisfactorios resultados gracias a camisetas biomédicas que permiten medir la actividad cardiaca y pulmonar en tiempo real. El uso experimental en niños de estas prendas inteligentes en lugar de los tradicionales calorímetros supone un nuevo avance en los tratamientos antiobesidad.

La clave del programa está en su diseño individualizado para dar respuesta a las necesidades y características de cada paciente, evitando que una pauta genérica sea ineficaz e incluso llegue a ser contraproducente para la salud de los niños.

"No se trata sólo de desarrollar actividad física sino de hacerlo de acuerdo con lo que nuestro cuerpo, por constitución, capacidad y resistencia física, puede soportar y necesita para mantener un equilibrio", sostiene Empar Lurbe, del Hospital General Universitario de Valencia, coordinadora del estudio.

La pauta se elabora teniendo en cuenta parámetros antropométricos y bioquímicos y, de manera especial, la medición de la función cardiorrespiratoria de los niños. Las prendas incorporan sensores en su tejido que recogen continuamente parámetros cardiacos y respiratorios tanto en situación basal como durante la práctica de ejercicio físico, y se registran por telemonitorización sin cables.

La sencillez de su funcionamiento la convierte en la candidata idónea para un gran número de aplicaciones fisiopatológicas y clínicas, no sólo en el campo de la obesidad sino en otros ámbitos donde el ejercicio físico es un elemento esencial.

sinc
La ciencia es noticia

Los especialistas abogan por modificar el nombre del trastorno

Somos adictos a comer, no a la comida

Científicos españoles consideran que 'adicción a comer' define con mayor rigor la conducta alimentaria de tipo adictivo ya que no existe, de momento, evidencia sobre las propiedades adictivas de ciertos alimentos. El estudio no señala como culpable directo a la industria de alimentación, pero le atribuye un papel clave en las políticas de prevención de la obesidad.

Un nuevo documento de consenso que acaba de emitir el consorcio de investigadores NeuroFAST, en el que participan varios países de toda Europa incluido España, concluye que 'adicción a comer', en lugar de 'adicción a la comida', detalla con mayor precisión la conducta alimentaria de tipo adictivo.

El hallazgo, que acaba de ser publicado en la revista *Neuroscience & Biobehavioral Reviews* y en el que ha participado Carlos Diéguez, del Centro de Investigación Biomédica en Red-Fisiopatología de la Obesidad y la Nutrición (CIBERobn), recoge argumentos sobre la supuesta adicción que provocan alimentos, componentes o sustancias alimenticias concretas.

El trabajo concluye que, a día de hoy, no existe evidencia científica que apoye la hipótesis de que los alimentos involucran mecanismos cerebrales comparables a las drogas de abuso, a pesar de las opiniones de expertos de primer nivel, como el director general de Salud del Reino Unido que manifestó que "la investigación demostrará que el azúcar es adictivo".

Alimentos atractivos, no adictivos

"La gente trata de encontrar explicaciones racionales para el sobrepeso y es fácil culpar a los alimentos. Es cierto que algunos alimentos son más atractivos que otros, debido en parte a su capacidad para estimular vías de recompensa en el cerebro –también activadas por algunos comportamientos naturales, como el sexo, y algunas drogas de abuso–", sostiene Diéguez, investigador de la Universidad de Santiago de Compostela (USC).

ACTA SANITARIA

SEGÚN UN ESTUDIO EPIDEMIOLÓGICO PROSPECTIVO FINANCIADO POR EL INSTITUTO DE SALUD CARLOS III

Consumir vino tinto de forma moderada a lo largo de la semana reduce la mortalidad un 40%

Consumir alcohol de forma moderada a lo largo de la semana y elegir preferentemente vino tinto reduce la mortalidad en un 40%, según ha puesto de manifiesto un estudio epidemiológico prospectivo financiado por el Instituto de Salud Carlos III y liderado por Miguel Angel Martínez-González y Alfredo Gea, investigadores de la Universidad de Navarra y del CIBEROBN, que acaba de ser publicado en el *British Journal of Nutrition*.

En el estudio SUN (Seguimiento Universidad de Navarra) los investigadores siguieron a 18.394 participantes durante una media de más de 7 años, y concluyeron que cuando el consumo se adapta a los siete principios básicos del consumo mediterráneo tradicional se reduce relativamente la mortalidad en un 40% respecto a los abstemios, sin embargo este consumo "tradicional", común entre la población española, se ha visto desplazado por el consumo de atracón en fin de semana, cada vez más frecuente sobre todo entre los jóvenes. Esto no solo anula los efectos benéficos del alcohol sobre la salud sino que duplica el riesgo de mortalidad.

Los principios básicos que rigen el consumo mediterráneo tradicional son: beber en cantidades moderadas; hacerlo de forma repetida a lo largo de la semana y evitar el consumo concentrado en fines de semana; preferir el vino, tinto a ser posible, a otras bebidas; consumirlo siempre acompañando a las comidas; evitar el consumo de bebidas destiladas y no sobrepasar nunca 5 bebidas en ningún día concreto.

Nutricionistas vinculan los aspectos emocionales con la adicción a la comida

SIMPOSIO CIENTÍFICO Los aspectos emocionales y de personalidad están implicados en la adicción a la comida, según han mostrado diversos estudios realizados en 2014 en el programa de neurocognición del Centro de Investigación Biomédica en Red-Fisiopatología de la Obesidad y la Nutrición (CIBERobn), dependiente del Instituto de Salud Carlos III, que dirige el doctor Felipe Casanueva, jefe de Endocrinología del CHUS, con motivo de la celebración de su VI Simposio Científico. En el congreso, el doctor José Manuel Fernández-Real adelantó la progresión del programa de adipobiología del CIBERobn centrado, entre otros aspectos, en la detección de señales cerebrales que podrían modular cuánto comemos. Los expertos recordaron también que existen una serie de mecanismos neurológicos centrales implicados en la conducta alimentaria que están cobrando protagonismo en el control del peso corporal. En este sentido, informaron de que se han producido nuevos descubrimientos relacionados con agentes que actúan a nivel celular en el sistema nervioso central y que intervienen en la regulación metabólica. ECG

Doctor Felipe Casanueva, director del CIBERobn

Invertir en ciencia para el control nutricional de la obesidad

LA NUEVA FUNCIÓN DE LA LEPTINA EN LA LECHE MATERNA, PUEDE SER DECISIVA EN LA PREVENCIÓN DE LA OBESIDAD

C. A. I.

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Andreu Palou.

Actualidad Universitaria
La universidad española, a un click

Los profesores de la UB Francesc Villarroya y Rosa M.ª Lamuela ganan las ayudas del Instituto Danone para proyectos de nutrición y salud

Francesc Villarroya, catedrático del Departamento de Bioquímica y Biología Molecular de la UB, y Rosa M.ª Lamuela, profesora del Departamento de Nutrición y Bromatología, recibirán financiación de la convocatoria de ayudas para proyectos de investigación científica impulsada por el Instituto Danone con el fin de promover la investigación y la difusión de conocimientos en el ámbito de la alimentación, la nutrición y la salud.

Francesc Villarroya, director del Instituto de Biomedicina de la Universidad de Barcelona (IBUB) y también miembro del Centro de Investigación Biomédica en Red de Fisiopatología de la Obesidad y la Nutrición (CIBERobn), recibirá financiación para desarrollar el proyecto titulado FGF21, un nuevo factor bioactivo de la leche materna. El factor de crecimiento de fibroblastos 21 (FGF21), liberado por el hígado en respuesta a los lípidos de la dieta, es un factor endocrino con un papel clave en el metabolismo energético, donde actúa como agente antidiabético y antiobesidad. El nuevo proyecto tiene por objetivo conocer la biología del FGF21 de la leche materna y su impacto sobre el desarrollo del bebé. Los datos obtenidos contribuirán a conocer las bases moleculares de los efectos saludables de la lactancia materna y permitirán promover alternativas eficaces a esta (mejora en la elaboración de preparados para la lactancia artificial, etc.).

La profesora Rosa M.ª Lamuela, que es también miembro del CIBERobn, es responsable del Grupo de Investigación de Antioxidantes Naturales de la UB e investigadora del Instituto de Investigación en Nutrición y Seguridad Alimentaria (INSA). Destinará la ayuda del Instituto Danone a desarrollar el proyecto Los alimentos probióticos aumentan la presencia de compuestos bioactivos fenólicos en el organismo y disminuyen los parámetros de riesgo cardiovascular. Los polifenoles son moléculas orgánicas que se encuentran de forma natural en muchos vegetales y que, como se ha demostrado, tienen un efecto beneficioso para la salud humana. En el marco del proyecto, el equipo dirigido por la profesora Lamuela evaluará, mediante muestras procedentes del estudioPrevención con dieta mediterránea (PREDIMED), la relación que existe entre la ingesta de probióticos contenidos en el yogur, la absorción de los polifenoles de cadena corta —originados por el metabolismo de la microbiota— y la disminución de parámetros de inflamación y de riesgo cardiovascular.

4. PLATFORMS

PLATFORMS

Having a large number of biological samples such as tissues, serum, plasma, DNA, proteins, etc., is extremely important today for the advancement and development of biomedical research. Storing such a large amount of samples from different origins and the increasingly closer collaboration between laboratories mean that samples must be sent often, and this requires strict control.
Given the deficiencies in our area of a biobank specialising in collecting adipose tissue, associated samples and their clinical data for the study of highly prevalent diseases that are constantly increasing in our population, such as obesity and obesity-associated diseases, it was necessary to provide a biobank to continue carrying out daily activity in a rigorous manner and to have samples that assure reliable quality results. In this context, the CIBEROBN strategically supports providing a specific Biobank for adipose tissue samples, called FatBank.
The FatBank shares the general philosophy of Biobanks, which are non-profit public or private establishments that house a collection of biological samples conceived for diagnostic or biomedical research purposes and organised as a technical unit with quality criteria, order and intended to serve society in general and the scientific community in particular.
Along the same line, the CIBEROBN FatBank is supported on 5 basic pillars:

- Providing rigorous Informed Consents for Biomedical Research and in compliance with the Personal Data Protection Law as well as other laws regulating Biobanks.
- Standardising procedures and protocols, assuring quality in obtaining, processing, preserving and storing samples.
- Assuring traceability of samples, acquiring the necessary infrastructure to that end and using unique coding methods.
- Providing effective biobank and sample management systems, using computer applications created for such purpose.
- Having specialised staff dedicated to the biobank and familiar with it.

The primary goal of the FatBank is to provide the scientific community with trustworthy quality samples obtained by means of specific protocols to minimise the intermodal variability of visceral adipose tissue, subcutaneous adipose tissue and circulating adipose tissue derivatives from the same donor, all complemented with broad clinical phenotyping including a dietary and physical activity questionnaire and complementary analytical study.
The CIBEROBN FatBank was accredited by FIS in 2012 as a Biobank within the Biobank of the Hospital de Girona, being part of the National Network of Biobanks.
There were initially 6 sample collection and analysis nodes, 5 of which are still active today in the following centres: Cordoba, Malaga, Pamplona, Santiago and Girona as the coordinating centre.

The following summary table includes the main FatBank activity indicators:

	No. Donors				Serum				EDTA plasma			
Nodo	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014
Girona	130	196	242	285	2.080	3.136	3.872	4.560	4.160	6.272	7.744	9.120
Málaga	142	200	230	230	2.272	3.200	3.680	3.680	4.544	6.400	7.360	7.360
Pamplona	36	74	107	138	288	1.184	1.712	2.208	576	2.368	3.424	4.416
Santiago	30	51	72	93	240	816	1.152	1.488	480	1.632	2.304	2.976
Córdoba	62	62	77	84	496	992	1.344	1.392	992	1.984	2.464	2.688
Tarragona	50	76	76	0	400	1.216	1.216	0	800	2.432	2.432	0
Total	**450**	**659**	**804**	**830**	**5.776**	**10.544**	**12.864**	**13.328**	**11.552**	**21.088**	**25.728**	**26.560**

As can be seen in the table, FatBank activity indicators were either maintained or increased in 2014, with an increase in the number of donors (easily exceeding 800) and in the number of serum and EDTA plasma samples collected. All the activity indicators of this biobank have doubled in the four-year period that the FatBank has been operating, which strengthens its situation as a national reference centre as an adipose tissue biobank.

5. RESEARCH GROUPS

Obesidad Infantil, Genética y Neuroendocrinología

Programme: P3. Complications of Obesity

Lead Researcher: Argente Oliver, Jesús

Group Members

STAFF MEMBERS: Canelles Ortiz, Sandra | Díaz González, Francisca

ASSOCIATED MEMBERS: Argente Arizón, Pilar | Baquedano Caballero, Eva | Barrios Sabador, Vicente | Castro González, David | Chowen King, Julie Ann | Frago Fernández, Laura María | García Cáceres, Cristina | Granado Garcia, Miriam | Martos Moreno, Gabriel Ángel | Muñoz Calvo, María Teresa | Pozo Román, Jesús

Main lines of research

- Severe early onset childhood obesity: metabolic, hormonal, genetic, genomic and metabolomic aspects.
- Relationship genotype/phenotype in the development of secondary complications of obesity.
- The role of hypothalamic astrocytes in physiological and pathophysiological metabolic control.
- Long-term metabolic effects of early dietary and hormonal modifications.
- Interaction of leptin and insulin signaling pathways in the development of obesity associated complications.

Most relevant scientific articles

- Argente J., Flores R., Gutierrez-Arumi A., Verma B., Martos-Moreno G.A., Cusco I. et al. Defective minor spliceosome mRNA processing results in isolated familial growth hormone deficiency. EMBO Molecular Medicine. 2014;6(3):299-306.
- Kim J.G., Suyama S., Koch M., Jin S., Argente-Arizón P., Argente J. et al. Leptin signaling in astrocytes regulates hypothalamic neuronal circuits and feeding. Nature Neuroscience. 2014;17(7):908-910.
- Baquedano E., Ruiz-López A.M., Sustarsic E.G., Herpy J., List E.O., Chowen J.A. et al. The absence of GH signaling affects the susceptibility to high-fat diet-induced hypothalamic inflammation in male mice. Endocrinology. 2014;155(12):4856-4867.
- Garcia-Cáceres C., Fuente-Martin E., Diaz F., Granado M., Argente- Arizón P., Frago L.M. et al. The opposing effects of ghrelin on hypothalamic and systemic inflammatory processes are modulated by its acylation status and food intake in male rats. Endocrinology. 2014;155(8):2868-2880.
- Martos-Moreno G.A., Barrios V., Munoz-Calvo M.T., Pozo J., Chowen J.A., Argente J. Principles and pitfalls in the differential diagnosis and management of childhood obesities. Advances in Nutrition. 2014;5(3):299S-305S.

Highlights

The funding of the project on childhood obesity (FISPI1302195) began in 2014, with this being a continuation of a previous FIS project. Currently there are 1450 obese children being followed in the clinic and enrolled in these studies. The new aspect of this project is the incorporation of metabolomics to determine what are the early metabolic signs of insulin resistance in these children. The most important results in the past year have been:

1) During this past year we discovered a new monogenic syndrome that affects the GH-IGF1 system causing growth failure, reduced BMI and skeletal abnormalities. This discovery has resulted in new international collaborations.

2) Preliminary metabolomic studies have detected new potential markers for insulin resistance that are actually different between prepubertal males and females. This indicates the importance of analyzing boys and girls seperately even at this early age.

3) The role of glial cells in metabolism have been solidified with the demonstration that the knock-out of the leptin receptor in astrocytes causes a reduction in the anorexic response to this hormone.

4) We have shown that the development of hypothalamic inflammation/gliosis depends on the underlying cause of weight gain and that this may help to explain the different secondary complications associated with different diets.

In 2014 we published the second addition of the Pediatric Endocrinology Handbook, which is widely used throughout Spain and in America.

Two doctoral theses were defended in 2014, with both obtaining the maximum qualification at the Universidad Autónoma de Madrid. We obtained a contract (BFU) for a new doctoral student.

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Prevención cardiovascular y estilo de vida

Programme: P1. Nutrition

Lead Researcher: Arós Borau, Fernando

Group Members

STAFF MEMBERS: Roiz Ortiz, Sara | Salaverria Lete, Itziar | Sánchez Costa, María Victoria

ASSOCIATED MEMBERS: Alonso Gómez, Ángel María | Bello Mora, María Concepción | De Loma-Osorio Montes, Ángel | Recondo Olaechea, Javier Gregorio

Main lines of research

- Effect of Mediterranean Diet on primary prevention of cardiovascular disease.
- Secondary prevention of ischemic heart disease. Cardiac rehabilitation. Lifestyle.
- Exercise testing in stable coronary artery disease.
- Exercise phisiology in obese patients.
- Cardiac imaging in obesity.

Most relevant scientific articles

- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.
- Martínez-González M.A., Toledo E., Aros F., Fiol M., Corella D., Salas-Salvado J. et al. Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial. Circulation. 2014;130(1):18-26.
- Martínez-González M.A., Sánchez-Tainta A., Corella D., Salas-Salvado J., Ros E., Aros F. et al. A provegetarian food pattern and reduction in total mortality in the Prevención con Dieta Mediterránea (PREDIMED) study. American Journal of Clinical Nutrition. 2014;100(SUPPL. 1).
- García-López M., Toledo E., Beunza J.J., Aros F., Estruch R., Salas-Salvado J. et al. Mediterranean diet and heart rate: The PREDIMED randomised trial. International Journal of Cardiology. 2014;171(2):299-301.
- Guasch-Ferre M., Hu F.B., Martínez-González M.A., Fito M., Bullo M., Estruch R. et al. Olive oil intake and risk of cardiovascular disease and mortality in the PREDIMED Study. BMC Medicine. 2014;12(1).

Highlights

During the year 2014 the priority activity of the group has been the participation in the PREDIMED PLUS study: organization of the infrastructure, beginning of the recruitment and development of the same.

In addition the Lead researcher of the group keeps on coordinating the committee of clinical events of the PREDIMED study and of the PREDIMED PLUS.

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Bioingeniería y tecnología orientada al ser humano (I3BH)

Programme: P4. Neurocognition and Environmental-Biological Factors
P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: Botella Arbona, Cristina

Group Members

STAFF MEMBERS: Etchemendy, Ernestina | Zaragoza Álvarez, Irene

ASSOCIATED MEMBERS: Alcañiz Raya, Mariano | Andreu Mateu, Sabrina | Baños Rivera, Rosa María | Breton López, Juana María | Castilla López, Diana Virginia | Cebolla Martí, Ausias Josep | García Palacios, Azucena | Guillén Botella, Verónica | Guixeres Provinciale, Jaime | Juan Lizandra, María Del Carmen | Miralles Tena, Ignacio | Moragrega Vergara, Inés | Oliver Gasch, Elia | Perpiña Tordera, Concepción | Quero Castellano, Soledad | Rey Solaz, Beatriz | Serrano Zarate, Berenice

Main lines of research

- Virtual Reality
- Augmented Reality
- Internet and Web technologies
- Mobile Devices
- Serious Games
- Psychological Treatments
- Health Psychology
- Physical activity, health and wellness
- Positive Psychology
- Emotional Regulation
- Cognitive Ergonomics

Most relevant scientific articles

- Banos R.M., Cebolla A., Moragrega I., Van Strien T., Fernández-Aranda F., Aguera Z. et al. Relationship between eating styles and temperament in an Anorexia Nervosa, Healthy Control, and Morbid Obesity female sample. Appetite. 2014;76:76-83.
- Cebolla A., Barrada J.R., van Strien T., Oliver E., Banos R. Validation of the Dutch Eating Behavior Questionnaire (DEBQ) in a sample of Spanish women. Appetite. 2014;73:58-64.
- García-Palacios A., Herrero R., Belmonte M.A., Castilla D., Guixeres J., Molinari G. et al. Ecological momentary assessment for chronic pain in fibromyalgia using a smartphone: A randomized crossover study. European Journal of Pain (United Kingdom). 2014;18(6):862-872.
- Fernández-Aranda F., Sauchelli S., Pastor A., González M.L., De La Torre R., Granero R. et al. Moderate-vigorous physical activity across body mass index in females: Moderating effect of endocannabinoids and temperament. PLoS ONE. 2014;9(8).
- Soler J., Cebolla A., Feliu-Soler A., Demarzo M.M.P., Pascual J.C., Banos R. et al. Relationship between meditative practice and self-reported mindfulness: The MINDSENS composite index. PLoS ONE. 2014;9(1).

Highlights

- We have worked in the European Project MEAL creating a platform allowing clinicians to transfer children good eating habits.
- We applied for the European Project ehcoButler and it was awarded. Dr Fernández-Aranda's group is also participating in this project. The functional specifications of the technological platform are being designed in order to train the elders in cognitive and emotional competences to promote a healthy and active ageing.
- Within the framework of the Project Living Better, we have developed an online self-applied program which is being implemented and tested at the Hypertension Unit of Sagunto Hospital, and which is addressed to promote healthy lifestyles in hypertensive patients with obesity.
- We have improved the E-TIOBE platform for the treatment of childhood obesity, and have started two control studies: one of them at the Virgen de la Arrixaca Hospital, at Murcia (financed by the Mapfre Foundation), and the second one is taking part in cooperation with the Universidad Nacional Autónoma de México (financed by CONACYT, Mexico). The goal is to diminish the number of in-person sessions and make part of the treatment to be carried out with the support of technology.
- We are actively working with Dr Fernández-Aranda's group. We have also started to collaborate with Dr De la Torre's group, having applied for a joint project at Koplowitz Foundation, in order to adapting the E-TIOBE platform to children with Down syndrome, in order to improve their eating habits and increase their physical activity. We keep working with the Nutrigenomic and Obesity Group led by Dr Palou, and the Pediatrics, Innovation, Translation and Technology in Obesity, led by Dr Lurbe.
- We are actively collaborating at PREDIMED-PLUS project, and have designed the whole psychological intervention program which is being implemented to the participants.
- Also, during the year 2014, 6 members of our group have defended their PhD degree dissertation, we have applied for 10 local and/or national projects, and 10 European projects.

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Endocrinología Molecular

Programme: P3. Complications of Obesity

Lead Researcher: Casanueva Freijo, Felipe

Group Members

STAFF MEMBERS: Álvarez Mangas, Leticia | Castelao Taboada, Cecilia | Castro País, Ana Isabel | Couselo Carreira, Marcos.

ASSOCIATED MEMBERS: Amil Diz, María | Crujeiras Martínez, Ana Belén | Gurriarran Rodríguez, Uxía | Lage Varela, María del Carmen | Lodeiro Pose, María | Martínez Olmos, Miguel Ángel | Pardo Pérez, María | Pazos Randulfe, Yolanda | Peino García, Roberto | Peñalva Maqueda, Ángela | Pérez Camiña, Jesús | Seoane Camino, Luisa Mª

Main lines of research

- Adipobiology.
- Obesity and Cancer.
- Nanotechnology applied to obesity.
- Development and validation of anti-obesity treatments.
- Influence of obesity in models of cerebral ischemia.
- Obesidomic: identification and characterization of new signals released by adipose and muscle tissue involved in the regulation of energy homeostasis: Proteomic Analysis of visceral and subcutaneous adipose tissue and its implications in the development and maintenance of obesity.
- Development and adaptation of proteomic technologies (quantitative proteomics: DIGE, CILAIR) study these secretome of muscle and adipose tissue.
- Analysis of skeletal muscle secretome for the identification of regulatory signals of energy homeostasis.
- Characterization of Fetuin-A and Musclin/Osteocrin as new peripheral signals involved in energy homeostasis.
- Study of the role of hormone irisin as a new target for the treatment of obesity and type 2 diabetes.

- Study of the physiological mechanisms responsible for the regulation of energy balance in the gastrointestinal tract. Role of ghrelin nesfatin a-1, gastricendogenous cannabinoid, signaling pathway activated by FNDC5 andmTOR/S6k1.
- Study of the effect of lactation on metabolism. Study of lipid metabolism in adipose tissue and gastrointestinal mechanisms.

Most relevant scientific articles

- Fernández-Aranda F., Sauchelli S., Pastor A., González M.L., De La Torre R., Granero R. et al. Moderate-vigorous physical activity across body mass index in females: Moderating effect of endocannabinoids and temperament. PLoS ONE. 2014;9(8).
- Giustina A., Chanson P., Kleinberg D., Bronstein M.D., Clemmons D.R., Klibanski A. et al. Expert consensus document: A consensus on the medical treatment of acromegaly. Nature Reviews Endocrinology. 2014; 10(4):243-248.
- Vázquez C., Botella-Carretero J.I., Corella D., Fiol M., Lage M., Lurbe E. et al. White fish reduces cardiovascular risk factors in patients with metabolic syndrome: The WISH-CARE study, a multicenter randomized clinical trial. Nutrition, Metabolism and Cardiovascular Diseases. 2014; 24(3):328-335.
- Pye S.R., Huhtaniemi I.T., Finn J.D., Lee D.M., O'Neill T.W., Tajar A. et al. Late-onset hypogonadism and mortality in aging men. Journal of Clinical Endocrinology and Metabolism. 2014; 99(4):1357-1366.
- Crujeiras A.B., Zulet M.A., Lopez-Legarrea P., De La Iglesia R., Pardo M., Carreira M.C. et al. Association between circulating irisin levels and the promotion of insulin resistance during the weight maintenance period after a dietary weight-lowering program in obese patients. Metabolism: Clinical and Experimental. 2014; 63(4):520-531.

Highlights

The group of Molecular Endocrinology in 2014 has published 22 articles with a cumulative impact factor of 77 among which Nature Reviews and Human Reproduction Update. During this period, the group has obtained a national project (ISCIII/AES PI14 /01012) and have established agreements with various companies as well as 3 clinical trials. Noteworthy is the beginning of Hologal project (Holoturias, Nuevo recurso marino de Galicia) is a project funded by FEDER-INNTERCONECTA from Conselleria Innovation and Industry and Centro para el Desarrollo Tecnologico e Industrial (CDTI) – Ministerio de Economia. It aims to find new markets and uses for sea cucumber by the fishing and processing sector in Galicia as a strategy for finding new business solutions.

In 2014 have started new research focused on the search for new effective therapies against obesity based on oral treatments with antioxidants and the use of nanoparticles having obtained very encouraging preliminary results. There have also been significant advances in the project The Obesity Paradox in multiple prevalent diseases: a translational approach whose results will be published in the coming months.

Within the CIBER, Endocrinology group actively participates in several scientific programs and the Fat Bank and during the last year they have obtained obvious progress.

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Epidemiología Genética de las enfermedades cardiovasculares y Obesidad-Nutrigenómica (EPIGEM-NUTRIGENIO)

Programme: P1. Nutrition

Lead Researcher: Corella Piquer, Dolores

Group Members

STAFF MEMBERS: Carrasco Espi, Paula | Fernández Carrión, Rebeca | Guillem Saiz, Patricia | Ortega Azorín, Carolina.

ASSOCIATED MEMBERS: Alfonso Sánchez, José Luis | Asensio Márquez, Eva María | Barragán Arnal, Rocío | Bautista Rentero, Daniel | Coltell Simón, Óscar | Frances Bozal, Francisco | Giménez Fernández, Francisco Javier | González Arráez, José Ignacio | Guillen Domínguez, María Luisa | Portoles Reparaz, Olga | Ruiz De La Fuente Tirado, Salvador | Sorli Guerola, José Vicente | Sotos Prieto, Mercedes | Zanon Moreno, Vicente

Main lines of research

- Mediterranean diet and health
- Genetic and Molecular Epigemiology of Obesity and Cardiovascular Diseases
- Gene-environment interactions and Gene-Diet Interactions
- Research Methods in Genomics and Epigenomics
- Nutrigenomics of eye diseases
- Bionformatics and Genomics
- Computational Medicine
- Taste and cardiovascular risk factors and obesity
- MicroRNAs, methodology and association with cardiovascular diseases and obesity
- Meta-analysis
- Gene expresion and modulation by diet and physical activity
- Healhty ageing

Most relevant scientific articles

- Ortega-Azorín C., Sorli J.V., Estruch R., Asensio E.M., Coltell O., González J.I. et al. Amino acid change in the carbohydrate response element binding protein is associated with lower triglycerides and myocardial infarction incidence depending on level of adherence to the mediterranean diet in the PREDIMED trial. Circulation: Cardiovascular Genetics. 2014; 7(1):49-58.
- Corella D., Ordovás J.M. How does the Mediterranean diet promote cardiovascular health? Current progress toward molecular mechanisms: Gene-diet interactions at the genomic, transcriptomic, and epigenomic levels provide novel insights into new mechanisms. BioEssays. 2014;36(5):526-537.
- Corella D., Sorli J.V., Estruch R., Coltell O., Ortega-Azorín C., Portoles O. et al. MicroRNA-410 regulated lipoprotein lipase variant rs13702 is associated with stroke incidence and modulated by diet in the randomized controlled PREDIMED trial. American Journal of Clinical Nutrition. 2014;100(2):719-731.
- Corella D., Sorli J.V., Gonzalez J.I., Ortega C., Fito M., Bullo M. et al. Novel association of the obesity risk-allele near Fas Apoptotic Inhibitory Molecule 2 (FAIM2) gene with heart rate and study of its effects on myocardial infarction in diabetic participants of the PREDIMED trial. Cardiovascular Diabetology. 2014; 13(1):-.
- Sotos-Prieto M., Luben R., Khaw K.-T., Wareham N.J., Forouhi N.G. The association between Mediterranean Diet Score and glucokinase regulatory protein gene variation on the markers of cardiometabolic risk: An analysis in the European Prospective Investigation into Cancer (EPIC)-Norfolk study. British Journal of Nutrition. 2014;112(1):122-131.

Highlights

In 2014 our group has carried out very important contributions in the field of cardiovascular nutrigenomics and the Mediterranean diet. Nutrigenomics need results that provide a higher level of scientific evidence through experimental studies, and our group is an international pioneer providing these results. Thus, our results published in Circulation Cardiovascular Genetics demonstrated a gene-diet interaction between the Mediterranean diet and a functional variant (rs3812316, C771G, Gln241His) in MLXIPL gene (X Max-like protein interacting protein-like). This gene was first described in 2008 in a GWAs in which our group was involved,as a new gene associated with plasma triglycerides. We now show that this association is mediated by adherence to the Mediterranean diet. When the adherence to the Mediterranean diet is high, the allelic variant G protects against hypertriglyceridemia, but not when adherence is low. Similarly, in the intervention group with Mediterranean diet, the G variant protects against myocardial infarction. This protection is lost in the control group. In another important contribution in the Am J Clin Nutr, we presented pioneering results regarding the interaction between genetics and epigenetics. Thus we have shown that the effect of a polymorphism in a binding site of a microRNA (miR-410) in the lipoproteinlipase gene (LPL-rs13702T> C) is also modulated by the unsaturated fatty acids in the diet and the Mediterranean diet pattern. The protection against hipertriglyceridemia and stroke of the variant allele of this polymorphism only took place in the intervention group with Mediterranean diet. Moreover we have contributed in other works of the PREDIMED and we have continued collaborating with other international groups (Dr. Ordovás in Boston, EPIC, etc) and have participated in several national and international projects (ENPADASI). .

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Efectos metabolico-nutricionales del aceite de oliva virgen y sus componentes

Programme: P1. Nutrition; P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: De la Osada García, Jesús

Group Members

STAFF MEMBERS: Barranquero Cortés, Cristina | Gascón Mesa, Sonia | Martínez Beamonte, Roberto.

ASSOCIATED MEMBERS: Arbones Mainar, José Miguel | Arnal Atarés, Carmen | Lou Bonafonte, José Manuel | Marca Andrés, María del Carmen | Martínez Gracia, María Victoria | Muniesa Lorda, Pedro | Navarro Ferrando, María Ángeles | Rodríguez Yoldi, María Jesús | Surra Muñoz, Joaquín Carlos.

Main lines of research

- Olive oil and fatty liver.
- Olive oil and intestinal physiopathology.
- Nuts and atherosclerosis.

Most relevant scientific articles

- Gabas-Rivera C., Barranquero C., Martínez-Beamonte R., Navarro M.A., Surra J.C., Osada J. Dietary squalene increases high density lipoprotein-cholesterol and paraoxonase 1 and decreases oxidative stress in mice. PLoS ONE. 2014; 9(8).
- Pérez-Díaz S., Johnson L.A., DeKroon R.M., Moreno-Navarrete J.M., Alzate O., Fernandez-Real J.M. et al. Polymerase I and transcript release factor (PTRF) regulates adipocyte differentiation and determines adipose tissue expandability. FASEB Journal. 2014; 28(8):3769-3779.
- Orriols M., Guadall A., Galán M., Marti-Pamies I., Varona S., Rodriguez-Calvo R. et al. Lysyl oxidase (LOX) in vascular remodelling: Insight from a new animal model. Thrombosis and Haemostasis. 2014; 112(4):812-824.
- Oliván S., Martínez -Beamonte R., Calvo A.C., Surra J.C., Manzano R., Arnal C. et al. Extra virgin olive oil intake delays the development of amyotrophic lateral sclerosis associated with reduced reticulum stress and autophagy in muscle of SOD1G93A mice. Journal of Nutritional Biochemistry. 2014; 25(8):885-892.
- Tejedor M.T., Garcia-Sobreviela M.P., Ledesma M., Arbones-Mainar J.M. The apolipoprotein e polymorphism rs7412 associates with body fatness independently of plasma lipids in middle aged men. PLoS ONE. 2014; 9(9).

Highlights

RESEACH GRANTS

- Virgin olive oil terpenic compounds in atherosclerosis and fatty liver development. Funding body: Ministerio de Economía y Competitividad. SAF 2013-41651-R. Period 2014-2016. Principal investigator: Jesus de la Osada Garcia
- Effect of nut dietary supplementation on atherosclerosis development in apolipoprotein E deficient mice. A search for new biomarkers in humans. Funding body: Fiss PI13/02600. Period: 2014-2016. Principal investigator: María Ángeles Navarro Ferrando

Institution: Universidad de Zaragoza

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Obesómica funcional y Metabolismo Molecular

Programme: P2. Adipobiology; P3. Complications of Obesity; P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: Diéguez González, Carlos

Group Members

STAFF MEMBERS: Garrido Novelle, Marta | Pazos Mendoza, Patricia | Pérez Sieira, Sonia | Romero Pico, Amparo

ASSOCIATED MEMBERS: Abella Fernández, María del Sol | Álvarez Crespo, Mayte | Beiroa Tarrio, Daniel | Blanco Martinez de Morentín, Pablo | Fernández Mayo, Diana | Gallego Gómez, Rosalia | García García, María del Carmen | González Diéguez, Carmen Ruth | Jesús Martins, Luis Ricardo | López Pérez, Miguel Antonio | Martínez Sánchez, Noelia | Nogueiras Pozo, Rubén | Tovar Carro, Sulay | Velázquez Raimundo, Douglas Alfredo | Vigo Ramos, Eva

Main lines of research

- Identification of new drug targets at the CNS for Obesity and associated comorbilities. Search for new therapeutic agents against complicated obesity by reprofiling existing drugs.
- The Integrated Neurobiology of Food Intake and food reward.
- Central Control of peripheral lipid metabolism.
- Gender and energy homeostasis.
- Energy sensors and energy balance.

Most relevant scientific articles

- Martínez De Morentin P.B., González-García I., Martins L., Lage R., Fernandez-Mallo D., Martinez-Sanchez N. et al. Estradiol regulates brown adipose tissue thermogenesis via hypothalamic AMPK. Cell Metabolism. 2014; 20(1):41-53.
- Beiroa D., Imbernon M., Gallego R., Senra A., Herranz D., Villarroya F. et al. GLP-1 agonism stimulates brown adipose tissue thermogenesis and browning through hypothalamic AMPK. Diabetes. 2014; 63(10):3346-3358.
- Contreras C., González-García I., Martínez -Sánchez N., Seoane-Collazo P., Jacas J., Morgan D.A. et al. Central ceramide-induced hypothalamic lipotoxicity and ER stress regulate energy balance. Cell Reports. 2014; 9(1):366-377.
- Hebebrand J, Albayrak Ö, Adán R, Antel J, Diéguez C, de Jong J et al. "Eating addiction", rather than "food addiction", better captures addictive-like eating behavior.Neuroscience and biobehavioral reviews. 2014; 47:295-306.
- Fruhbeck G., Nogueiras R. GLP-1: The oracle for gastric bypass? Diabetes. 2014; 63(2):399-401.

Highlights

The year 2014 has represented the consolidation of the group in highly relevant aspects such as: a) the maintenance of a high level of quality publications. b) strengthen and develop new partnerships with other groups of CIBEROBN which has resulted in new lines of research such as food- addicion. c) To reach agreements with companies for the initiation of new projects in the field of obesity. d) Taking into account that this year was a landmark in the field of obesity (20th anniversary of the discovery of leptin), we organized an internacional workshop at which relevant scientists such as of J.Friedman, SO Rahilly and M. Tschop attended.

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Dieta Mediterránea y Enfermedad Cardiovascular

Programme: P1. Nutrition

Lead Researcher: Estruch Riba, Ramón

Group Members

STAFF MEMBERS: Casas Rodríguez, Rosa María | Roth Pérez, Irene | Viñas Hernández, Concepción

ASSOCIATED MEMBERS: Arranz Martínez, Sara | Bosch Aparici, Xavier | Boto Ordoñez, María | Coca Payeras, Antonio | Fernández Sola, Joaquín | López Soto, Alfonso | Masanés Toran, Ferrán | Mena Jaramillo, Mari Pau | Nicolás Arfelis, José María | Rey Fernández, Olalla | Romero Mamani, Edwin Saúl | Sacanella Meseguer, Emiliio | Valderás Martinez, Palmira

Main lines of research

- Effects of olive oil, nuts, tomato and cocoa effects on lipid profile, oxidative stress and biomarkers related to atherosclerosis.
- Effects of chronic alcohol consumption on the cardiovascular system, liver and nervous system.
- Effects of Mediterranean diet on health and cardiovascular disease, cancer and neurodegenerative disease.
- Mechanism of the effects of moderate consumption of wine and beer: effects on the expression and function of adhesion molecules and chemokines associated with the development of atherosclerosis.
- Effects of different types of alcoholic beverages on the immune system.

Most relevant scientific articles

- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.
- Domenech M., Román P., Lapetra J., Garcia De La Corte F.J., Sala-Vila A., De La Torre R. et al. Mediterranean diet reduces 24-hour ambulatory blood pressure, blood glucose, and lipids: One-year randomized, clinical trial. Hypertension. 2014;64(1):69-76.
- Martínez-González M.A., Toledo E., Aros F., Fiol M., Corella D., Salas-Salvado J. et al. Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial. Circulation. 2014;130(1):18-26.
- Chiva-Blanch G., Condines X., Magraner E., Roth I., Valderás-Martínez P., Arranz S. et al. The non-alcoholic fraction of beer increases stromal cell derived factor 1 and the number of circulating endothelial progenitor cells in high cardiovascular risk subjects: A randomized clinical trial. Atherosclerosis. 2014;233(2):518-524.
- Casas R., Sacanella E., Urpi-Sarda M., Chiva-Blanch G., Ros E., Martínez-González M.-A. et al. The effects of the Mediterranean diet on biomarkers of vascular wall inflammation and plaque vulnerability in subjects with high risk for cardiovascular disease. A randomized trial. PLoS ONE. 2014; 9(6).

Highlights

The main lines of Internal Medicine - Hospital Clinic research group are: 1) effects of the Mediterranean diet on cardiovascular disease and cancer; 2) Mechanisms of the effects of moderate consumption of wine and beer on health; and 3) Effects of olive oil, nuts, tomatoes and cocoa on blood pressure, lipid profile and inflammatory biomarkers related to atherosclerosis. The group is the coordinator of the Network "Nutrition and cardiovascular disease" since 2003 and the director of PREDIMED (Prevention with Mediterranean Diet) study which includes 18 research groups from nine autonomous communities and also a member of the Steering Committee of the study PREDIMED Plus which includes 22 research groups. Most studies have been conducted in collaboration with foreign universities such as Columbia University in New York, Loma Linda University in California, Harvard School of Public Health in Massachusetts, Human Nutrition Research Center at Tufts University, also in Massachusetts, USA, and Mario Negri Sud de Santa Maria d'Imbaro (Italy).

It has published over 300 papers in high impact journals, including The New England Journal of Medicine (1989, 2013), JAMA (1995, 2014), Annals of Internal Medicine (2000, 2002, 2006, 2014), Archives of Internal Medicine (1995, 2007, 2008) and American Journal of Nutrition. The results of the study on the effects of the Mediterranean Diet on Cardiovascular Disease Prevention the journal published in New England Journal of Medicine in April 2013 has been the most widely read scientific paper in the world in 2013 and 2014. However also worth mentioning the works published in as J Nutr (2010), Diabetes Care (2011, 2014), PloS One (2012) Eur J Heart Fail (2014), Int J Cardiol (2014) andThromb Vasc Biol Arterioscler (2014).

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Grupo de investigación avanzada en trastornos de la conducta alimentaria

Programme: P4. Neurocognition and Environmental-Biological Factors; P1. Nutrition; P5. New Strategies and Biomarkers

Lead Researcher: Fernández Aranda, Fernando

Group Members

STAFF MEMBERS: Aguera Imbernon, Zaida Palmira | Fagundo Morales, Ana Beatriz | Islam, Mohammed Anisul.

ASSOCIATED MEMBERS: Giner Bartolomé, Cristina | Granero Pérez, Roser | Gunnard, Katarina | Jiménez Murcia, Susana | Sauchelli Toran, Sarah | Wolz, Inés

Main lines of research

- Environmental and genetic risk factors in Eating Disorders and Abnormal eating behaviors.
- Neurocognitive, sensorial, activity related factors and their interaction with biological correlates in Extreme weight conditions.
- New technologies and emotional regulation strategies in Eating disorders and Impulse control disorders: effectiveness and underlying brain-physiological correlates.
- Treatment outcome and related clinical-cognitive-biological correlates in Obesity and related Eating Disorders.
- Food behavior and Addictive patterns in Eating Disorders, Obesity and non-substance related addictions.

Most relevant scientific articles

- Boraska V, Franklin CS, Floyd JA, Thornton LM, Huckins LM, Southam L et al. A genome-wide association study of anorexia nervosa.Molecular psychiatry. 2014; 19(10):1085-94.
- Blasco G., Puig J., Daunis-i-Estadella J., Molina X., Xifra G., Fernandez-Aranda F. et al. Brain iron overload, insulin resistance, and cognitive performance in obese subjects: A preliminary MRI case-control study. Diabetes Care. 2014;37(11):3076-3083.
- Via E., Zalesky A., Sánchez I., Forcano L., Harrison B.J., Pujol J. et al. Disruption of brain white matter microstructure in women with anorexia nervosa. Journal of Psychiatry and Neuroscience. 2014;39(6):367-375.
- Fernández-Aranda F., Sauchelli S., Pastor A., González M.L., De La Torre R., Granero R. et al. Moderate-vigorous physical activity across body mass index in females: Moderating effect of endocannabinoids and temperament. PLoS ONE. 2014; 9(8).
- Fagundo A.B., Via E., Sanchez I., Jiménez-Murcia S., Forcano L., Soriano-Mas C. et al. Physiological and brain activity after a combined cognitive behavioral treatment plus video game therapy for emotional regulation in bulimia nervosa: A case report. Journal of Medical Internet Research. 2014;16(8):e183-.

Highlights

- Increased scientific publications and dissemination under the scopes CIBEROBN (Total publications 22, 9 Q1: 11 Q2, Q3 1, 1 Q4; IF accumulated 84.4) .Increased visibility and general dissemination of goals of CIBEROBN in media (press, radio, TV and internet). Active participation in the annual meeting of the Semana de la Ciencia, for students and general public, in Madrid, representing CIBERobn
- Annual guideline of Ministry of Health, on "Update on the Current Status of Eating Disorders in Spain and Recommended Guidelines" - 2014 (Authors: Dr. F Fernandez-Aranda and Dr. S. Jiménez-Murcia).
- Increased internationalization through participation in several consortiums: Playmancer; GWAS of Anorexia Nervosa and Abnormal eating behavior; Psychiatric GWAS; COST-EU-BM1105) and EU Grant (H2020 EhcoButtler- /2014-16). Participation as partner in Reseach Network on Psychology and Mental Health - MINECO / PSI2014-56303-REDT. Grant FIS-ISCIII (PI14 / 290).
- Increased synergies and collaborations with other groups and coordination of program 4 (9 groups), other CIBERs (CIBERSAM, CIBERESP) and other programs of CIBERobn (Nutrition and Biomarkers). Five stays of Professor of foreign Universities (1 Sweden; 1 Belgium, 2 UK, 1 France). Invited lectures foreign Professors (1 UK, 1 USA, 1 Canada, 1 French, 1 Belgian, 1 Italy).
- International Research Award (AED Leadership Award on Research-2015)
- Invited conferences or keynotes in International Universities and/or International Conferences (1 UK, 2 Mexico; 1 Portugal; 2 Germany; 2 Italy, 2 Uruguay, 2 Spain).
- Including therapeutic Video Serious Game (Playmancer) as a treatment tool at the University Hospital of Bellvitge-ICS in patients related to impulsivity and food addiction.

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Nutrición, Eumetabolismo y Salud

Programme: P2. Adipobiology; P3. Complications of the Obesity

Lead Researcher: Fernández-Real Lemos, José Manuel

Group Members

STAFF MEMBERS: Alonso Ledesma, Isabel | Moreno Navarrete, José María | Moreno Rodríguez, María | Rovira Gomez, Óscar

ASSOCIATED MEMBERS: Biarnes Costa, Josefina | Castillejo Navarro, Clotilde | Castro Guardiola, Antonio | Esteve Lafuente, Eduardo | Fernández Balsells, María de las Mercedes | Loshuertos Gil, Emilio | Martínez Merchan, Cristina | Ortega Delgado, Francisco José | Pardo Albiñana, Gerard | Peral Fuentes, Belén | Planella Farrugia, Cristina | Recasens Sala, Mónica | Ricart Engel, Wifredo | Sabater Masdeu, Mónica | Salleras Compte, Neus | Xifra Villarroya, Gemma

Main lines of research

- Inflammation and insulin resistance.
- Iron metabolism and insulin resistance.
- Biomarkers of obesity, insulin resistance and type 2 diabetes.
- Bone as an endocrine organ.
- Vascular disease and inflammation.
- Proteomics in adipose tissue.
- Microbiota, insulin resistance and NASH.

Most relevant scientific articles

- Fernández-Real J.M., Manco M. Effects of iron overload on chronic metabolic diseases. The Lancet Diabetes and Endocrinology. 2014;2(6):513-526.
- Jove M., Moreno-Navarrete J.M., Pamplona R., Ricart W., Portero-Otín M., Fernández-Real J.M. Human omental and subcutaneous adipose tissue exhibit specific lipidomic signatures. FASEB Journal. 2014;28(3):1071-1081.
- Ortega F.J., Mercader J.M., Moreno-Navarrete J.M., Rovira O., Guerra E., Esteve E. et al. Profiling of circulating microRNAs reveals common microRNAs linked to type 2 diabetes that change with insulin sensitization. Diabetes Care. 2014;37(5):1375-1383.
- Moreno-Navarrete J.M., Novelle M.G., Catalan V., Ortega F., Moreno M., Gómez-Ambrosi J. et al. Insulin resistance modulates iron-related proteins in adipose tissue. Diabetes Care. 2014;37(4):1092-1100.
- Blasco G., Puig J., Daunis-i-Estadella J., Molina X., Xifra G., Fernández-Aranda F. et al. Brain iron overload, insulin resistance, and cognitive performance in obese subjects: A preliminary MRI case-control study. Diabetes Care. 2014;37(11):3076-3083.

Highlights

CURRENT (ACTIVE) FUNDING

- The role of intestinal microflora in non-alcoholic fatty liver disease (FLORINASH) Fundings: 7th Framework European Union. Since/to: 2010-2014. PI: José Manuel Fernández-Real
- MicroRNA circulantes y en el tejido adiposo como biomarcadores metabólicos (FIS 2011). Fundings: ISCIII. Since/to: 2012-2015. PI: José Manuel Fernández-Real
- Estudio del posible rol del hierro en la fisiología del tejido adiposo humano en asociación con obesidad y resistencia a la insulina (FIS 2012). Fundings: ISCIII. Since/to: 2012-2015. PI: Jose María Moreno-Navarrete
- Circulating microRNAS in prepubertal children as biomarkers of metabolic diseases as type 2 diabetes Fundings: European Association for the Study of Diabetes. Fundings: European Association for the Study of Diabetes. Since/to: 2013-2014. PI: Francisco José Ortega Delgado
- Estudio de la metformina y microflora intestinal (FIS 2011). Fundings: ISCIII. Since/to: 2012-2014. PI: Wifredo Ricart Angel
- CLINICAL GUIDELINES: Estrategia en diabetes del Sistema Nacional de Salud- Visión esquemática de la actualización de 2012" Informes, Estudios e Investigación 2014. Ministerio de Sanidad, Servicios Sociales e Igualdad.

PRIZES

- XIII Frederik Paulsen 2014 Award "Changes in circulating microRNAs are associated with childhood obesity". Authors: Autores: A. Prats-Puig, F.J. Ortega, J.M. Mercader, J.M. Moreno-Navarrete, M. Moreno, N. Bonet, W. Ricart, A. Lopez-Bermejo, J.M. Fernández-Real
- Best Scientific Communication Award (VI Simposium del CIBERobn, Madrid, 2014). Title: Weight loss rescues impaired microRNA-induced silencing in obese adipose tissue and inflamed adipocytes

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Fisiopatología cardiovascular y epidemiología nutricional

Programme: P1. Nutrition; P3. Complications of Obesity; P5. New Strategies and Biomarkers

Lead Researcher: Fiol Sala, Miguel

Group Members

STAFF MEMBERS: García Valdueza, Marta | Zamanillo Campos, Rocío.

ASSOCIATED MEMBERS: Alcolea Delgado, Mª del Pilar | Amengual Cladera, Emilia | Amezaga Menéndez, Rocío | Carrillo López, Andrés | Costa Bauza, Antonia | García Palmer, Francisco José | Gianotti Bauza, Magdalena | Gómez Pérez, Yolanda | Grases Freixedas, Feliciano | Guevara De Bonis, Rocío | Llado Sampol, Isabel | Moñino Gómez, Manuel | Morey Servera, Margarita | Nadal Casellas, Antonia | Oliver Oliver, Jordi | Prieto Almirall, Rafael | Proenza Arenas, Ana Mª | Prohens Rigo, Lara | Roca Salom, Mª del Pilar | Romaguera Bosch, Mª Adoración | Rossello Ferrer, Ainhoa | Santandreu Jaume, Francisca Mª | Sastre Serra, Jorge | Valle Gómez, Adamo | Vila Vidal, Magdalena

Main lines of research

Cardiovascular risk factors (nutrition, diabetes, obesity, high blood pressure, lipid levels, smoking, etc) affect cardiovascular disease incidence through several physio-pathological pathways.
Our group investigates some of these pathways in these research lines:

1- The role of diet on intermediate markers of cardiovascular risk:

- Evaluation of the effect of a Mediterranean diet on the primary prevention of cardiovascular disease (Predimed Study).
- Phytate intake, coronary calcification and risk of cardiovascular disease.
- Change in cardiovascular risk score and metabolic syndrome after an intervention based on the Mediterranean diet.

2 - Phatological implications of obesity:

- Evaluation of an intensive lifestyle intervention based on a low calorie Mediterranean diet, physical activity and conductual treatment on weight loss and cardiovascular disease prevention (PrediMedPlus study).

- Molecular basis of sexual dimorphism on the energy metabolism and mitocondrial function; pathological implications.
- Nutritional and genetic determinants of the development of different obesity phenotypes; association of these phenotypes with diseases risk and mortality.

3- Nutrition, diet and cancer:

- Pro-oxidant and antioxidant nutritional factors and their influence on carcinogenesis: the role of estrogens.
- Dietary patterns defined a priori and a posteriori and incidence and recurrence of cancer.

Most relevant scientific articles

- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.
- Fito M., Estruch R., Salas-Salvadó J., Martínez-González M.A., Aros F., Vila J. et al. Effect of the Mediterranean diet on heart failure biomarkers: A randomized sample from the PREDIMED trial. European Journal of Heart Failure. 2014; 16(5):543-550.
- Guasch-Ferre M., Hu F.B., Martínez-González M.A., Fito M., Bullo M., Estruch R. et al. Olive oil intake and risk of cardiovascular disease and mortality in the PREDIMED Study. BMC Medicine. 2014;12(1).
- Martínez-González M.A., Toledo E., Aros F., Fiol M., Corella D., Salas-Salvadó J. et al. Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial. Circulation. 2014;130(1):18-26.
- Roswall N., Angquist L., Ahluwalia T.S., Romaguera D., Larsen S.C., Ostergaard J.N. et al. Association between Mediterranean and Nordic diet scores and changes in weight and waist circumference: Influence of FTO and TCF7L2 loci. American Journal of Clinical Nutrition. 2014;100(4):1188-1197.

Highlights

The most important project that has been developed by this group during 2014 was the start of recruitment of the PREDIMED-PLUS study, which was funded by the ISCIII in the 2014 AES call. The PREDIMED-PLUS project aims to evaluate the effect of intensive intervention based on a low-calorie Mediterranean diet, physical activity and behavioral therapy in cardiovascular disease prevention. From our centre Hospital Son Espases, were have recruited over a hundred participants so far. We have also initiated a series of complementary sub-projects associated with PREDIMED-PLUS study, such as performing densitometry to all patients included in baseline and follow-up visits to determine changes in body composition associated with the intervention. We are also performing echocardiograms to a subsample of patients to study the effect of the intervention on the substrate of atrial fibrillation. Researchers Nephrolithiasis group from the UIB, members of CIBER-OBN, are studying the effect of the intervention PREDIMED-PLUS study on uric acid nephrolithiasis. Finally, note that our group leads the CORE laboratory of electrocardiography in order to process and interpret all the ECG performed in the PREDIMED-PLUS study.

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Riesgo Cardiovascular y Nutrición (CARIN)

Programme: P1. Nutrition; P2. Adipobiology;
P4. Neurocognition and Environmental-Biological Factors;
P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: Fitó Colomer, Monserrat

Group Members

STAFF MEMBERS: Blasco Lapuente, Anna | Castañer Niño, Olga.

ASSOCIATED MEMBERS: Covas Planells, María Isabel | De la Torre Fornell, Rafael | Farras Mañe, Marta | Forcano Gamazo, Laura | Goday Arno, Alberto | Hernáez Camba, Álvaro | Martin Peláez, Sandra | Muñoz Aguayo, Daniel | Pastor Bosch, Antoni | Pujadas Bastardes, María Antonia | Rodríguez Morato, José | Tello Rovira, Susana

Main lines of research

The Mediterranean diet, its foods and the interaction of nutrients, has healthy effects on morbidity and mortality related to cardiovascular diseases that have been widely described and scientifically proven. In this context, the main objective of our research is to determine the effect of diet on cardiovascular risk factors and cardiovascular diseases, as well as to establish the cellular and molecular mechanisms that contribute to these beneficial effects. To achieve these goals, we are working at present in the following research lines:

- Nutrition Studies and Cardiovascular Risk
- Molecular and cellular mechanisms related with risk and protective factors for cardiovascular disease
  - Role of high density lipoproteins (HDLs)
  - Nutrigenomics
  - Interaction between diet and intestinal flora
  - Emergent and cardiovascular risk factors
- Nutritional Epidemiology and Childhood Obesity
- Nutrition and Neurocognition
- Obesity and diabetes epidemiology and management

Most relevant scientific articles

- Fito M., Estruch R., Salas-Salvado J., Martinez-Gonzalez M.A., Aros F., Vila J. et al. Effect of the Mediterranean diet on heart failure biomarkers: A randomized sample from the PREDIMED trial. European Journal of Heart Failure. 2014;16(5):543-550.
- Hernáez A., Fernandez-Castillejo S., Farras M., Catalan U., Subirana I., Montes R. et al. Olive oil polyphenols enhance high-density lipoprotein function in humans: A randomized controlled trial. Arteriosclerosis, Thrombosis, and Vascular Biology. 2014;34(9):2115-2119.
- Gómez M., Vila J., Elosua R., Molina L., Bruguera J., Sala J. et al. Relationship of lipid oxidation with subclinical atherosclerosis and 10-year coronary events in general population. Atherosclerosis. 2014;232(1):134-140.
- De la Torre R., De Sola S., Pons M., Duchon A., de Lagran M.M., Farre M. et al. Epigallocatechin-3-gallate, a DYRK1A inhibitor, rescues cognitive deficits in Down syndrome mouse models and in humans. Molecular Nutrition and Food Research. 2014;58(2):278-288.
- Mas-Lorenzo A., Benaiges D., Flores-Le-Roux J.A., Pedro-Botet J., Ramon J.M., Parri A. et al. Impact of Different Criteria on Type 2 Diabetes Remission Rate After Bariatric Surgery. Obesity Surgery. 2014;24(11):1881-1887.

Highlights

Highlighting the concession of a Joan Rodés (3 years) Contract to a medical doctor of the group, who will combine the field-work in the PREDIMEDplus Study at Institute Hospital del Mar (IMIM) in Barcelona with the clinical care task in the Endocrinology Service in the same hospital. Also remark the concession of two FIS projects to two researchers from the group: one on the enhancing effects exerted by alcohol on endogenous and exogenous synthesis of hydroxytyrosol and the other, on the role of iron-deficient state in the prognosis of patients with heart failure and valve disease.

Highlight the following results: 1/ to provide the highest level of scientific evidence on the effect of polyphenols-rich virgin olive oil on the HDL functionality and its oxidative status, in healthy subjects; 2/ it has been demonstrated the value of the oxidation of LDL, as a biomarker for predicting cardiovascular events in the general population; gradation of the oxidation of LDL particle is associated with obesity, hypertension and lipid profile in a transversal study (this work has constituted one of the papers in a Doctoral Thesis); 3/ in population at high cardiovascular risk, an intervention with Mediterranean diet has improved the concentration of the N-terminal pro-brain natriuretic, a heart failure biomarker related-peptide; a decrease in this natriuretic peptide is linked to an improvement of the oxidation of LDL; 4/ the epigallocatechin-3-gallate administration has been a useful tool to improve cognitive performance in sunjects with Down Syndrome, that effectiveness is linked to an inhibition of a tyrosine-(Y)-phosphorylation regulated kinase 1A (Dyrk1A); 5/ Type-2 diabetes mellitus remission is higher after laparoscopic surgery with gastric bypass (LRYGB) compared with other surgical techniques.

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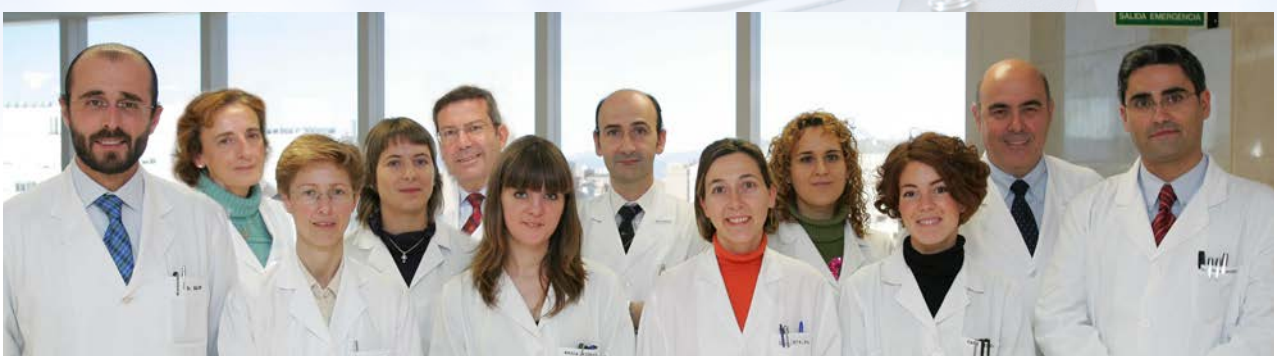
Adipobiología Traslacional

Programme: P2. Adipobiology



Lead Researcher: Frühbeck Martínez, Gema

Group Members

STAFF MEMBERS: Becerril Mañas, Sara | Ibáñez Solano, Patricia.

ASSOCIATED MEMBERS: Álvarez Cienfuegos Suárez, Javier | Burrel Bustos, María Ángela | Catalán Goñi, Victoria | Escalada San Martín, Francisco Javier | Fernández González, Secundino | Gil Calvo, María Jesís | Gómez Ambrosi, Javier | Lancha Urtasun, Andoni | Méndez Giménez de los Galanes, Leire | Moncada Durruti, Rafael | Ramírez Sola, Beatriz | Rodríguez Murueta Goyena, Amaia | Rotellar Sastre, Fernando | Salvador Rodríguez, Francisco Javier | Silva Froján, Camilo | Valenti Azcarate, Víctor

Main lines of research

- Study of the changes in energy balance and metabolism following bariatric surgery.
- Influence of adipokines, myokines, hepatokines and osteokines in the development of obesity and its comorbidities.
- Implication of aquaglyceroporins in energy homeostasis and metabolic control.
- Importance of adipose tissue extracellular matrix remodelling in obesity and its comorbidities.
- Influence of immune cells in the development of obesity-associated adipose tissue inflammation.
- Adipose tissue dysregulation and colon carcinogenesis promotion.

Most relevant scientific articles

- Catalan V., Gomez-Ambrosi J., Rodriguez A., Perez-Hernandez A.I., Gurbindo J., Ramirez B. et al. Activation of noncanonical wnt signaling through WNT5A in visceral adipose tissue of obese subjects is related to inflammation. Journal of Clinical Endocrinology and Metabolism. 2014;99(8).
- Gomez-Ambrosi J., Pascual E., Catalan V., Rodriguez A., Ramirez B., Silva C. et al. Circulating betatrophin concentrations are decreased in human obesity and type 2 diabetes. Journal of Clinical Endocrinology and Metabolism. 2014;99(10):E2004-E2009.
- Gomez-Ambrosi J., Catalan V., Rodriguez A., Andrada P., Ramirez B., Ibanez P. et al. Increased cardiometabolic risk factors and inflammation in adipose tissue in obese subjects classified as metabolically healthy. Diabetes Care. 2014;37(10):2813-2821.

- Beiroa D., Imbernon M., Gallego R., Senra A., Herranz D., Villarroya F. et al. GLP-1 agonism stimulates brown adipose tissue thermogenesis and browning through hypothalamic AMPK. Diabetes. 2014;63(10):3346-3358.
- Moreno-Navarrete J.M., Novelle M.G., Catalan V., Ortega F., Moreno M., Gomez-Ambrosi J. et al. Insulin resistance modulates iron-related proteins in adipose tissue. Diabetes Care. 2014;37(4):1092-1100.

Highlights

RESEARCH PROJECTS

- Study of the implication of extracellular matrix remodeling of the adipose tissue and liver in the onset of obesity and its comorbidities. FIS-ISCIII_Gómez-Ambrosi • Prospective study of the changes in energy balance after bariatric surgery. FIS_INTRASALUD-ISCIII_Frühbeck • Implication of obesity and type 2 diabetes mellitus in colon cancer development. Gene expression analysis involved in metilation, inflammation and tumoral growth in adipose tissue and peripheral blood. DeptoSalud, GobNav_Catalán • Study of the implication of aquaglyceroporins in insulin resistance development. Aging effects. PIUNA, UNAV_Rodríguez • Adipose tissue dysfunctionality studies in cardiometabolic alterations associated to obesity and its influences in aging. CAN_Gómez-Ambrosi • Role of interleukin-32 in the regulation of macrophage polarization in adipose tissue. Involvement in the obesity-associated inflammation and comorbidities. FIS-ISCIII_Catalán • Impact of ghrelin isoforms in the development of obesity-related hypertension. FIS-ISCIII_Rodríguez • DORIAN - Developmental Origins of Healthy and Unhealthy Ageing. The role of Maternal Obesity. EU-Project_Iozzo • SPOTLIGHT – Sustainable Prevention of Obesity Through Integrated Strategies. EU-Project_Brug.

CLINICAL GUIDELINES

- Need for a paradigm shift in adult overweight and obesity management - an EASO position statement on a pressing public health, clinical and scientific challenge in Europe.ObesFacts.2014;7:408-16 • Beyond BMI-phenotyping the obesities.ObesFacts.2014;7:322-8 • Interdisciplinary European guidelines on metabolic and bariatricsurgery.RozhlChir.2014;93:366-78 • Obesity: a gateway disease with a rising prevalence. ObesFacts.2014;7 Suppl 2:33-6 • An EASO position statement on multidisciplinary obesity management in adults.ObesFacts.2014;7:96-101 • Interdisciplinary European guidelines on metabolic and bariatric surgery. ObesSurg.2014;24:42-55.

COLLABORATIONS

- Estancia de formación de Natalia Moreno (Departamento de Biología Celular, Fisiología e Inmunología-IMIBIC,Córdoba), miembro del grupo liderado por Prof. Manolo Tena Sempere (CIBEROBN).
- NACIONAL: Collaboration&publications with CIBERobn groups of Drs. Casanueva, Fernández- Real, Fernández-Aranda, Diéguez, Tena-Sempere, Botella, Argente, Tinahones Villaroya, Fitó-Colomer, López Miranda.
- INTERNACIONAL: Collaboration & publications with Drs. Pietiläinen (Helsinki,Finland), Calamita (Bari,Italy), Yumuk (Istanbul,Turkey), Toplak (Graz,Austria), Woodward (European Association for the Study of Obesity on behalf of the Executive Committee), Halford (Liverpool,UK), Blundell (Leeds,UK), Dulloo (Fribourg, Switzerland), Oppert (Paris, France), Fried (Prague, Czech Republic), Scopinaro (Genoa,Italy), Weiner (Frankfurt,Germany), Yashkov (Moscow,Russia), Maislos (Beer Sheva,Israel) y Acerlus(Leicester,UK).

AWARDS

- Iberoamerican "Cortes de Cádiz" Award in Surgery _J.Álvarez Cienfuegos.
- Medical Senior Fellowship "Colegio Médicos de Navarra" _V.Valentí.

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Unidad de Epidemiología Nutricional, Actividad física y Prevención de la Obesidad (ENAP)

Programme: P1. Nutrition

Lead Researcher: Gómez Gracia, Enrique

Group Members

STAFF MEMBERS: Benítez Pont, Rosa Ana | Warnberg, Julia

Main lines of research

- The Unit for Nutritional Epidemiology, Physical Activity and Obesity Prevention is a multidisciplinary team that includes specialists in Preventive Medicine, Epidemiology, Nutrition, Sports Medicine and Biostatistics.
- We focus our research on studies of primary prevention of chronic diseases with diet (Mediterranean diet), and physical activity and the study of risk factors such as obesity, chronic inflammation and cardiovascular disease in children, adolescents and adults.
- Our research areas are the following:

  1) Nutritional Epidemiology and Physical Activity;

  2) Intervention studies with diet and physical activity;

  3) Anti-inflammatory effect of diet and food;

  4) Body composition studies.

Most relevant scientific articles

- Salas-Salvado J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.
- Martinez-Gonzalez M.A., Toledo E., Aros F., Fiol M., Corella D., Salas-Salvado J. et al. Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial. Circulation. 2014;130(1):18-26.
- Tresserra-Rimbau A., Rimm E.B., Medina-Remon A., Martinez-Gonzalez M.A., Lopez-Sabater M.C., Covas M.I. et al. Polyphenol intake and mortality risk: A re-analysis of the PREDIMED trial. BMC Medicine. 2014;12(1).
- Guasch-Ferre M., Hu F.B., Martinez-Gonzalez M.A., Fito M., Bullo M., Estruch R. et al. Olive oil intake and risk of cardiovascular disease and mortality in the PREDIMED Study. BMC Medicine. 2014;12(1).
- Martinez-Gonzalez M.A., Sanchez-Tainta A., Corella D., Salas-Salvado J., Ros E., Aros F. et al. A provegetarian food pattern and reduction in total mortality in the Prevención con Dieta Mediterránea (PREDIMED) study. American Journal of Clinical Nutrition. 2014;100(SUPPL. 1).

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Antioxidantes Naturales

Programme: P1. Nutrition

Lead Researcher: Lamuela Raventós, Rosa M.

Group Members

ASSOCIATED MEMBERS: Castellote Bargallo, Ana Isabel | Izquierdo Pulido, María | López Sabater, María Del Carmen | Martínez Huelamo, Mirian | Medina Remon, Alexander | Montes Goyanes, Rosa María | Quifer Rada, Paula | Tresserra Rimbau, Anna | Vallverdu Queralt, Anna

Main lines of research

- Study of food bioactive compounds (polyphenols, carotenoids and vitamins)
  - Polyphenols, carotenoids and vitamins in food, intrinsic and extrinsic factors that modify the presence therefore. Influence of cultural factors, technology, processing and storage in the levels of these compounds.
  - The matrix effect on the bioavailability of such compounds.
- Nutritional studies of bioactive compounds: clinical trials and epidemiological studies.
  - The relationship between the consumption of bioactive compounds in the prevention and reduction of chronic diseases.
  - Bioavailability and Bioaccessibility tests, effect of food matrix on the absorption and efficacy of such compounds.
  - Studies of nutritional biomarkers.
  - Nutrikinetics and pharmacokinetics analysis. Effect of consumption of polyphenols and other bioactive compounds in primary prevention and obesity (PREDIMED and PREDIMEDPLUS).

Most relevant scientific articles

- Tresserra-Rimbau A., Rimm E.B., Medina-Remon A., Martínez-González M.A., Lopez-Sabater M.C., Covas M.I. et al. Polyphenol intake and mortality risk: A re-analysis of the PREDIMED trial. BMC Medicine. 2014;12(1).
- Quifer-Rada P., Martínez-Huelamo M., Chiva-Blanch G., Jauregui O., Estruch R., Lamuela-Raventós R.M. Urinary isoxanthohumol is a specific and accurate biomarker of beer consumption. Journal of Nutrition. 2014;144(4):484-488.
- Tresserra-Rimbau A., Rimm E.B., Medina-Remon A., Martinez-Gonzalez M.A., de la Torre R., Corella D. et al. Inverse association between habitual polyphenol intake and incidence of cardiovascular events in the PREDIMED study. Nutrition, Metabolism and Cardiovascular Diseases. 2014;24(6):639-647.
- Vallverdu-Queralt A., Regueiro J., Martinez-Huelamo M., Rinaldi Alvarenga J.F., Leal L.N., Lamuela-Raventos R.M. A comprehensive study on the phenolic profile of widely used culinary herbs and spices: Rosemary, thyme, oregano, cinnamon, cumin and bay. Food Chemistry. 2014;154:299-307.
- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.

Highlights

In the year 2014 was awarded the grant from the Danone Institute for Nutrition and health projects.

The Natural Antioxidant Group participated in the european project ERAB.

During 2014 some clinical trials were done:

- Furanocoumarin metabolites as dietary biomarkers of grapefruit consumption.
- Polyphenols bioavailability study on wine.

As a result of the group activity several non-cientific communications were published.

In the year 2014 the projects associated to the research group are the following:

- ERAB: The European Foundation for Alcohol Research (Evaluation of moderate and benefits ofmoderate beer consumption in 1,000 subjects at high cardiovascular risk using a new beerbiomarker).
- AGL2013 (Bioactive components of stir-fry. Metabolomic study and mechanisms involved in the control of oxidative stress and inflammation).
- INNPRONTA (Guide to the substantiation of health claims on foods: immune function, cognitive and metabolic syndrome).
- Gallina Blanca (through CIBER).

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Nutrición y prevención de enfermedades en Atención Primaria

Programme: P1. Nutrition

Lead Researcher: Lapetra Peralta, José

Group Members

STAFF MEMBERS: Miro Moriano, Leticia.

ASSOCIATED MEMBERS: Espinaco Garrido, María Josefa | García de la Corte, Francisco José | Iglesias Bonilla, Pablo | Jiménez Jiménez, Luis Manuel | Lahera Robles, Laura | Lama Herrera, Carmen | Mayoral Sánchez, Eduardo | Ortega Calvo, Manuel | Ramos Molina, Marian | Román Torres, Pilar | San Juan Lozano, Pilar | Santos Lozano, José Manuel | Urbano Fernández, Víctor.

Main lines of research

- Diet, nutrition, and disease prevention.
- Cardiovascular epidemiology.
- Hypertension and ambulatory blood pressure monitoring.
- Health related quality of life.

Most relevant scientific articles

- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.
- Domenech M., Roman P., Lapetra J., García De La Corte F.J., Sala-Vila A., De La Torre R. et al. Mediterranean diet reduces 24-hour ambulatory blood pressure, blood glucose, and lipids: One-year randomized, clinical trial. Hypertension. 2014;64(1):69-76.
- Martínez-González M.A., Toledo E., Aros F., Fiol M., Corella D., Salas-Salvadó J. et al. Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial. Circulation. 2014;130(1):18-26.
- Fernández-Berges D., Consuegra-Sanchez L., Penafiel J., Cabrera De León A., Vila J., Félix-Redondo F.J. et al. Metabolic and inflammatory profiles of biomarkers in obesity, metabolic syndrome, and diabetes in a mediterranean population. DARIOS inflammatory study. Revista Espanola de Cardiologia. 2014;67(8):624-631.
- Babio N., Toledo E., Estruch R., Ros E., Martínez-González M.A., Castaner O. et al. Mediterranean diets and metabolic syndrome status in the PREDIMED randomized trial. CMAJ. 2014;186(17):E649-E657.

Highlights

- Grant by Instituto de Salud Carlos III for Research Coordinated Project "PREDIMED-PLUS: Effect of Hypocaloric Mediterranean and Physical Activity Promotion on the Primary Prevention of Cardiovascular Disease. Pilot Study on Intermediate Markers" (PI13/00673). Principal Investigator: José Lapetra. Coordinating Principal Investigator: Jordi Salas-Salvadó. Duration: 3 years (2014-2016).
- Grant by Andalusian Healh Service (Spain) for Research Project "Validity of glycemic hour after the oral glucose load in the diagnosis of impaired glucose tolerance and hidden diabetes in patients with impaired fasting glucose" (PI-0112-2013). Principal Investigator: Manuel Santos. Duration: 3 years (2014-2016).
- Designation as "Affiliated Group" at the Institute of Biomedicine of Seville (IBIS).

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Colesterol, Nutrición y Obesidad

Programme: P1. Nutrition; P2. Adipobiology P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: Lasunción Ripa, Miguel Ángel

Group Members

STAFF MEMBERS: Casado Cerdeño, María Emilia.

ASSOCIATED MEMBERS: Arrieta Blanco, Francisco Jesús | Balsa Barro, José Antonio | Botella Carretero, José Ignacio | Busto Durán, Rebeca | Crespo Toro, Lorena | Gómez Coronado Cáceres, Diego | Martín Hidalgo, Antonia | Martínez Botas Mateo, Javier | Prieto Moreno, Ana | Ramírez Ortiz, María Mercedes | Vázquez Martínez, Clotilde | Zamarrón Cuesta, Isabel

Main lines of research

- Alterations of intracellular cholesterol homeostasis.
- Role of cholesterol in cell proliferation and differentiation.
- Effects of nutrients and foods on lipid, hydrocarbon and oxidative metabolisms.
- Metabolic effects of bariatric surgery in morbidly obese patients.
- Gene polymorphisms and gene expression in the obese patient and their relation with cardiometabolic affectation.
- Role of lipids in male infertility associated to metabolic disorders. Study of the mechanisms and prevention by diet.

Most relevant scientific articles

- Vázquez C., Botella-Carretero J.I., Corella D., Fiol M., Lage M., Lurbe E. et al. White fish reduces cardiovascular risk factors in patients with metabolic syndrome: The WISH-CARE study, a multicenter randomized clinical trial. Nutrition, Metabolism and Cardiovascular Diseases. 2014;24(3):328-335.
- Canfran-Duque A., Pastor O., Quintana-Portillo R., Lerma M., de la Pena G., Martin-Hidalgo A. et al. Curcumin promotes exosomes/microvesicles secretion that attenuates lysosomal cholesterol traffic impairment. Molecular Nutrition and Food Research. 2014;58(4):687-697.
- Calderón B., Galdon A., Calanas A., Peromingo R., Galindo J., Garcia-Moreno F. et al. Effects of Bariatric Surgery on Male Obesity-Associated Secondary Hypogonadism: Comparison of Laparoscopic Gastric Bypass with Restrictive Procedures. Obesity Surgery. 2014.
- Vázquez-Castellanos JF, Serrano-Villar S, Latorre A, Artacho A, Ferrús ML, Madrid N et al. Altered metabolism of gut microbiota contributes to chronic immune activation in HIV-infected individuals.Mucosal immunology. 2014.
- Vázquez C., Arrieta F., Pinera M.J., Balsa J.A., Martínez-Botas J., Gómez-Coronado D. et al. The metabolically unhealthy obese phenotype is mainly associated with hypoadiponectinemia, hyperuricemia and high OPG/RANKL ratio. e-SPEN Journal. 2014.

Highlights

During 2014, the group Cholesterol, Nutrition and Obesity (CNO) has contributed along with 10 other groups of the Community of Madrid, to the constitution of ALIBIRD-CM, a consortium that has obtained a grant from the Programa de Actividades de I+D entre grupos, Tecnología 2013 (Comunidad de Madrid, S2013/ABI-2728) with the project proposal entitled "Functional Foods and effective nutritional strategies for the prevention and treatment of chronic diseases" for the following four years. The aim of this multidisciplinary project is to gain the scientific knowledge and technical support for the development of functional foods to aid improving cardiovascular health, reducing obesity and contributing to the prevention and increasing the quality of life of cancer patients. This group will be involved in two of the three major objectives outlined, such as the identification of the cellular and molecular mechanisms of the most characteristic ingredients in the functional foods developed in the context of this project, and in the programmed clinical studies aimed to demonstrate the efficacy of functional foods and nutritional supplements and their use in personalized nutrition of patients with cardiovascular disease, obesity or cancer.

In 2014, this group has also expanded partnerships with other CIBEROBN groups, groups from other CIBER and from abroad, to explore specific issues such as the role of microRNA in lipid metabolism, the relationship between gut microbiota disruption with inflammation, the induction of genomic instability by metabolism alterations and the molecular diagnosis of food allergies. Regarding this last point, members of this group have registered the patent entitled "Method for the prediction of the efficacy of oral immunotherapy for the treatment of allergy to cow's milk proteins". Finally, it has been completed the doctoral thesis entitled "Study of the effects of tamoxifen, raloxifene and toremifene on the regulation of cholesterol homeostasis. Impact on reverse cholesterol transport from macrophages".

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Nutrigenómica y Síndrome Metabólico

Programme: P1. Nutrition; P2. Adipobiology;
P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: López Miranda, José

Group Members

STAFF MEMBERS: Camargo García, Antonio | Gómez Arcas, Pilar | Rangel Zuñiga, Oriol Alberto.

ASSOCIATED MEMBERS: Alcalá Díaz, Juan Francisco | Almaden Peña, Yolanda | Criado García, Juan | Delgado Casado, Nieves | Delgado Lista, Francisco Javier | Fernández de la Puebla Giménez, Rafael Ángel | Fuentes Jiménez, Francisco José | García Ríos, Antonio | Gómez Luna, Purificación | López Segura, Fernando | Marín Hinojosa, Carmen | Paniagua González, Juan Antonio | Pérez Jiménez, Francisco | Pérez Martínez, Pablo | Yubero Serrano, María Elena

Main lines of research

- Nutrition and disease
- Gene-environment interaction

Most relevant scientific articles

- Delgado-Lista J., Pérez-Martínez P., Juan S., García-Ríos A., Pérez-Caballero A.I., Lovegrove J.A. et al. Top single nucleotide polymorphisms affecting carbohydrate metabolism in metabolic syndrome: From the LIPGENE study. Journal of Clinical Endocrinology and Metabolism. 2014;99(2).
- Delgado-Lista J, Pérez-Martínez P, García-Ríos A, Pérez-Caballero AI, Pérez-Jiménez F, Lopez-Miranda J. Mediterranean diet and cardiovascular risk: beyond traditional risk factors.Critical reviews in food science and nutrition. 2014;.
- Gutiérrez-Mariscal F.M., Yubero-Serrano E.M., Rangel-Zuniga O.A., Marín C., García-Ríos A., Perez-Martinez P. et al. Postprandial activation of P53-dependent DNA repair is modified by mediterranean diet supplemented with coenzyme Q10 in elderly subjects. Journals of Gerontology - Series A Biological Sciences and Medical Sciences. 2014; 69(7):886-893.
- Gómez-Delgado F., Alcalá-Díaz J.F., García-Ríos A., Delgado-Lista J., Ortiz-Morales A., Rangel-Zuniga O. et al. Polymorphism at the TNF-alpha gene interacts with Mediterranean diet to influence triglyceride metabolism and inflammation status in metabolic syndrome patients: From the CORDIOPREV clinical trial. Molecular Nutrition and Food Research. 2014;58(7):1519-1527.
- Rangel-Zuñiga OA, Haro C, Pérez-Martínez P, Delgado-Lista J, Marín C, Quintana-Navarro GM et al. Effect of frying oils on the postprandial endoplasmic reticulum stress in obese people.Molecular nutrition & food research. 2014;58(11):2239-42.

Highlights

During the year 2014 our group has maintained the highest level of excellence, accredited in the past. This fact is supported by the following achivements:

We have published 34 articles (JCR), with a high percentage of leadership in these publications, and with an index of more than 148 points of cumulative impact. In addition, during the year of 2014, we have developed a total of 11 research projects of national competitive calls, and a European project, and we have obtained the financing of a project Interciber and an Integrated Project of Excellence. Within the catchment of the Group's resources, it should be noted the participation in 13 clinical trials. From the point of view of mobility, we have been receiving several visiting researchers and a researcher of our group has made a stay at the Mount Sinai Medical Center (USA). In relation to human resources, we currently enjoy a contract Rio-Hortega, PFIS, FPI, Sara Borrell, Juan de la Cierva, two Miguel Servet, Nicolás Monarde, and F.E.A contract internal medicine to enhance the research work of the UGC, and they have been defended 5 PhD theses with the highest rating, which is indicative of the quality of the formation of our group. Following the creation of a technological spin-off in 2012, our group participates in several projects for generation of platforms e-health. During this year, two mobile helper applications for medical professionals have been merchandised, they include protocols and algorithms for tackling the main diseases related to food and obesity, as hypertension, coronary artery disease, and hypercholesterolemia. This application (PadMed) has currently reached 50,000 downloads. In addition, we have received the Award for the Best Business Idea in the 6th annual edition of the contest of Ideas of Business of the University of Córdoba.

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Pediatría, Innovación, Traslación y Tecnología en la Obesidad Infantil

Programme: P3. Complications of Obesity;
P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: Lurbe Ferrer, Empar

Group Members

STAFF MEMBERS: Calaforra Juan, Oscar | Dix, Rachael Ann | Ponce Zanon, Francisco Jose | Redon Lurbe, Pau.

ASSOCIATED MEMBERS: Aguilar Bacallado, Francisco | Alvarez Pitti, Julio Carlos | Pascual Izuel, José María | Redón i Mas, Josep | Torro Domenech, María Isabel.

Main lines of research

The group has established a number of research areas that focus on various aspects of childhood obesity and the study of cardiometabolic and renal complications both in children and in adults.
In the area of childhood obesity:

- Study of risk factors for development of obesity, focusing on the impact of intrauterine life, postnatal growth and environmental factors (tobacco, metals).
- Identification of molecular mechanisms involved in cardiometabolic risk to better understand its mechanisms and search for biomarkers.
- Study of the association of metabolic factors, dyslipidemia, insulin resistance and hyperuricemia and hemodynamic, arterial pressure.
- Comprehensive prevention and treatment focused on physical exercise with the implementation of new technologies for personalized treatment leading to the creation of PEDITEC (JOINT RESEARCH UNIT FOR TECHNOLOGICAL INNOVATION IN PEDIATRICS -PEDITEC- FACING CHILD WELFARE) together with the Polytechnic University of Valencia (VLCCampus).
- Technology transfer, with the creation of integrated software for cardiorespiratory fitness and autonomic activity for personalizing exercise.

In the study area of cardiometabolic and renal complications:

- Study of biomarkers of cardiometabolic risk.
- Study of the mechanisms of podocyte damage as the origin of renal damage in obesity.
- Study of genetic markers in the risk of developing obesity and its complications.

Most relevant scientific articles

- Lurbe E., García-Vicent C., Torro M.I., Aguilar F., Redón J. Associations of birth weight and postnatal weight gain with cardiometabolic risk parameters at 5 years of age. Hypertension. 2014;63(6):1326-1332.
- Ivorra C., Garcia-Vicent C., Ponce F., Ortega-Evangelio G., Fernandez-Formoso J.A., Lurbe E. High cotinine levels are persistent during the first days of life in newborn second hand smokers. Drug and Alcohol Dependence. 2014;134(1):275-279.
- Guixeres J., Redón P., Saiz J., Álvarez J., Torro M.I., Cantero L. et al. Cardiovascular fitness in youth; association with obesity and metabolic abnormalities. Nutricion Hospitalaria. 2014;29(6):1290-1297.
- Pascual J.M., Rodilla E., Costa J.A., García-Escrich M., González C., Redón J. Prognostic Value of Microalbuminuria During Antihypertensive Treatment in Essential Hypertension. Hypertension. 2014.
- Marrachelli V.G., Monleón D., Rentero P., Mansego M.L., Morales J.M., Galán I. et al. Genomic and metabolomic profile associated to microalbuminuria. PLoS ONE. 2014;9(6).

Highlights

- Creating JOINT RESEARCH UNIT FOR TECHNOLOGICAL INNOVATION IN PEDIATRICS -PEDITEC- FACING CHILD WELFARE with the Polytechnic University of Valencia (VLCCampus), which uses both health staff in their daily work who are dedicated to managing obesity, along with engineers who develop software for capturing signals via mobile devices. Through PEDITEC the study of physiological parameters that allow for personalized treatment has been achieved. In the same line, the group has received a FIPSE 2014 funded project of the Institute of Health Carlos III entitled "Development of a transfer plan of a prototype analysis of cardiorespiratory capacity and its application in the prevention and treatment of childhood obesity".
- The PAIDO program continues its activities in Unit Against Cardiovascular Risk in Children and Adolescents of the Hospital General Universitario de Valencia, coordinated by the group of Dr . Lurbe. The Programme of Personalised Integrated Care for Childhood Obesity (PAIDO) extends to the dinvolvement of the family, educators, nutritionists, physical education teachers and other actors of various kinds. Thus, the treatment of this pathology goes beyond the hospital space and also involves the environment and the child's own individual sphere. This has also been supported by the introduction of modern technologies of artificial intelligence.
- Obtaining a FIS Project: Prospective study from birth of children who have reached 10 years of age. With over 200 children. The study combines information and umbilical cord material with epigenetic studies and metabolomics, and the follow-up of clinical parameters and cardiometabolic phenotype.
- Clinical Guide on Ambulatory Blood Pressure Monitoring of the European Society of Hypertension.

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Epidemiología Nutricional

Programme: P1. Nutrition

Lead Researcher: Martínez González, Miguel Ángel

Group Members

STAFF MEMBERS: Goñi Ochandorena, Estíbaliz

ASSOCIATED MEMBERS: Alonso Gutiérrez, Álvaro | Bes Rastrollo, Maira | Buil Cosiales, Pilar | De Irala Estévez, Jokin | De la Fuente Arrillaga, Carmen | Díez Espino, Javier | García Arellano, Ana | Gea Sánchez, Alfredo | Guillén Grima, Francisco | López de Burgo, Cristina | Martín Calvo, Nerea | Razquin Burillo, Cristina | Rodríguez Alemany, Susana | Ruiz-Canela López, Miguel | San Julián, Beatriz | Sánchez Tainta, Ana | Serrano Martínez, Manuel | Toledo Atucha, Estefanía A | Vázquez Ruiz, Zenaida | Zazpe García, Itziar

COLABORADORES: Sánchez Adán, David

Main lines of research

- Mediterranean diet and cardiovascular disease
- Mediterranean diet and other chronic diseases
- Lifestyles and obesity
- Lifestyles and chronic diseases
- Metabolic profile and cardiovascular disease

Most relevant scientific articles

- Ruiz-Canela M., Estruch R., Corella D., Salas-Salvadó J., Martínez-González M.A. Association of Mediterranean diet with peripheral artery disease: The PREDIMED randomized trial. JAMA - Journal of the American Medical Association. 2014;311(4):415-417.
- Martínez-González M.A., Sanchez-Tainta A., Corella D., Salas-Salvado J., Ros E., Aros F. et al. Erratum: A provegetarian food pattern and reduction in total mortality in the Prevención con Dieta Mediterránea (PREDIMED) study (American Journal of Clinical Nutrition (2014) 100:1 (320S-328S)). American Journal of Clinical Nutrition. 2014;100(6):1605.
- Buil-Cosiales P., Zazpe I., Toledo E., Corella D., Salas-Salvadó J., Diez-Espino J. et al. Fiber intake and all-cause mortality in the Prevención con Dieta Mediterránea (PREDIMED) study. American Journal of Clinical Nutrition. 2014;100(6):1498-1507.
- Martínez-González M.A., Toledo E., Aros F., Fiol M., Corella D., Salas-Salvadó J. et al. Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial. Circulation. 2014;130(1):18-26.
- Trichopoulou A., Martínez-González M.A., Tong T.Y.N., Forouhi N.G., Khandelwal S., Prabhakaran D. et al. Definitions and potential health benefits of the Mediterranean diet: Views from experts around the world. BMC Medicine. 2014;12(1).

Highlights

The "Seguimiento Universidad de Navarra" (SUN) Cohort study with over 22,000 participants and 15 years of existence, the PREDIMED Study with 7,447 participants where our node was pioneered in beginning and finishing the recruitment and which has contributed with more person-years, and the PREDIMED-PLUS study, are among our most important projects. These projects are unique sources of great significance and with high scientific performance for multiple prospective studies of obesity and nutrition with translational character. They received funding from 5 national institutions in 2014, including the Carlos III Institute of Health, Cajanavarra Foundation, the Government of Navarra and the Spanish Society of Basic and Applied Nutrition. Moreover, 3 international entities, the European Research Council, the National Institute of Diabetes and Digestive and Kidney Diseases (USA) and the International Nut and Dried Fruit Council, contributed financially to the development of our research projects, and we have been awarded with new research projects from the last two of these North American NIH. In October 2013 our group was the first in starting the multicenter study PREDIMED-PLUS, which currently has 15 recruiters groups throughout Spain and 7 other are now starting to perform the fieldwork. Our group published in 2014 a total of 15 articles of the SUN cohort and 39 of the PREDIMED study, all of them in peer review journals. In addition, the New Dietary Guidelines for Americans (Dietary Guidelines for Americans-15), included the Mediterranean diet as healthy pattern to prevent cardiovascular diseases taking into account a large number of results obtained in the PREDIMED and also in the SUN project.

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Nutrición, Obesidad y Salud

Programme: P1. Nutrition

Lead Researcher: Martínez Hernández, José Alfredo

Group Members

ASSOCIATED MEMBERS: Campion Zabalda, Francisco Javier | González Muniesa, Pedro | Mansego Talavera, María Luisa | Martí del Moral, Amelia | Milagro Yoldi, Fermín Ignacio | Moreno Aliaga, María Jesús | Navas Carretero, Santiago | Prieto Hontoria, Pedro Luis | Zulet Alzorriz, Mª Ángeles.

COLABORADORES: Jimeno Moreno, Beatriz.

Main lines of research

- Obesity and inflammation
- Personalized nutrition and diet therapy in metabolic syndrome
- Mechanisms involved in energy homeostasis
- Metabolic biomarkers in obesity
- Bioactive compounds

Most relevant scientific articles

- Martínez J.A., Navas-Carretero S., Saris W.H.M., Astrup A. Personalized weight loss strategies—the role of macronutrient distribution. Nature Reviews Endocrinology. 2014.
- Goni L., Milagro F.I., Cuervo M., Martínez J.A. Single-nucleotide polymorphisms and DNA methylation markers associated with central obesity and regulation of body weight. Nutrition Reviews. 2014;72(11):673-690.
- Pérez-Cornago A., Ramirez M.J., Zulet M.T., Martínez J.A. Effect of dietary restriction on peripheral monoamines and anxiety symptoms in obese subjects with metabolic syndrome. Psychoneuroendocrinology. 2014;47:98-106.

- Ibero-Baraibar I., Abete I., Navas-Carretero S., Massis-Zaid A., Martínez J.A., Zulet M.A. Oxidised LDL levels decreases after the consumption of ready-to-eat meals supplemented with cocoa extract within a hypocaloric diet. Nutrition, Metabolism and Cardiovascular Diseases. 2014;24(4):416-422.
- Martínez J.A., Milagro F.I., Claycombe K.J., Schalinske K.L. Epigenetics in adipose tissue, obesity, weight loss, and diabetes. Advances in Nutrition. 2014;5(1):71-81.

Highlights

The group's research has focused on the following scientific areas:

- Nutrition: Studies of the role of macronutrient distribution and the presence of antioxidants within energy-restricted diets on weight loss, inflammation and manifestations of metabolic syndrome.
- Adipobiology: Characterization of various adipokines involving mediators and cell differentiation processes, lipogenesis, lipolysis, etc. in adipocytes.
- Complications of obesity and environmental factors: Investigation of possible relationships between the processes of weight loss and manifestations related to mood / depression.
- Obesity in childhood and adolescence: Relationships of the influence of the antioxidant capacity of hypocaloric diets on weight loss and inflammation in children and adolescents.
- Biomarkers: Assessment of the role of irisin, ghrelin and vitamin D in energy homeostasis as well as the involvement of telomeres length, SNPs and DNA methylation on epigenetic signatures and metabolomics approaches.
- Pathophysiology: Implications of the physiological situation on obesity in different populations and on the implementation of customized diets depending on the phenotype / genotype.

PROJECTS

- Título: Nutricion personalizada y biomarcadores nutrigenomicos de la inflamacion asociada a la dieta y la obesidad. Papel de nutrientes, adiposidad y edad (AGL2013-45554-R). Funding: Ministerio de Economía y Competitividad (Spain). Duration: 2014-2016. Principal investigator: Prof. J. Alfredo Martínez/Dr. Fermín Milagro.

- Guide about the Substantiation of Health Claims in Food in the XVI Meeting of the SEÑ
  - Characterization and stability studies concerning bioactive compounds
  - Toxicological studies of bioactive compounds
  - Nutridynamics - mechanisms of action of bioactive compounds in the body
  - Selection of relevant biomarkers for nutritional claims
  - Nutrikinetic and bioavailability of bioactive compounds
  - Cause-effect relationships in intervention studies with functional foods

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Nutrigenómica y Obesidad

Programme: P5. New Strategies and Biomarkers; P2. Adipobiology; P3. Complications of Obesity; P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: Palou Oliver, Andreu

Group Members

STAFF MEMBERS: Ceresi, Enzo | Granados Borbolla, Nuria | Priego Cuadra, Teresa.

ASSOCIATED MEMBERS: Asnani Kishnani, Madhu | Bonet Piña, María Luisa | Chaplin, Alice | Cifre Calafat, Margalida | Dianov Petrov, Petar | García Carrizo, Francisco Jose | García Ruiz, Estefanía | Konieczna, Jadwiga | Laraichi, Sarah | Llopis Corro, Marina | López Sanfot, Nora | Nozhenko, Yuriy | Oliver Vara, Paula | Palou March, Andreu | Palou March, Mariona | Parra Moya, Pilar | Pico Segura, Catalina | Reynes Miralles, Barbara | Ribot Riutort, Joan | Rodríguez Guerrero, Ana María | Sánchez Roig, Juana | Serra Vich, Francisca | Szostaczuk, Nara | Torrens García, Juana María

Main lines of research

- Nutrition, genes and pathologies. Obesity and diabetes
- Nutrigenomics and personalized nutrition
- Biomarkers of health
- Functional foods. Health claims
- Food security and quality

Most relevant scientific articles

- Castro H., Pomar C.A., Pico C., Sánchez J., Palou A. Cafeteria diet overfeeding in young male rats impairs the adaptive response to fed/fasted conditions and increases adiposity independent of body weight. International Journal of Obesity. 2014.
- Musinovic H., Bonet M.L., Granados N., Amengual J., von Lintig J., Ribot J. et al. ß-Carotene during the suckling period is absorbed intact and induces retinoic acid dependent responses similar to preformed vitamin A in intestine and liver, but not adipose tissue of young rats. Molecular Nutrition and Food Research. 2014;58(11):2157-2165.
- Torrens J.M., Konieczna J., Palou M., Sánchez J., Pico C., Palou A. Early biomarkers identified in a rat model of a healthier phenotype based on early postnatal dietary intervention may predict the response to an obesogenic environment in adulthood. Journal of Nutritional Biochemistry. 2014;25(2):208-218.
- Reynes B., Díaz-Rua R., Cifre M., Oliver P., Palou A. Peripheral blood mononuclear cells as a potential source of biomarkers to test the efficacy of weight-loss strategies. Obesity. 2014.
- Konieczna J., Sánchez J., Van Schothorst E.M., Torrens J.M., Bunschoten A., Palou M. et al. Identification of early transcriptome-based biomarkers related to lipid metabolism in peripheral blood mononuclear cells of rats nutritionally programmed for improved metabolic health. Genes and Nutrition. 2014;9(1).

Highlights

During 2014, the group has continued heading the European Project BIOCLAIMS ("BIOmarkers of Robustness of Metabolic Homeostasis for Nutrigenomics-derived Health CLAIMS Made on Food"), which involves 11 partners of 7 countries, funded by the European Union, that attempts to identify new biomarkers of the effects of food and food components on health, based on the new biological technologies, in particular, those of Nutrigenomics. The group is also involved in the European project DIABAT ("Recruitment and activation of brown adipocytes as preventive and curative therapy for type 2 diabetes"). This project is focused on brown adipose tissue as a target to increase energy waste using different approaches, including diet, to contribute to prevent/treat obesity and its complications.

Among other aspects, the group has gone in depth in the usefulness of a fraction of blood cells (PBMC) for obtaining early biomarkers of obesity and metabolic alterations related to food unbalances. Noteworthy, it has been identified a "nutrigenomic biomarker" which can predict predisposition to develop obesity. This description is protected as a patent that involves CIBER: "Method for the prediction and/or prevention of overweight, obesity and/or its complications through gene expression analysis" (P201430428), and as a publication (Scientific Reports, ranked first decile in its category). Related to this, the group has described that a higher tendency to develop obesity can be prevented by the intake of adequate amounts of leptin during lactation.

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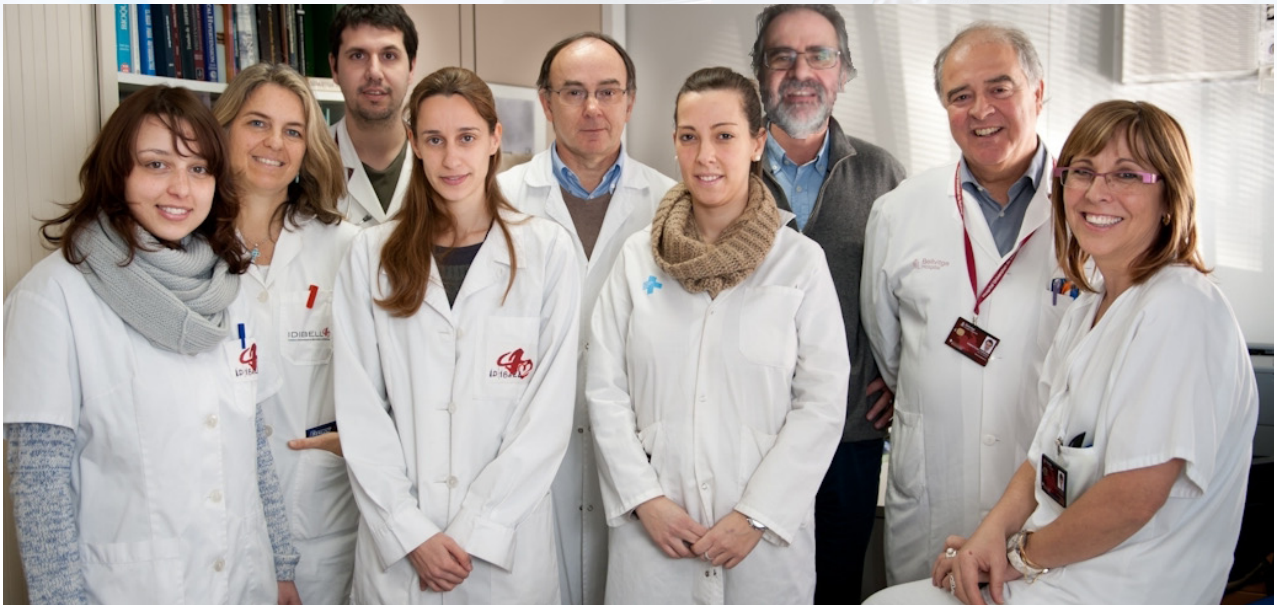
Dieta mediterránea, Esteatosis y Riesgo Vascular

Programme: P1. Nutrition



Lead Researcher: Pinto Sala, Xavier

Group Members

STAFF MEMBERS: De la Cruz Ballester, Elsa | Galera Cusi, Ana.

ASSOCIATED MEMBERS: Corbella Inglés, Emili | Pujol Farriols, Ramón | Solanich Moreno, Xavier | Soler Sancho, Yolanda

Main lines of research

- Clinical studies about the diagnosis and treatment of disorders of lipoprotein metabolism, including the degree of control of dyslipidemia and the related factors.
- Effect of an intensive intervention on lifestyle with a hipocaloric Mediterranean diet, physical activity and behavior therapy for the primary prevention of cardiovascular disease in patients with obesity and high cardiovascular risk.
- Influence of diet and the changes in body weight on changes in hepatic fat (steatosis) assessed by nuclear magnetic resonance (NMR) and biochemical parameters of liver inflammation (Esteatohepatitis). Assessing the relationship between changes in biomarkers of oxidative stress and inflammation, and changes in hepatic fat content and in the biochemical signs of hepatitis.
- Effect of nicotinic acid on the composition of high density lipoproteins (HDL) and arterial endothelial function in patients with premature ischemic heart disease and high levels of HDL cholesterol .
- Study of the relationship between changes in body weight and the variations in the parameters of platelet aggregation.
- Study variants of genes of lipid metabolism that may be related with the etiology of family and polygenic hypercholesterolemia and with severe hypertriglyceridemia .

- Study of the relationship between cardiovascular risk factors of Arterial and Venous Vascular Disease.
- Study the relationship between cardiovascular risk factors, diet and drug treatments on erectile function.
- Relationship between nutritional factors and lifestyle with plasma homocysteine concentrations.

Most relevant scientific articles

- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.
- Martínez-González M.A., Toledo E., Aros F., Fiol M., Corella D., Salas-Salvadó J. et al. Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial. Circulation. 2014;130(1):18-26.
- Tresserra-Rimbau A., Rimm E.B., Medina-Remon A., Martínez-González M.A., Lopez-Sabater M.C., Covas M.I. et al. Polyphenol intake and mortality risk: A re-analysis of the PREDIMED trial. BMC Medicine. 2014; 12(1).
- Guasch-Ferre M., Hu F.B., Martinez-Gonzalez M.A., Fito M., Bullo M., Estruch R. et al. Olive oil intake and risk of cardiovascular disease and mortality in the PREDIMED Study. BMC Medicine. 2014; 12(1).
- Corella D., Sorli J.V., Estruch R., Coltell O., Ortega-Azorín C., Portoles O. et al. MicroRNA-410 regulated lipoprotein lipase variant rs13702 is associated with stroke incidence and modulated by diet in the randomized controlled PREDIMED trial. American Journal of Clinical Nutrition. 2014;100(2):719-731.

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Nutricion y obesidad

Programme: P1. Nutrition; P2. Adipobiology P5. New Strategies and Biomarkers

Lead Researcher: Portillo Baquedano, María del Puy

Group Members

STAFF MEMBERS: Aguirre López, Leixuri.

ASSOCIATED MEMBERS: Arias Rueda, Noemí | Churruca Ortega, Itziar | Eseberri Barrace, Itziar | Fernández Quintela, Alfredo | Gómez Zorita, Saioa | Lasa Elgezua, Arrate | Macarulla Arenaza, María Teresa | Miranda Gómez, Jonatan | Rodríguez Rivera, Víctor Manuel | Simón Magro, Edurne

Main lines of research

- Functional foods and obesity
- Fuctional food and diabetes
- Mediterranean diet and health
- Childhood obesity
- Epigenetic: obesity markers
- Assessment of dietary habits and nutritional state of population
- Design and validation of nutritional education programs
- Assessment of gluten in food. Accredited laboratory

Most relevant scientific articles

- Gómez-Zorita S., Fernández-Quintela A., Lasa A., Aguirre L., Rimando A.M., Portillo M.P. Pterostilbene, a dimethyl ether derivative of resveratrol, reduces fat accumulation in rats fed an obesogenic diet. Journal of Agricultural and Food Chemistry. 2014;62(33):8371-8378.
- Gracia A., Elcoroaristizabal X., Fernández-Quintela A., Miranda J., Bediaga N.G., De Pancorbo M.M. et al. Fatty acid synthase methylation levels in adipose tissue: Effects of an obesogenic diet and phenol compounds. Genes and Nutrition. 2014;9(4).
- Arias N., Miranda J., Macarulla M.T., Aguirre L., Fernandez-Quintela A., Andres-Lacueva C. et al. The combination of resveratrol and conjugated linoleic acid attenuates the individual effects of these molecules on triacylglycerol metabolism in adipose tissue. European Journal of Nutrition. 2014;53(2):575-582.
- Lasa A., Miranda J., Bullo M., Casas R., Salas-Salvadó J., Larretxi I. et al. Comparative effect of two Mediterranean diets versus a low-fat diet on glycaemic control in individuals with type 2 diabetes. European Journal of Clinical Nutrition. 2014;68(7):767-772.
- Jiménez-Agüero R, Emparanza JI, Beguiristain A, Bujanda L, Alustiza JM, García E et al. Novel equation to determine the hepatic triglyceride concentration in humans by MRI: diagnosis and monitoring of NAFLD in obese patients before and after bariatric surgery. BMC medicine. 2014;12:137.

Highlights

The main research line of our group "Nutrition and Obesity" is a preclinical one devoted to study the health benefits of biomolecules present in foodstuffs, which is supported by Plan Nacional grants. In 2014 we have worked in a project aimed to improving resveratrol effectiveness as an anti-obesity molecule, by mean of its combination with quercetin, another polyphenol which reduces resveratrol metabolism, and thus increases its bioavailability. In this research project we have a patent "Composition and uses for thermogenesis activation" in collaboration with Dr. Palou's group, another CIBERobn group. This patent focuses on the use of resveratrol and quercetin combinations useful for thermogenesis activation, and their application in overweight an obesity treatment or prevention, as well as in their co-morbilities prevention.

Also working in this research line, we have demonstrated for the first time that pterostilbene, a structural analogue of resveratrol which shows higher bioavailability, reduces body fat in animals fed an obesogenic diet. This study has been carried out in collaboration with the USDA in USA.

Our group also performs activities for knowledge transference to society. We have introduced a program to increase fruit and vegetable consumption among child population by collaborating with the City Hall. It has been applied in Vitoria-Gasteiz in the frame of the City Nutritional Observatory. This program has received two awards: National Prize of Quality (Federación Española de Municipios y Provincias; Red Española de Ciudades Saludables) and Estrategia Naos Award.

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Regulacion del metabolismo en la obesidad

Programme: P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: Remesar Betlloch, Xavier

Group Members

STAFF MEMBERS: Calderón Domínguez, María | Romero Romero, María Mar

ASSOCIATED MEMBERS: Alemany Lamana, Mariano | Ariza Piquer, Javier | Calvo Márquez, Merce | Casals Farre, Nuria | Esteve Rafols, Monserrat | Fernández López, José Antonio | García Gómez, Jorge | Grasa Martínez, Mar | Herrero Rodríguez, Laura | Ramírez Flores, Sara | Serra Cucurull, Dolores

Main lines of research

- Determine how the excess fat in the diet influences the catabolism of amino acids and their role in inflammation. Analysis of urea cycle function in different tissues. Effects of high-energy diets.
- Role of protein binding corticosterone (CBG) in the first stage of inflammation to evaluate the mechanism by which hormone fit into the tissue and how can modulate the inflammatory response.
- Role of CPT1 in the development of obesity-induced insulin resistance and type 2 diabetes. In vitro and in vivo studies of fatty-acid oxidation and inflammation in liver and adipose tissue.
- Appetite regulation. Role of fatty acids and CPT1A in the control of food intake. Role of CPT1C in the brain.
- Bioinformatic modeling of CPT1 and its relationship with obesity and type 2 diabetes: in silico design of anti-obesity drugs. Study of derivates from the potential anti-obesity drug C75 and their interaction with CPT1 in vitro, and in vivo in the hypothalamus.

Most relevant scientific articles

- Mera P., Mir J.F., Fabrias G., Casas J., Costa A.S.H., Malandrino M.I. et al. Long-term increased carnitine palmitoyltransferase 1A expression in ventromedial hypotalamus causes hyperphagia and alters the hypothalamic lipidomic profile. PLoS ONE. 2014;9(5).
- Sabater D., Arriaran S., Romero M.D.M., Agnelli S., Remesar X., Fernandez-Lopez J.A. et al. Cultured 3T3L1 adipocytes dispose of excess medium glucose as lactate under abundant oxygen availability. Scientific Reports. 2014;4:1-9.
- Romero M.D.M., Roy S., Pouillot K., Feito M., Esteve M., Grasa M.D.M. et al. Treatment of rats with a self-selected hyperlipidic diet, increases the lipid content of the main adipose tissue sites in a proportion similar to that of the lipids in the rest of organs and tissues. PLoS ONE. 2014;9(3).
- Gao S., McMillan R.P., Jacas J., Zhu Q., Li X., Kumar G.K. et al. Regulation of substrate oxidation preferences in muscle by the peptide hormone adropin. Diabetes. 2014;63(10):3242-3252.
- Contreras C., González-García I., Martínez-Sánchez N., Seoane-Collazo P., Jacas J., Morgan D.A. et al. Central ceramide-induced hypothalamic lipotoxicity and ER stress regulate energy balance. Cell Reports. 2014;9(1):366-377.

Highlights

- Granting the project "Strengthening the power to burn fat brown adipose tissue as a therapy against obesity and diabetes." SAF2013-45887-R. Grant: 145,200 €. Duration 2014 to 2016. IP: Laura Herrero.
- Groups Quality Recognition as consolidated by the AGAUR (Generalitat de Catalunya) (2014-2016).

  Subgroup led by Dolores Serra (2014SGR465). Grant: 24,000 €.

  Subgroup led by Xavier Remesar (2014SGR 331).
- Contract with the FBG (FBG89491), in collaboration with "Laboratorios ISDIN, SA", for "advice on issues of research and drug development. IP: Javier Ariza. Open contract 05.20.2014 to 05.19.2018. 2014 = 12,235 €

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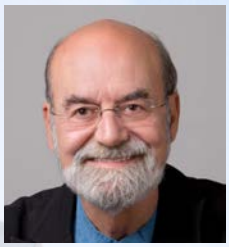
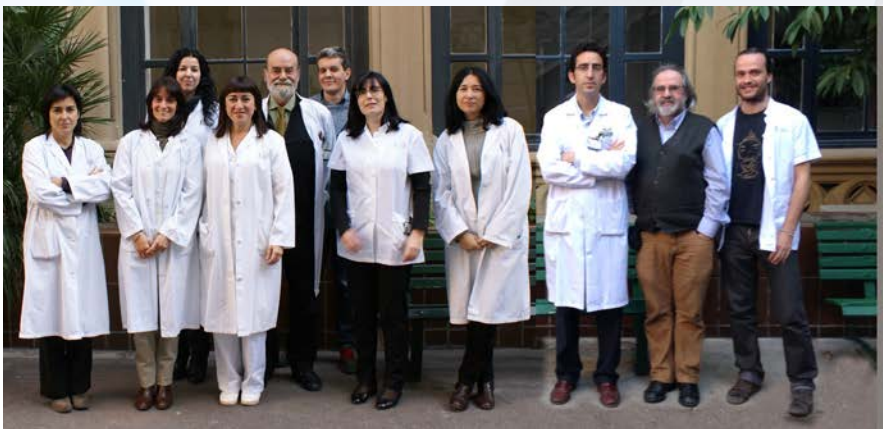
Grupo de Nutrición, Lípidos y Riesgo Cardiovascular

Programme: P1 . Nutrición





Lead Researcher: Ros Rahola, Emilio

Group Members

STAFF MEMBERS: Cofan Pujol, Monserrat | Sala Vila, Aleix.

ASSOCIATED MEMBERS: Alegret Jorda, Marta | Laguna Egea, Juan Carlos | Merlos Roca, Manuel | Nuñez Lucas, Isabel | Ortega Martínez de Victoria, Emilio | Pérez Heras, Ana María | Roglans Ribas, Nuria | Sánchez Peñarroya, Rosa María

Main lines of research

- Study of variants in genes of lipid metabolism that might illustrate the etiology of familial and polygenic hypercholesterolemia and severe hypertriglyceridemia.
- Carotid and femoral ultrasound examination, in particular. a) examination of the associations between preclinical atherosclerosis and classical and emergent risk factors and dietary biomarkers, such as polyunsaturated fatty acids in plasma lipid fractions and circulating phytosterols; b) preclinical atherosclerosis in the pre-diabetic stage compared with a matched control population, and its temporal evolution.
- Functionality of whole foods and dietary patterns: effects on the serum lipoprotein profile, blood pressure as assessed by 24-h ambulatory monitoring, insulin resistance, markers of cholesterol absorption and synthesis and vascular risk, and dietary biomarkers (blood polyunsaturated fatty acids, plasma carotenes and vitamin E, and urinary polyphenols).
- Specific projects within the PREDIMED study, for which the Group directed the nutritional intervention. The main projects deal with the effects of PREDIMED diets on: a) age-related cognitive decline alter intervention for 4 y in a subgroup of 450 participants; b) 5-y incidence of dementia in the whole cohort; c) consumption of alpha-linolenic acid and mortality in the whole cohort; d) fructose intake and mortality in the whole cohort; e) changes in carotid plaque by ultrasound and MRI after intervention for 2 y in an subgroup of 150 participants.

- Randomized controlled trial WAHA (WAlnuts for Healthy Aging): effects of a diet enriched with walnuts (15% of energy) for 2 y in comparison with a control diet on age-related cognitive decline and macular degeneration in 700 older persons. Other outcomes are 2-y changes in: brain structure and function by MRI, carotid atherosclerosis, body composition corporal, bone mineral density, 24-h ambulatory blood pressure, lipid profile and circulating inflammation markers, leukocyte telomere length, and miRNAs related to lipid metabolism.
- Cognitive function evaluated by neuropsychological tests and functional brain MRI in familial hypercholesterolemia compared to moderate hypercholesterolemia and normolipidemia.
- Cholesterol absorption and synthesis as assessed by determination of plasma non-cholesterol sterols by gas chromatography: quantification, genetic determinants, effect on cardiovascular risk, and associations with lipid responses to plant sterols, statins, and ezetimibe.
- Influence of long-chain polyunsaturated fatty acids (n-3 from plant and marine sources) on carotid atherosclerosis assessed by ultrasound and MRI.
- Associations of fatty acids profiles in total blood, total plasma and phospholipid fractions with cardiometabolic risk factors and non-alcoholic fatty liver; genetic determinants of the blood omega-3 index; and fatty acid composition of lipid rafts and intracellular signal transduction.
- Investigation of receptors heterodimeric with RXR (PPAR, FXR, LXR, etc.) and other nuclear receptors participating in energy metabolism in liver, adipose, and skeletal muscle tissues and in macrophages.
- Experimental models of metabolic syndrome in fructose-fed rats and rodent models of senescence. Molecular characterization.

Most relevant scientific articles

- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.
- Martínez-González M.A., Estruch R., Corella D., Ros E., Salas-Salvadó J. Prevention of diabetes with Mediterranean diets: In response. Annals of Internal Medicine. 2014;161(2):157-158.
- Martínez-González M.A., Toledo E., Aros F., Fiol M., Corella D., Salas-Salvadó J. et al. Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial. Circulation. 2014;130(1):18-26.
- López-Vicario C., González-Periz A., Rius B., Moran-Salvador E., García-Alonso V., Lozano J.J. et al. Molecular interplay between Δ5/Δ6 desaturases and long-chain fatty acids in the pathogenesis of non-alcoholic steatohepatitis. Gut. 2014;63(2):344-355.
- Domenech M., Roman P., Lapetra J., García De La Corte F.J., Sala-Vila A., De La Torre R. et al. Mediterranean diet reduces 24-hour ambulatory blood pressure, blood glucose, and lipids: One-year randomized, clinical trial. Hypertension. 2014;64(1):69-76.

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Nutrición y Metabolismo Lipídico

Programme: P1. Nutrition

Lead Researcher: Ruíz Gutiérrez, Valentina

Group Members

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Main lines of research

- Nutrition and Lipid Metabolism
- Influence of virgin olive oil on cardiovascular disease
- Mediterranean diet
- Hypertension

Most relevant scientific articles

- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.
- Martínez-González M.A., Toledo E., Aros F., Fiol M., Corella D., Salas-Salvadó J. et al. Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial. Circulation. 2014;130(1):18-26.
- Domenech M., Roman P., Lapetra J., García De La Corte F.J., Sala-Vila A., De La Torre R. et al. Mediterranean diet reduces 24-hour ambulatory blood pressure, blood glucose, and lipids: One-year randomized, clinical trial. Hypertension. 2014;64(1):69-76.
- Guasch-Ferre M., Hu F.B., Martínez-González M.A., Fito M., Bullo M., Estruch R. et al. Olive oil intake and risk of cardiovascular disease and mortality in the PREDIMED Study. BMC Medicine. 2014;12(1).
- Tresserra-Rimbau A., Rimm E.B., Medina-Remon A., Martínez-González M.A., López-Sabater M.C., Covas M.I. et al. Polyphenol intake and mortality risk: A re-analysis of the PREDIMED trial. BMC Medicine. 2014;12(1).

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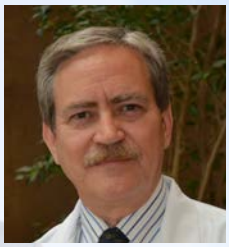

Patología Oxidativa

Programme: P3. Complications of Obesity

Lead Researcher: Sáez Tormo, Guillermo

Group Members

STAFF MEMBERS: Tormos Muñoz, María del Carmen

ASSOCIATED MEMBERS: Cerdá Mico, Concepción | Iradi Casal, Antonio | Vázquez Prado, Antonio

Main lines of research

- Role of oxidative stress in the pathophysiology of cardiometabolic diseases. Special study of obesity and its cardiovascular and neoplasic complications.
- Identification of p53 dependent signal transduction pathways involved in the repair of oxidative stress-induced genetic alterations. Repair enzyme expression and identification of genetic polymorphisms.
- Validation oxidative metabolites (8-oxodG and F2-Isoprostanes) as clinical markers of cardiovascular and tumor diseases.

Most relevant scientific articles

- Cerdá C., Sánchez C., Climent B., Vázquez A., Iradi A., El Amrani F. et al. Oxidative stress and DNA damage in obesity-related tumorigenesis. Advances in Experimental Medicine and Biology. 2014;824:5-17.
- Fito M., Estruch R., Salas-Salvadó J., Martínez-González M.A., Aros F., Vila J. et al. Effect of the Mediterranean diet on heart failure biomarkers: A randomized sample from the PREDIMED trial. European Journal of Heart Failure. 2014;16(5):543-550.
- Tresserra-Rimbau A., Rimm E.B., Medina-Remón A., Martínez-González M.A., de la Torre R., Corella D. et al. Inverse association between habitual polyphenol intake and incidence of cardiovascular events in the PREDIMED study. Nutrition, Metabolism and Cardiovascular Diseases. 2014;24(6):639-647.
- Bagan J., Saez G.T., Tormos M.C., Gavalda-Esteve C., Bagan L., Leopoldo-Rodado M. et al. Oxidative stress in bisphosphonate-related osteonecrosis of the jaws. Journal of Oral Pathology and Medicine. 2014;43(5):371-377.
- Galan-Chilet I., Tellez-Plaza M., Guallar E., De Marco G., López-Izquierdo R., Gónzalez-Manzano I. et al. Plasma selenium levels and oxidative stress biomarkers: A gene-environment interaction population-based study. Free Radical Biology and Medicine. 2014;74:229-236.

Highlights

Scientific collaborations with different research groups involved in The PREDIMED study has been established and conducted. Prominent among them are those in which it has been demonstrated the beneficial role of the Mediterranean diet on various clinical and anthropometric aspects in patients at high cardiovascular risk. It is noteworthy observations in the elderly population in which we assess the state of oxidative stress (OS) and its modulation after different dietary interventions. It should be noted the effect of desaturated fatty acid overloading on antioxidant systems in familial hypercholesterolemia and other dyslipidemias that have made a comparative study and correlation between different markers of inflammation. This resulted in a Doctoral Thesis read in 2014. Another Doctoral Theses this year has been related with the role of polyphenols as cell growth modulators of various tumor cell lines. In 2014 a research project of Carlos III (FIS PI13 / 01848) Institute for the study of genetic and metabolomics factors in the pathophysiology of morbid obesity was initiated. We have collected and processed more than 150 biological samples from these patients. We have studied the degree of OS and DNA damage before and after being subjected to hypocaloric diet, exercise and bariatric surgery. A significant decrease of EO satus and its correlation with clinical and anthropometric parameters has been observed. Studies of gene and protein expression of DNA repair were started together with the identification of microRNAs as potential markers of clinical outcome of morbid obesity and its complications.

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Nutrición Humana y Obesidad

Programme: P1. Nutrition

Lead Researcher: Salas Salvadó, Jordi

Group Members

STAFF MEMBERS: Ferreira Pego, Cintia Sofía.

ASSOCIATED MEMBERS: Babio Sánchez, Nancy Elvira | Balanza Roure, Rafael | Basora Gallisa, Josep | Bullo Bonet, Mónica | Cavallé Busquets, Pere | Fernández Ballart, Joan Domenech | García Minguillan del Campo, Carlos Jesús | Guasch Ferre, Marta | Ibarrola Jurado, Nuria | Juanola Falgarona, Marti | Munne i Cuevas, Carles | Murphy, Michelle | Quilez Grau, Joan

Main lines of research

- Mediterranean diet and cardiovascular disease.
- Public health and epidemiology in relation to nutrition and nutrition related diseases.
- Clinical trials to assess the effect of diet and diet components on health or disease and its mechanisms.
- Evaluation of the relation between obesity, inflammation and co morbidities associated to obesity.
- Effect of the interactions of genetics and nutrition on health.
- Influence of the nutritional status on fertility and the effect on pregnancy on the pregnant and its offspring.
- Metabolic and biochemical biomarkers of diabetes and cardiovascular disease.

Most relevant scientific articles

- Hernández-Alonso P., Salas-Salvadó J., Baldrich-Mora M., Juanola-Falgarona M., Bullo M. Beneficial effect of pistachio consumption on glucose metabolism, insulin resistance, inflammation, and related metabolic risk markers: A randomized clinical trial. Diabetes Care. 2014; 37(11):3098-3105.
- Becerra-Tomas N., Estruch R., Bullo M., Casas R., Díaz-López A., Basora J. et al. Increased serum calcium levels and risk of type 2 diabetes in individuals at high cardiovascular risk. Diabetes Care. 2014; 37(11):3084-3091.
- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014; 160(1):1-10.
- Guasch-Ferre M., Hu F.B., Martinez-Gonzalez M.A., Fito M., Bullo M., Estruch R. et al. Olive oil intake and risk of cardiovascular disease and mortality in the PREDIMED Study. BMC Medicine. 2014; 12(1).
- Juanola-Falgarona M., Salas-Salvado J., Ibarrola-Jurado N., Rabassa-Soler A., Diaz-Lopez A., Guasch-Ferre M. et al. Effect of the glycemic index of the diet on weight loss, modulation of satiety, inflammation, and other metabolic risk factors: A randomized controlled trial. American Journal of Clinical Nutrition. 2014; 100(1):27-35.

Highlights

The evaluation of diet and its effect in the onset and progression of chronic diseases such as obesity, type 2 diabetes, metabolic syndrome and cardiovascular disease are the neural axis of the research taking place in the Unit of Human Nutrition. During the past year, part of the group efforts have been focused on the analysis of the results of the PREDIMED Study, in particular, on the risk of developing type 2 diabetes. But mainly, the group has focused on the implementation of the PREDIMED PLUS Study, a collaborative study whose main objective is to evaluate the effect of intensive treatment on changes in lifestyle, including physical activity, hypocaloric Mediterranean diet and behavioral therapy on the prevention of cardiovascular disease.

Additionally, during 2014, the group has conducted other nutritional trials demonstrating the effect of pistachio intake on glucose metabolism and lipid profile and also evaluating the effect of bread enriched with GABA on improving blood pressure. Moreover, during the past year the group has been working in the design of the intervention study in the framework of the European Study SATIN. This project is aimed at demonstrating whether the control of satiety help in the maintenance of weight lost at long term, the fieldwork of the project is expected to start in 2015. Finally, the research team, collaborating with other research groups, has participated in the development of a competitive project in Interciber call, which was approved later this year, and has participated in the development of several national guidelines and consensus.

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Nutrición y Toxicología

Programme: P1. Nutrition; P3. Complications of Obesity; P4. Neurocognition and Environmental-Biological Factors

Lead Researcher: Serra Majem, Lluís

Group Members

STAFF MEMBERS: Álvarez Pérez, Jacqueline | Díaz Benítez, Elena María | Hernández García, Raquel

ASSOCIATED MEMBERS: Álvarez León, Eva Elisa | Bautista Castaño, Inmaculada | Domínguez Boada, Luis María | Henríquez Sánchez, Patricia | Nissensohn, Mariela | Pérez Luzardo, Octavio Luis | Ribas Barba, María Lourdes | Román Viñas, Blanca | Ruano Rodríguez, Cristina | Sánchez Villegas, Almudena

Main lines of research

- Assessment of nutritional status in different populations in the context of Public Health Nutrition. Nutritional adequacy methodology in populations and individuals and its repercussions on health.
- Epidemiology and obesity determinants in different populations: children, adolescents and pregnant women.
- Mediterranean diet, chronic diseases and mental disorder. SUN and PREDIMED studies. Effect of an intensive lifestyle intervention with an energy-restricted Mediterranean diet, increased physical activity, and behavioural treatment on the primary prevention of cardiovascular diseases: the PREDIMED-PLUS randomized clinical trial.
- PLANT food supplements: Levels of Intake, Benefit and Risk Assessment: PLANTLIBRA
- Role of Zinc in neurodevelopment and growth. EURRECA.
- European Network of Excellence developing methodologies to standardise the process of setting micronutrient recommendations. EURRECA NoE
- Incentives and new technologies in the promotion of Mediterranean Diet and physical activity (Credits-4Health).
- Interaction of the genetic load with the metabolism of selected micronutrients and with the load of POPs (Persistent Organic Pollutants),and the development of the obesity and other chronic diseases.

- Body composition estimated by bioelectrical impedance and Mediterranean diet.
- Study of the dietary glycaemic index and dietary glycaemic load in the Mediterranean Diet.
- Quality of life and Mediterranean diet.
- Effect of the Mediterranean diet on the development of pregnancy and intrauterine growth.
- Hydration and health in Europe: validation of questionnaires for beverage intake.

Most relevant scientific articles

- Salas-Salvadó J., Bullo M., Estruch R., Ros E., Covas M.-I., Ibarrola-Jurado N. et al. Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial. Annals of Internal Medicine. 2014;160(1):1-10.
- Nissensohn M, Sánchez-Villegas A, Fuentes Lugo D, Henríquez Sánchez P, Doreste Alonso J, Peña Quintana L et al. Effect of zinc intake on growth in infants: A meta-analysis.Critical reviews in food science and nutrition. 2014;:0.
- García-Álvarez A., Egan B., De Klein S., Dima L., Maggi F.M., Isoniemi M. et al. Usage of plant food supplements across six european countries: Findings from the plantlibra consumer survey. PLoS ONE. 2014;9(3)
- Schroder H., Ribas L., Koebnick C., Funtikova A., Gómez S.F., Fito M. et al. Prevalence of abdominal obesity in Spanish children and adolescents. do we need waist circumference measurements in pediatric practice?. PLoS ONE. 2014;9(1)
- Castro-Quezada I., Sánchez-Villegas A., Estruch R., Salas-Salvadó J., Corella D., Schroder H. et al. A high dietary glycemic index increases total mortality in a mediterranean population at high cardiovascular risk. PLoS ONE. 2014;9(9)

Highlights

- The III World Congress of Public Health Nutrition was held in Las Palmas de Gran Canaria in November 9-11th organized by our group and chaired by Lluis Serra Majem. All the group members were part of the Scientific Committee and the Local Organizing Committee being involved in the organization and programming of the Congress. This Congress has been a great success: 848 participants from 62 different countries, and more than 40 hours of work, with a total of 180 hours of activities, workshops, meetings, and debates and more than 300 media impacts. From this event emerged the International Association of Community Nutrition (IACON) and the International Foundation of Mediterranean Diet (IFMED).
- Participation to the European Project Credits4Health (VII Framework Programme), defining and coordinating the nutrition and physical activity intervention guidelines. In March the PREDIMED PLUS study was launched in the Canary Island node, PI13 / 00272. During this recruitment period we have captured a total of 200 participants of which there are almost 100 randomized patients at the end of 2014.
- From 17 to 19th September, the Consensus Meeting on Food Survey Methodology, Characterization of Physical Activity and Healthy Lifestyle took place in Laguardia, Rioja Alavesa under the coordination of Javier Aranceta and Lluis Serra.
- Nutritional advice of the TVE Programme "Planeta Comida" trough PLIS PLAS (8 programmes).
- The Nutrition research group has joined the recently created Research Institute of Biomedical and Health Sciences (IUIBS) at the University of Las Palmas, which director is Lluis Serra-Majem. A 1,5 Million-euro Project of Infrastructures has been obtained for this Institute UNLP10-3E-2187 (PI Lluis Serra-Majem).
- A total of 61 indexed articles with a cumulated impact factor of 208 were published during 2014.

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Obesidad, Neuroendocrinología y Función Reproductora (UCO)

Programme: P2. Adipobiology; P3. Complications of Obesity; P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: Tena Sempere, Manuel

Group Members

STAFF MEMBERS: Barroso Romero, María Alexia | Molero Murillo, Laura | Rivero Cortes, Esther | Rodríguez Sanchez, Ana Belén.

ASSOCIATED MEMBERS: Aguilar Benítez de Lugo, Enrique | Benito López, Pedro | Castaño Fuentes, Justo Pastor | Castellano Rodríguez, Juan Manuel | Díaz Ruiz Ruiz, José Alberto | Fernández Fernández, Rafael | García Galiano, David | Gaytan Luna, Francisco | Gracia Navarro, Socorro | León Tellez, Silvia | Luque Huertas, Raúl Miguel | Malagón Poyato, María del Mar | Manfredi Lozano, María | Martínez Fuentes, Antonio Jesús | Peinado Mena, Juan Ramón | Pineda Reyes, Rafael | Pinilla Jurado, Leonor | Roa Rivas, Juan | Ruiz Pino, Francisco | Vázquez Martínez, Rafael Manuel | Vigo Gago, Eva María

Main lines of research

Our group implements integral analyses of various aspects of the pathophysiology of obesity and its complications, by the use of state-of-the-art techniques and cellular and animal models, as well as human samples. Our major research lines are:

- Adipobiology. We conduct proteomic analyses directed to the identification of novel molecular targets that are altered in the adipose tissue in obesity, with special interest in the characterization of the differential proteomic profile of the various fat depots and their different components (mature adipocytes vs. stromal-vascular fraction). These studies aim also at the identification of novel molecular markers of adipocyte differentiation and insulin resistance.
- Adipose hormone signaling. We aim to characterize the receptors and signaling cascades of key adipokines, with special attention to the characterization of the receptors and intracellular signaling of adiponectin.
- Neuroendocrinology of metabolic alterations. We aim to characterize the endocrine and metabolic alterations of suitable preclinical models of deregulated energy balance, with special attention to the analysis of the contribution of somatostatin/cortistatin, ghrelin, GH/IGF-1, insulin, their receptors and related molecules, involved in the neuro-hormonal mechanisms responsible for the control of food intake, glucose homeostasis and metabolism.
- Puberty, reproduction and obesity. We aim to characterize the alterations of puberty and reproductive function in conditions of energy imbalance, with special attention to the impact of obesity on puberty onset, gonadotropic function and fertility. Our interest is also covering the pathophysiology of early onset obesity and its link with pubertal disorders, addressed by the use of suitable preclinical models.

- Gonadal factors and obesity. We study the metabolic alterations associated to gonadal and reproductive dysfunction, with special attention to the analysis of the influence of nutritional and gonadal factors in the generation of obesity, as studies by the use of preclinical models of sequential obesogenic insults.
- Obesity and cancer. We aim to evaluate the alterations induced by obesity in the generation and progression of hormone-dependent cancers, such as breast, ovarian and prostate cancers, using both human samples and suitable animal models, with special attention to the analysis of neuroendocrine metabolic and inflammatory markers.

Most relevant scientific articles

- Sánchez-Garrido M.A., Ruiz-Pino F., Manfredi-Lozano M., León S., García-Galiano D., Castano J.P. et al. Obesity-induced hypogonadism in the male: Premature reproductive neuroendocrine senescence and contribution of Kiss1-mediated mechanisms. Endocrinology. 2014;155(3):1067-1079.
- Luque R.M., Córdoba-Chacón J., Ibánez-Costa A., Gesmundo I., Grande C., Gracia-Navarro F. et al. Obestatin plays an opposite role in the regulation of pituitary somatotrope and corticotrope function in female primates and male/female mice. Endocrinology. 2014;155(4):1407-1417.
- Sangiao-Alvarellos S., Pena-Bello L., Manfredi-Lozano M., Tena-Sempere M., Cordido F. Perturbation of hypothalamic microrna expression patterns in male rats after metabolic distress: Impact of obesity and conditions of negative energy balance. Endocrinology. 2014;155(5):1838-1850.
- Leon S., García-Galiano D., Ruiz-Pino F., Barroso A., Manfredi-Lozano M., Romero-Ruiz A. et al. Physiological roles of gonadotropin-inhibitory hormone signaling in the control of mammalian reproductive axis: Studies in the NPFF1 receptor null mouse. Endocrinology. 2014;155(8):2953-2965.
- Martínez De Morentin P.B., González-García I., Martins L., Lage R., Fernandez-Mallo D., Martínez-Sánchez N. et al. Estradiol regulates brown adipose tissue thermogenesis via hypothalamic AMPK. Cell Metabolism. 2014;20(1):41-53.

Highlights

The group has continued its research activities in the area of the neuroendocrine control of body weight and the integral regulation energy balance, puberty and reproductive function. We have also completed studies in adipobiology and obesity and cancer. These activities have been carried out in close collaboration with other CIBERobn groups, and internationally recognized teams, and have resulted a high number of publications in reputed scientific journals at D1/Q1.

The activities of the group have advanced in the definition of the mechanisms of obesity-induced male hypogonadism, using pre-clinical models. Hypogonadism might have a major role in the perpetuation of complications of the obesity; our results have allowed identification of the key role of Kiss1 system in this process. Similarly, our group has taken part in studies, coordinated by the group of the University of Santiago of our CIBER, aiming to shed light into the mechanisms whereby estrogens act at hypothalamic levels to regulate body energy homeostasis; a study that may help to explain the basis of body weight disorders linked to conditions such as menopause.

Our group has also participated in collaborative studies directed to identifying changes in the profiles of expression of miRNAs at the hypothalamus in conditions of metabolic stress and obesity, and has completed the first characterization of the reproductive and metabolic profiles of a model of inactivation of the receptor of the factor GnIH/RFRP-3; a recently identified signal that not only participates as inhibitory factor in the control of the reproductive axis, but also might play a role as orexigenic signal that stimulates food intake and body weight.

Finally, the group has also worked in the characterization of the metabolic effects of relevant neuroendocrine signals, e.g., obestatin, in the definition of the molecular basis of the interaction between obesity, metabolic deregulation and cancer, and on the regulation of factors of adipose origin, as HMGB1, in conditions of obesity, and their possible role in the control of pancreatic beta cells.

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Investigación y desarrollo en obesidad y enfermedades asociadas

Programme: P3. Complications of Obesity

Lead Researcher: Tinahones Madueño, Francisco

Group Members

STAFF MEMBERS: Coin Arangüez, Leticia | Morcillo Espina, Sonsóles | Oliva Olivera, Wilfredo | Picón César, Inmaculada Concepción

ASSOCIATED MEMBERS: Alcaide Torres, Juan | Barbarroja Puerto, Nuria | Cardona Díaz, Fernando | Castellano Castillo, Daniel | Clemente Postigo, María Mercedes | El Bekay, Rajaa | Fernández García, Diego | Fernández García, José Carlos | García Almeida, José Manuel | García Fuentes, Eduardo | Garrido Sánchez, Lourdes | Gómez Huelgas, Ricardo | López Siguero, Juan Pedro | Macías González, Manuel | Manchas Doblas, Isabel | Moreno Indias, Isabel | Queipo Ortuño, María Isabel | Roca Rodríguez, María del Mar

Main lines of research

- Microbiota and related diseases. This line is going to study the intestinal bacterial microflora profiles in lean and obese patients with and without insulin resistance to establish the role of this microflora in the origin of obesity and insulin resistance. We have also started a subline that analyzes changes in the microbiota that can cause certain nutrients rich in polyphenols and the relationship of these changes to metabolic diseases.
- Development of metabolic syndrome and lipodystrophy in HIV-infected patients. The aim of this line is to study the possible association of oxidative stress, chronic inflammatory status and antiretroviral therapy with the development of metabolic syndrome (MS) and lipodystrophy (LP) in HIV-infected patients, by analysis of the most relevant blood biomarkers levels.
- Obesity and associated diseases. We study the relationship between obesity and related metabolic diseases. We tried to elucidate the mechanisms that protect certain individuals with obesity to develop metabolic diseases or to develop these much later. Among the diseases associated with obesity, diabetes and postprandial lipemia are two of the areas where we are deepening.

- Transcription and epigenetic factors in the relationship between obesity and diabetes. In this line, we analyze epigenetic modifications of certain genes involved in the relation obesity-diabetes and how these modifications are affecting transcription factors that regulate crucial metabolic or signaling pathways in this relation.

Most relevant scientific articles

- Gutiérrez-Repiso C., Velasco I., García-Escobar E., García-Serrano S., Rodríguez-Pacheco F., Linares F. et al. Does dietary iodine regulate oxidative stress and adiponectin levels in human breast milk? Antioxidants and Redox Signaling. 2014;20(5):847-853.
- Moreno-Indias I., Cardona F., Tinahones F.J., Queipo-Ortuno M.I. Impact of the gut microbiota on the development of obesity and type 2 diabetes mellitus. Frontiers in Microbiology. 2014;5(APR).
- Garrido-Sánchez L., Roca-Rodríguez M.D.M., Fernandez-Veledo S., Vendrell J., Yubero-Serrano E.M., Ocana-Wilhelmi L. et al. CCNG2 and CDK4 is associated with insulin resistance in adipose tissue. Surgery for Obesity and Related Diseases. 2014;10(4):691-696.
- Rodríguez-Pacheco F., García-Serrano S., García-Escobar E., Gutiérrez-Repiso C., Garcia-Arnes J., Valdes S. et al. Effects of obesity/fatty acids on the expression of GPR120. Molecular Nutrition and Food Research. 2014;58(9):1852-1860.
- Moreno-Indias I, Torres M, Montserrat JM, Sanchez-Alcoholado L, Cardona F, Tinahones FJ et al. Intermittent hypoxia alters gut microbiota diversity in a mouse model of sleep apnoea.The European respiratory journal. 2014.

Highlights

During 2014 the group has included membership in the European Association for the Study of Obesity EASO Collaborating Centres for Obesity Management (COMs).Also the group has associated with the University of Barcelona in JPI HDHL-BioNH FOODBALL-Fwd: Biomarkers of Health.

We are participating as partners in the network of European Concerted Research Action designated as COST Action FA1403: Interindividual variation response to consumption of plant food bioactives and determinants involved. And in the topic Horizon 2020-PHC-2015-single stage. Topic: PJHC28-2015. Improving Health Outcomes and Treatment Compliance Rates using intelligent. Personalised Care Plan with Health Risk Assessment Application for Diabetic Patients. Acronym: RIA. Proposal number: SE-210245074. Further we have started two new lines of research attached to two new contracts Miguel Servet type I within the group (CP13/00188 y CP13/00065), and two contract Rio Hortega (CM14/00078), one FPU (FPU13/04211).

We have won two autonomic projects (PI-0153-2013; PI-0173-2013; PI-0557-2013) and two projects in health of the AES convocatoria 2104 (PI14/00082;PI14/01306), and one proyect interciber (PIE14/00031).

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Grupo de nutrición, ejercicio, riesgo cardiovascular, obesidad y estrés oxidativo (NUTECOX)

Programme: P1. Nutrition

Lead Researcher: Tur Marí, Josep Antoni

Group Members

STAFF MEMBERS: Bibiloni Esteva, María Del Mar.

ASSOCIATED MEMBERS: Batle Vidal, Joan Miquel | De la Peña Fernández, Andrés | Gámez Martínez, José María | González Gross, María Marcela | Jiménez Monreal, Antonia María | Llompart Alabern, Isabel | Martínez Tome, Magdalena | Micol Molina, Vicente | Murcia Tomás, María Antonia | Palacios le Ble, Gonzalo | Pich Sole, Jorge | Pons Biescas, Antoni | Puig Mojer, Marta Sebastiana | Ripoll Vera, Tomás | Roche Collado, Enrique | Sureda Gomila, Antoni

Main lines of research

- Characterization and monitoring of the dietary pattern of the population, the prevalence of obesity and its comorbidities.
- Longitudinal intervention study of the effect of the Mediterranean diet on cardiovascular health (PREDIMED).
- Evaluation of the effect of physical activity on health and quality of life.
- Search of strategies to enhance antioxidant defenses.
- Functional food and sports performance.

Most relevant scientific articles

- Martorell M., Capo X., Sureda A., Batle J.M., Llompart I., Argelich E. et al. Effect of DHA on plasma fatty acid availability and oxidative stress during training season and football exercise. Food and Function. 2014;5(8):1920-1931.
- Salas R, Bibiloni Mdel M, Ramos E, Villarreal JZ, Pons A, Tur JA et al. Metabolic syndrome prevalence among Northern Mexican adult population.PloS one. 2014;9(8):e105581.
- Capo X., Martorell M., Sureda A., Llompart I., Tur J.A., Pons A. Diet supplementation with DHA-enriched food in football players during training season enhances the mitochondrial antioxidant capabilities in blood mononuclear cells. European Journal of Nutrition. 2014.
- Martorell M., Capo X., Sureda A., Tur J.A., Pons A. Effects of docosahexaenoic acid diet supplementation, training, and acute exercise on oxidative balance in neutrophils. Applied Physiology, Nutrition and Metabolism. 2014;39(4):446-457.
- Del Mar Bibiloni M., Salas R., Coll J.L., Pons A., Tur J.A. Ten-year trends in compliance with the current Spanish nutritional objectives in Balearic Islands adult population (2000-2010). Nutrition. 2014;30(7-8):800-806.

Highlights

We have finished with the research project entitled "Risk determinants of primary cardiovascular events" (ref. PI11/01791) and obtained funds for the research project entitled "PREDIMED+DM: Effect of a low-calorie Mediterranean diet and physical activity promotion in the prevention of type-2 diabetes in people with Metabolic Syndrome" (ref. PI14/00636). According to our research line of characterization and monitoring of the dietary pattern of the population, the prevalence of obesity and its comorbidities, we have found interesting results: increased proportion of Balearic adults complying with the nutritional objectives during 2000-2010 (Salas et al. Nutrition 2014); higher average functional food and component intakes among adolescents with high adherence to the Mediterranean Diet (Ozen et al. PHN 2014); healthier food consumption patterns among the native Mediterranean adolescents than their peers from non-Mediterranean countries (Llull et al. J Immigr Minor Health 2014). We also assessed the Metabolic Syndrome prevalence among the Northern Mexican adult population and found a high prevalence (54.8%) among them that reached 73.8% in obese subjects (Salas et al. PloS One 2014). According to the other research lines related to physical activity and antioxidant defenses, we have developed a new chromatographic and enzymatic method to quantify plasma fatty acids (Martorell et al. Cromatographia 2014). We have shown that functional foods consumption rich in omega-3 increase the availability of these fatty acids in plasma (Martorell et al. Food & Function 2014) and blood cells without increasing oxidative stress and even improving erythrocyte antioxidant defenses during training season among football players (Martorell et al. Lipids 2014). We also studied the beneficial effects of omega-3 supplementation on mitochondrial antioxidant capacity (Capó et al. European Journal of Nutrition 2014; Martorell et al. Applied Physiology, Nutrition, and Metabolism 2014) and plasma cytokine levels in immune cells (Capó et al. Cytokine 2014).

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Biología molecular y regulación génica del tejido adiposo y sus patologías

Programme: P6. Physiopathology of Body Weight Homeostasis

Lead Researcher: Villarroya Gombau, Francesc

Group Members

STAFF MEMBERS: Agustí Sánchez, Judit | Gallego Escuredo, José Miguel | Gavalda Navarro, Aleix.

ASSOCIATED MEMBERS: Amat Ferrer, Ramón | Cairo Calzada, Monserrat | Cereijo Tellez, Rubén | Giralt Coll, Albert | Giralt Oms, Marta | Iglesias Coll, María del Rosario | Mampel Astals, Teresa | Navarro Reglero, Isis | Planavila Porta, Ana | Redondo Angulo, Ibón | Ribas Aulinas, Francesc | Viñas Folch, Octavio

Main lines of research

Our research group specializes in the study of the molecular and physiological basis that controls energy metabolism, and how this relates to human pathologies. We study the molecular mechanisms of adipocyte gene control, muscle and hepatic differentiation in relation to metabolism as well as fat functionality. Also, new metabolic and endocrine functions of cells, tissues and organs, and its control by hormones and nutrients are characterized. This involves the development of models at the sub-cellular, cellular and animal levels, and the study of biological material from patients with obesity and other metabolic diseases.

Most relevant scientific articles

- Elias-Miro M., Mendes-Braz M., Cereijo R., Villarroya F., Jimenez-Castro M.B., Gracia-Sancho J. et al. Resistin and visfatin in steatotic and non-steatotic livers in the setting of partial hepatectomy under ischemia-reperfusion. Journal of Hepatology. 2014;60(1):87-95.
- Carriere A., Jeanson Y., Berger-Muller S., Andre M., Chenouard V., Arnaud E. et al. Browning of white adipose cells by intermediate metabolites: An adaptive mechanism to alleviate redox pressure. Diabetes. 2014;63(10):3253-3265.
- Beiroa D., Imbernon M., Gallego R., Senra A., Herranz D., Villarroya F. et al. GLP-1 agonism stimulates brown adipose tissue thermogenesis and browning through hypothalamic AMPK. Diabetes. 2014;63(10):3346-3358.
- Planavila A, Redondo-Angulo I, Ribas F, Garrabou G, Casademont J, Giralt M et al. Fibroblast growth factor 21 protects the heart from oxidative stress.Cardiovascular research. 2014;.
- Guzmán-Ruiz R, Ortega F, Rodríguez A, Vázquez-Martínez R, Díaz-Ruiz A, Garcia-Navarro S et al. Alarmin high-mobility group B1 (HMGB1) is regulated in human adipocytes in insulin resistance and influences insulin secretion in ß-cells.International journal of obesity (2005). 2014;38(12):1545-54.

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6. ANNEXE

LIST OF PUBLICATIONS IN JOURNALS OF THE FIRST QUARTILE 2014

ID	Publication name	Title	Category JCR Journal	Quartile	Decile	Impact Factor
24196190	Diabetologia	Adherence to predefined dietary patterns and incident type 2 diabetes in European populations: EPIC-InterAct Study.	ENDOCRINOLOGY & METABOLISM	1	1	6,8800
24277691	Pediatric obesity	Influence of breastfeeding on blood-cell transcript-based biomarkers of health in children.	PEDIATRICS	1	2	2,4190
24290344	Clinical nutrition (Edinburgh, Scotland)	Omega 3:6 ratio intake and incidence of glaucoma: the SUN cohort.	NUTRITION & DIETETICS	1	2	3,9400
24465878	PloS one	Validity and reproducibility of a Spanish dietary history.	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
24514567	Molecular psychiatry	A genome-wide association study of anorexia nervosa.	BIOCHEMISTRY & MOLECULAR BIOLOGY	1	1	15,1470
24549058	European journal of human genetics : EJHG	Using ancestry-informative markers to identify fine structure across 15 populations of European origin.	GENETICS & HEREDITY	1	3	4,2250
24577317	International journal of obesity (2005)	Alarmin high-mobility group B1 (HMGB1) is regulated in human adipocytes in insulin resistance and influences insulin secretion in ß-cells.	NUTRITION & DIETETICS	1	1	5,3860
24651160	PloS one	Effects of 1-year intervention with a Mediterranean diet on plasma fatty acid composition and metabolic syndrome in a population at high cardiovascular risk.	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
24651609	PloS one	Computational and biological evaluation of N-octadecyl-N'-propylsulfamide, a selective PPARα agonist structurally related to N-acylethanolamines.	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
24813425	Current drug metabolism	Review of novel aspects of the regulation of ghrelin secretion.	PHARMACOLOGY & PHARMACY	1	3	3,4870
24925919	The European respiratory journal	Integrated care pathways for airway diseases (AIRWAYS-ICPs).	RESPIRATORY SYSTEM	1	1	7,1250
24953394	Current pharmaceutical design	LDL and HDL subfractions, dysfunctional HDL: treatment options.	PHARMACOLOGY & PHARMACY	1	3	3,2880
25085903	Carcinogenesis	Elevated GH/IGF-I promotes mammary tumors in high-fat, but not low-fat, fed mice.	ONCOLOGY	1	2	5,2660
25104855	Human reproduction (Oxford, England)	The striking similarities in the metabolic associations of female androgen excess and male androgen deficiency.	OBSTETRICS & GYNECOLOGY	1	1	4,5850

25118147	Critical reviews in food science and nutrition	MEDITERRANEAN DIET AND CARDIOVASCULAR RISK: BEYOND TRADITIONAL RISK FACTORS.	FOOD SCIENCE & TECHNOLOGY	1	1	5,5480
25141255	PloS one	Metabolic syndrome prevalence among Northern Mexican adult population.	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
25164060	BMC medicine	Novel equation to determine the hepatic triglyceride concentration in humans by MRI: diagnosis and monitoring of NAFLD in obese patients before and after bariatric surgery.	MEDICINE, GENERAL & INTERNAL	1	1	7,2760
25164272	Molecular nutrition & food research	ß-Carotene during the suckling period is absorbed intact and induces retinoic acid dependent responses similar to preformed vitamin A in intestine and liver, but not adipose tissue of young rats.	FOOD SCIENCE & TECHNOLOGY	1	1	4,9090
25164487	Molecular nutrition & food research	Effect of frying oils on the postprandial endoplasmic reticulum stress in obese people.	FOOD SCIENCE & TECHNOLOGY	1	1	4,9090
25205078	Neuroscience and biobehavioral reviews	"Eating addiction", rather than "food addiction", better captures addictive-like eating behavior.	BEHAVIORAL SCIENCES	1	1	10,2840
25215961	PloS one	Fast food consumption and gestational diabetes incidence in the SUN project.	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
25230914	Annals of medicine	Thermogenic brown and beige/ brite adipogenesis in humans.	MEDICINE, GENERAL & INTERNAL	1	2	4,7330
25231836	European journal of clinical investigation	Metabolic phenotypes of obesity influence triglyceride and inflammation homoeostasis.	MEDICINE, GENERAL & INTERNAL	1	2	2,8340
25282193	Surgery for obesity and related diseases : official journal of the American Society for Bariatric Surgery	Can bariatric surgery improve cardiovascular risk factors in the metabolically healthy but morbidly obese patient?	SURGERY	1	1	4,9420
25304294	Clinical nutrition (Edinburgh, Scotland)	Empirically-derived food patterns and the risk of total mortality and cardiovascular events in the PREDIMED study.	NUTRITION & DIETETICS	1	2	3,9400
25342302	Neuroendocrinology	Delta-Like 1 Homologue (DLK1) Protein in Neurons of the Arcuate Nucleus That Control Weight Homeostasis and Effect of Fasting on Hypothalamic DLK1 mRNA.	ENDOCRINOLOGY & METABOLISM	1	2	4,9340
25352638	Diabetes	Increased dihydroceramide/ ceramide ratio mediated by defective expression of degs1 impairs adipocyte differentiation and function.	ENDOCRINOLOGY & METABOLISM	1	1	8,4740
25365524	Critical reviews in food science and nutrition	Effect of zinc intake on growth in infants: A meta-analysis.	FOOD SCIENCE & TECHNOLOGY	1	1	5,5480

25407519	Mucosal immunology	Altered metabolism of gut microbiota contributes to chronic immune activation in HIV-infected individuals.	IMMUNOLOGY	1	1	7,5370
25470607	Clinical chemistry and laboratory medicine : CCLM / FESCC	A review of the cut-off points for the diagnosis of vitamin B12 deficiency in the general population.	MEDICAL LABORATORY TECHNOLOGY	1	2	2,9550
25481680	Clinical nutrition (Edinburgh, Scotland)	Baseline consumption and changes in sugar-sweetened beverage consumption and the incidence of hypertension: The SUN project.	NUTRITION & DIETETICS	1	2	3,9400
25513984	Menopause (New York, N.Y.)	Adherence to Mediterranean dietary pattern and menopausal symptoms in relation to overweight/obesity in Spanish perimenopausal and postmenopausal women.	OBSTETRICS & GYNECOLOGY	1	3	2,8070
25537565	The European respiratory journal	Intermittent hypoxia alters gut microbiota diversity in a mouse model of sleep apnoea.	RESPIRATORY SYSTEM	1	1	7,1250
25538153	Cardiovascular research	Fibroblast growth factor 21 protects the heart from oxidative stress.	CARDIAC & CARDIOVASCULAR SYSTEMS	1	2	5,8080
84884508615	Food Chemistry	Phenolic profiling of the skin, pulp and seeds of Albariño grapes using hybrid quadrupole time-of-flight and triple-quadrupole mass spectrometry	FOOD SCIENCE & TECHNOLOGY	1	1	3,2590
84888229519	Genes and Nutrition	Expression of "brown-in-white" adipocyte biomarkers shows gender differences and the influence of early dietary exposure	NUTRITION & DIETETICS	1	3	3,4190
84888323603	Expert Systems with Applications	Assessment of the influence of navigation control and screen size on the sense of presence in virtual reality using EEG	OPERATIONS RESEARCH & MANAGEMENT SCIENCE	1	2	1,9650
84888599281	International Journal of Neuropsychopharmacology	Olanzapine depot formulation in rat: A step forward in modelling antipsychotic-induced metabolic adverse effects	CLINICAL NEUROLOGY	1	1	5,2640
84889666273	Food Chemistry	Erratum: Cytotoxic effect against 3T3 fibroblasts cells of saffron floral bio-residues extracts (Food Chem. (2013):147:55-59)	FOOD SCIENCE & TECHNOLOGY	1	1	3,2590
84890008293	Genes and Nutrition	Quercetin can reduce insulin resistance without decreasing adipose tissue and skeletal muscle fat accumulation	NUTRITION & DIETETICS	1	3	3,4190
84890174101	Drug and Alcohol Dependence	High cotinine levels are persistent during the first days of life in newborn second hand smokers	SUBSTANCE ABUSE	1	1	3,2780
84890250815	Biomaterials	Use of a fibrin-based system for enhancing angiogenesis and modulating inflammation in the treatment of hyperglycemic wounds	ENGINEERING, BIOMEDICAL	1	1	8,3120

84890487475	Current Medical Research and Opinion	Predictive factors of achieving therapeutic goals of hypertriglyceridemia	MEDICINE, GENERAL & INTERNAL	1	3	2,3720
84890518354	Nature Reviews Endocrinology	Metabolism: Irisin, the metabolic syndrome and follistatin in humans	ENDOCRINOLOGY & METABOLISM	1	1	12,9580
84890567778	Journal of Hepatology	Resistin and visfatin in steatotic and non-steatotic livers in the setting of partial hepatectomy under ischemia-reperfusion	GASTROENTEROLOGY & HEPATOLOGY	1	1	10,4010
84890851110	Food Chemistry	Comprehensive identification of walnut polyphenols by liquid chromatography coupled to linear ion trap-Orbitrap mass spectrometry	FOOD SCIENCE & TECHNOLOGY	1	1	3,2590
84890898823	Diabetologia	Characterising metabolically healthy obesity in weight-discordant monozygotic twins	ENDOCRINOLOGY & METABOLISM	1	1	6,8800
84890903465	Diabetologia	Systems biology approach to identify alterations in the stem cell reservoir of subcutaneous adipose tissue in a rat model of diabetes: Effects on differentiation potential and function	ENDOCRINOLOGY & METABOLISM	1	1	6,8800
84890912809	Diabetologia	Lifestyle factors and mortality risk in individuals with diabetes mellitus: Are the associations different from those in individuals without diabetes?	ENDOCRINOLOGY & METABOLISM	1	1	6,8800
84890961713	Journal of Nutrition	Dietary magnesium intake is inversely associated with mortality in adults at high cardiovascular disease risk	NUTRITION & DIETETICS	1	2	4,2270
84891602551	Atherosclerosis	Relationship of lipid oxidation with subclinical atherosclerosis and 10-year coronary events in general population	PERIPHERAL VASCULAR DISEASE	1	3	3,9710
84891642790	Annals of Internal Medicine	Prevention of diabetes with mediterranean diets: A subgroup analysis of a randomized trial	MEDICINE, GENERAL & INTERNAL	1	1	16,1040
84891737631	Gut	Molecular interplay between □5/□6 desaturases and long-chain fatty acids in the pathogenesis of non-alcoholic steatohepatitis	GASTROENTEROLOGY & HEPATOLOGY	1	1	13,3190
84891943447	Molecular and Cellular Endocrinology	Regulation of GPR55 in rat white adipose tissue and serum LPI by nutritional status, gestation, gender and pituitary factors	ENDOCRINOLOGY & METABOLISM	1	3	4,2410
84892385077	Cell Death and Differentiation	The EMT activator ZEB1 promotes tumor growth and determines differential response to chemotherapy in mantle cell lymphoma	BIOCHEMISTRY & MOLECULAR BIOLOGY	1	1	8,3850

84892404494	DMM Disease Models and Mechanisms	Oleoylethanolamide enhances ß-adrenergic-mediated thermogenesis and white-to-brown adipocyte phenotype in epididymal white adipose tissue in rat	PATHOLOGY	1	1	5,5370
84892490124	Journal of Nutritional Biochemistry	Early biomarkers identified in a rat model of a healthier phenotype based on early postnatal dietary intervention may predict the response to an obesogenic environment in adulthood	NUTRITION & DIETETICS	1	2	4,5920
84892490249	Journal of Nutritional Biochemistry	Liquid fructose down-regulates liver insulin receptor substrate 2 and gluconeogenic enzymes by modifying nutrient sensing factors in rats	NUTRITION & DIETETICS	1	2	4,5920
84892496890	Clinical Nutrition	Plasma fatty acid composition, estimated desaturase activities, and their relation with the metabolic syndrome in a population at high risk of cardiovascular disease	NUTRITION & DIETETICS	1	2	3,9400
84892540632	LWT - Food Science and Technology	Spanish cheese screening and selection of lactic acid bacteria withhigh gamma-aminobutyric acid production	FOOD SCIENCE & TECHNOLOGY	1	3	2,4680
84892572804	Scientific Reports	Cultured 3T3L1 adipocytes dispose of excess medium glucose as lactate under abundant oxygen availability	MULTIDISCIPLINARY SCIENCES	1	1	5,0780
84892680831	Journal of Sexual Medicine	Low Prolactin Is Associated with Sexual Dysfunction and Psychological or Metabolic Disturbances in Middle-Aged and Elderly Men: The European Male Aging Study (EMAS)	UROLOGY & NEPHROLOGY	1	3	3,1500
84892771440	JAMA - Journal of the American Medical Association	Association of Mediterranean diet with peripheral artery disease: The PREDIMED randomized trial	MEDICINE, GENERAL & INTERNAL	1	1	30,3870
84892895657	International Journal of Cardiology	Mediterranean diet and heart rate: The PREDIMED randomised trial	CARDIAC & CARDIOVASCULAR SYSTEMS	1	1	6,1750
84893017875	Current Opinion in Lipidology	Dietary patterns, Mediterranean diet, and cardiovascular disease	PERIPHERAL VASCULAR DISEASE	1	1	5,8030
84893026260	Obesity Surgery	Interdisciplinary European guidelines on metabolic and bariatric surgery	SURGERY	1	1	3,7390
84893046564	Diabetes	ITCH deficiency protects from diet-induced obesity	ENDOCRINOLOGY & METABOLISM	1	1	8,4740
84893089631	Genes and Nutrition	Identification of early transcriptome-based biomarkers related to lipid metabolism in peripheral blood mononuclear cells of rats nutritionally programmed for improved metabolic health	NUTRITION & DIETETICS	1	3	3,4190
84893142406	Diabetes	GLP-1: The oracle for gastric bypass?	ENDOCRINOLOGY & METABOLISM	1	1	8,4740

84893228851	Current Medical Research and Opinion	Prevalence of metabolic syndrome in hypertriglyceridaemic patients: Higher than it may appear	MEDICINE, GENERAL & INTERNAL	1	3	2,3720
84893373889	Molecular Nutrition and Food Research	Epigallocatechin-3-gallate, a DYRK1A inhibitor, rescues cognitive deficits in Down syndrome mouse models and in humans	FOOD SCIENCE & TECHNOLOGY	1	1	4,9090
84893431658	Antioxidants and Redox Signaling	Does dietary iodine regulate oxidative stress and adiponectin levels in human breast milk?	BIOCHEMISTRY & MOLECULAR BIOLOGY	1	1	7,6670
84893484054	Food Chemistry	A comprehensive study on the phenolic profile of widely used culinary herbs and spices: Rosemary, thyme, oregano, cinnamon, cumin and bay	FOOD SCIENCE & TECHNOLOGY	1	1	3,2590
84893664571	Preventive Medicine	Derivation and validation of a set of 10-year cardiovascular risk predictive functions in Spain: The FRESCO Study	MEDICINE, GENERAL & INTERNAL	1	2	2,9320
84893669261	Journal of Cellular and Molecular Medicine	LRP5 negatively regulates differentiation of monocytes through abrogation of Wnt signalling	MEDICINE, RESEARCH & EXPERIMENTAL	1	2	4,7530
84893684335	Diabetologia	Adherence to predefined dietary patterns and incident type 2 diabetes in European populations: EPIC-InterAct Study	ENDOCRINOLOGY & METABOLISM	1	1	6,8800
84893942330	Journal of Psychiatric Research	Functional connectivity alterations in brain networks relevant to self-awareness in chronic cannabis users	PSYCHIATRY	1	2	4,0920
84894278954	American Journal of Human Biology	Longitudinal variation of circulating irisin after an energy restriction-induced weight loss and following weight regain in obese men and women	ANTHROPOLOGY	1	2	1,9280
84894281787	Journal of Science and Medicine in Sport	Health-enhancing physical activity and associated factors in a Spanish population	SPORT SCIENCES	1	2	3,0790
84894456542	Addiction Biology	Functional alteration in frontolimbic systems relevant to moral judgment in cocaine-dependent subjects	SUBSTANCE ABUSE	1	1	5,9290
84894496681	Journal of Agricultural and Food Chemistry	Maternal fat supplementation during late pregnancy and lactation influences the development of hepatic steatosis in offspring depending on the fat source	AGRICULTURE, MULTIDISCIPLINARY	1	1	3,1070
84894516288	Journal of Food Engineering	Fermentation time and fiber effects on recrystallization of starch components and staling of bread from frozen part-baked bread	ENGINEERING, CHEMICAL	1	2	2,5760
84894587549	Journal of Cellular and Molecular Medicine	Lactoferrin gene knockdown leads to similar effects to iron chelation in human adipocytes	MEDICINE, RESEARCH & EXPERIMENTAL	1	2	4,7530

84895062091	Arteriosclerosis, Thrombosis, and Vascular Biology	Changes in ultrasound-assessed carotid intima-media thickness and plaque with a mediterranean diet: A substudy of the PREDIMED trial	HEMATOLOGY	1	2	5,5330
84895073687	European Journal of Nutrition	Eating carbohydrate mostly at lunch and protein mostly at dinner within a covert hypocaloric diet influences morning glucose homeostasis in overweight/obese men	NUTRITION & DIETETICS	1	3	3,8400
84895077376	European Journal of Nutrition	Different postprandial acute response in healthy subjects to three strawberry jams varying in carbohydrate and antioxidant content: A randomized, crossover trial	NUTRITION & DIETETICS	1	3	3,8400
84895094750	Health Expectations	Validation of the Spanish version of the 9-item Shared Decision-Making Questionnaire	HEALTH POLICY & SERVICES	1	2	2,8520
84895470561	Journal of Clinical Endocrinology and Metabolism	Late-onset hypogonadism and mortality in aging men	ENDOCRINOLOGY & METABOLISM	1	2	6,3100
84895799053	Journal of Clinical Endocrinology and Metabolism	Effects of a lifestyle program on vascular reactivity in macro- And microcirculation in severely obese adolescents	ENDOCRINOLOGY & METABOLISM	1	2	6,3100
84895826286	Nutrition, Metabolism and Cardiovascular Diseases	White fish reduces cardiovascular risk factors in patients with metabolic syndrome: The WISH-CARE study, a multicenter randomized clinical trial	NUTRITION & DIETETICS	1	2	3,8750
84895924567	Journal of Nutritional Biochemistry	Oleanolic and maslinic acid sensitize soft tissue sarcoma cells to doxorubicin by inhibiting the multidrug resistance protein MRP-1, but not P-glycoprotein	NUTRITION & DIETETICS	1	2	4,5920
84895924824	International Journal of Cancer	Adherence to the Mediterranean diet and risk of bladder cancer in the EPIC cohort study	ONCOLOGY	1	2	5,0070
84896084795	PLoS ONE	Magnesium inhibits wnt/b-catenin activity and reverses the osteogenic transformation of vascular smooth muscle cells	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84896098520	PLoS ONE	Telomere length as a biomarker for adiposity changes after a multidisciplinary intervention in overweight/obese adolescents: The EVASYON study	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84896120391	PLoS ONE	TGF-ß prevents phosphate-induced osteogenesis through inhibition of BMP and Wnt/ß-catenin pathways	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84896141301	PLoS ONE	CB1 blockade potentiates down-regulation of lipogenic gene expression in perirenal adipose tissue in high carbohydrate diet-induced obesity	MULTIDISCIPLINARY SCIENCES	1	2	3,5340

84896310704	PLoS ONE	Effects of switching from stavudine to raltegravir on subcutaneous adipose tissue in HIV-infected patients with HIV/HAART-Associated Lipodystrophy Syndrome (HALS). A clinical and molecular study	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84896312568	Atherosclerosis	The non-alcoholic fraction of beer increases stromal cell derived factor 1 and the number of circulating endothelial progenitor cells in high cardiovascular risk subjects: A randomized clinical trial	PERIPHERAL VASCULAR DISEASE	1	3	3,9710
84896413415	European Journal of Nutrition	Diet supplementation with DHA-enriched food in football players during training season enhances the mitochondrial antioxidant capabilities in blood mononuclear cells	NUTRITION & DIETETICS	1	3	3,8400
84896414564	Annals of the Rheumatic Diseases	Atherosclerosis and cardiovascular disease in systemic lupus erythematosus: Effects of in vivo statin treatment	RHEUMATOLOGY	1	1	9,2700
84896439917	Obesity Surgery	Effects of Bariatric Surgery on Male Obesity-Associated Secondary Hypogonadism: Comparison of Laparoscopic Gastric Bypass with Restrictive Procedures	SURGERY	1	1	3,7390
84896471460	Journal of Nutrition	Urinary isoxanthohumol is a specific and accurate biomarker of beer consumption	NUTRITION & DIETETICS	1	2	4,2270
84896689936	International Journal of Obesity	Longitudinal association of telomere length and obesity indices in an intervention study with a Mediterranean diet: The PREDIMED-NAVARRA trial	NUTRITION & DIETETICS	1	1	5,3860
84896707943	Nephrology Dialysis Transplantation	Magnesium modulates parathyroid hormone secretion and upregulates parathyroid receptor expression at moderately low calcium concentration	UROLOGY & NEPHROLOGY	1	2	3,4880
84896710856	Journal of Clinical Endocrinology and Metabolism	Top single nucleotide polymorphisms affecting carbohydrate metabolism in metabolic syndrome: From the LIPGENE study	ENDOCRINOLOGY & METABOLISM	1	2	6,3100
84896722440	European Journal of Nutrition	The combination of resveratrol and conjugated linoleic acid attenuates the individual effects of these molecules on triacylglycerol metabolism in adipose tissue	NUTRITION & DIETETICS	1	3	3,8400
84896731199	EMBO Molecular Medicine	Defective minor spliceosome mRNA processing results in isolated familial growth hormone deficiency	MEDICINE, RESEARCH & EXPERIMENTAL	1	1	8,2450

84896734270	European Journal of Nutrition	Dietary fat differentially influences the lipids storage on the adipose tissue in metabolic syndrome patients	NUTRITION & DIETETICS	1	3	3,8400
84896758616	Proteomics	Mitochondria in metabolic disease: Getting clues from proteomic studies	BIOCHEMICAL RESEARCH METHODS	1	2	3,9730
84896819609	Endocrinology	Prolactin and energy homeostasis: Pathophysiological mechanisms and therapeutic considerations	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84896824742	Biochimica et Biophysica Acta - Molecular and Cell Biology of Lipids	Liquid fructose downregulates Sirt1 expression and activity and impairs the oxidation of fatty acids in rat and human liver cells	BIOPHYSICS	1	2	4,4950
84896872038	Endocrinology	Obesity-induced hypogonadism in the male: Premature reproductive neuroendocrine senescence and contribution of Kiss1-mediated mechanisms	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84896898770	Endocrinology	Long- but not short-term adult-onset, isolated GH deficiency in male mice leads to deterioration of ß-cell function, which cannot be accounted for by changes in -ßcell mass	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84897032970	Nutrition, Metabolism and Cardiovascular Diseases	Oxidised LDL levels decreases after the consumption of ready-to-eat meals supplemented with cocoa extract within a hypocaloric diet	NUTRITION & DIETETICS	1	2	3,8750
84897070349	Applied Physiology, Nutrition and Metabolism	Effects of docosahexaenoic acid diet supplementation, training, and acute exercise on oxidative balance in neutrophils	SPORT SCIENCES	1	3	2,2250
84897071723	Nature Reviews Endocrinology	Expert consensus document: A consensus on the medical treatment of acromegaly	ENDOCRINOLOGY & METABOLISM	1	1	12,9580
84897118767	Obesity Surgery	Effect of Sleeve Gastrectomy on Osteopontin Circulating Levels and Expression in Adipose Tissue and Liver in Rats	SURGERY	1	1	3,7390
84897351095	Neuropharmacology	Memory and mood during MDMA intoxication, with and without memantine pretreatment	PHARMACOLOGY & PHARMACY	1	1	4,8190
84897433771	Molecular Nutrition and Food Research	Curcumin promotes exosomes/ microvesicles secretion that attenuates lysosomal cholesterol traffic impairment	FOOD SCIENCE & TECHNOLOGY	1	1	4,9090
84897442968	PLoS ONE	Treatment of rats with a self-selected hyperlipidic diet, increases the lipid content of the main adipose tissue sites in a proportion similar to that of the lipids in the rest of organs and tissues	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84897598147	Scientific Reports	Regulation of NR4A by nutritional status, gender, postnatal development and hormonal deficiency	MULTIDISCIPLINARY SCIENCES	1	1	5,0780

84897669241	Chronobiology International	Beneficial effect of CLOCK gene polymorphism rs1801260 in combination with low-fat diet on insulin metabolism in the patients with metabolic syndrome	BIOLOGY	1	3	2,8780
84897725966	Journal of Agricultural and Food Chemistry	Identification and quantification of grapefruit juice furanocoumarin metabolites in urine: An approach based on ultraperformance liquid chromatography coupled to linear ion trap-orbitrap mass spectrometry and solid-phase extraction coupled to ultraperformance liquid chromatography coupled to triple quadrupole-tandem mass spectrometry	AGRICULTURE, MULTIDISCIPLINARY	1	1	3,1070
84897861600	Diabetes Care	Insulin resistance modulates iron-related proteins in adipose tissue	ENDOCRINOLOGY & METABOLISM	1	1	8,5700
84897870504	Endocrinology	Obestatin plays an opposite role in the regulation of pituitary somatotrope and corticotrope function in female primates and male/female mice	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84897886548	American Journal of Pathology	PGC-1α signaling coordinates susceptibility to metabolic and oxidative injury in the inner retina	PATHOLOGY	1	2	4,6020
84897947716	PLoS ONE	Relationship between meditative practice and self-reported mindfulness: The MINDSENS composite index	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84897965947	BioEssays	How does the Mediterranean diet promote cardiovascular health? Current progress toward molecular mechanisms: Gene-diet interactions at the genomic, transcriptomic, and epigenomic levels provide novel insights into new mechanisms	BIOCHEMISTRY & MOLECULAR BIOLOGY	1	2	4,8380
84898003473	Journal of Agricultural and Food Chemistry	Home cooking and phenolics: Effect of thermal treatment and addition of extra virgin olive oil on the phenolic profile of tomato sauces	AGRICULTURE, MULTIDISCIPLINARY	1	1	3,1070
84898549032	Occupational and Environmental Medicine	Diabetic ketoacidosis following chlorothalonil poisoning	PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH	1	2	3,2340
84898622785	PLoS ONE	Usage of plant food supplements across six european countries: Findings from the plantlibra consumer survey	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84898638960	European Journal of Medicinal Chemistry	Gold(I) complexes with alkylated PTA (1,3,5-triaza-7-phosphaadamantane) phosphanes as anticancer metallodrugs	CHEMISTRY, MEDICINAL	1	3	3,4320

84898688472	Journal of Pediatrics	The "glacier Crevice" sign, from image to diagnosis	PEDIATRICS	1	1	3,7360
84898733769	Circulation: Cardiovascular Genetics	Amino acid change in the carbohydrate response element binding protein is associated with lower triglycerides and myocardial infarction incidence depending on level of adherence to the mediterranean diet in the PREDIMED trial	CARDIAC & CARDIOVASCULAR SYSTEMS	1	2	5,3370
84898854640	PLoS ONE	Polμ deficiency increases resistance to oxidative damage and delays liver aging	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84898870398	Age	Postprandial oxidative stress is modulated by dietary fat in adipose tissue from elderly people	GERIATRICS & GERONTOLOGY	1	3	3,4450
84898872998	Journal of Nutrition	Dietary intake of vitamin K is inversely associated with mortality risk	NUTRITION & DIETETICS	1	2	4,2270
84898890570	Journal of Nutrition	Docosahexaenoic acid modulates the enterocyte Caco-2 cell expression of MicroRNAs involved in lipid metabolism	NUTRITION & DIETETICS	1	2	4,2270
84898985032	Journal of Clinical Endocrinology and Metabolism	Irisin levels during pregnancy and changes associated with the development of preeclampsia	ENDOCRINOLOGY & METABOLISM	1	2	6,3100
84899036098	International Journal of Obesity	Moderate calorie restriction during gestation programs offspring for lower BAT thermogenic capacity driven by thyroid and sympathetic signaling	NUTRITION & DIETETICS	1	1	5,3860
84899040062	International Journal of Obesity	Weight loss maintenance in overweight subjects on ad libitum diets with high or low protein content and glycemic index: the DIOGENES trial 12-month results	NUTRITION & DIETETICS	1	1	5,3860
84899081933	Diabetes Care	Profiling of circulating microRNAs reveals common microRNAs linked to type 2 diabetes that change with insulin sensitization	ENDOCRINOLOGY & METABOLISM	1	1	8,5700
84899442593	Endocrinology	Nicotine improves obesity and hepatic steatosis and ER stress in diet-induced obese male rats	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84899459495	Endocrinology	Perturbation of hypothalamic microrna expression patterns in male rats after metabolic distress: Impact of obesity and conditions of negative energy balance	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84899488793	Genes and Nutrition	Genotype patterns at CLU, CR1, PICALM and APOE, cognition and Mediterranean diet: The PREDIMED-NAVARRA trial	NUTRITION & DIETETICS	1	3	3,4190

84899493474	European Journal of Heart Failure	Effect of the Mediterranean diet on heart failure biomarkers: A randomized sample from the PREDIMED trial	CARDIAC & CARDIOVASCULAR SYSTEMS	1	1	6,5770
84899539937	FASEB Journal	Human omental and subcutaneous adipose tissue exhibit specific lipidomic signatures	BIOLOGY	1	1	5,4800
84899558014	Journal of Lipid Research	Analysis of ECs and related compounds in plasma: Artifactual isomerization and ex vivo enzymatic generation of 2-MGs	BIOCHEMISTRY & MOLECULAR BIOLOGY	1	3	4,7300
84899559647	American Journal of Physiology - Endocrinology and Metabolism	Porcine sst1 can physically interact with other somatostatin receptors, and its expression is regulated by metabolic/ inflammatory sensors	PHYSIOLOGY	1	2	4,0880
84899592613	Neonatology	Growth in preterm infants until 36 weeks' postmenstrual age is close to target recommendations	PEDIATRICS	1	3	2,3690
84899676296	Frontiers in Microbiology	Impact of the gut microbiota on the development of obesity and type 2 diabetes mellitus	MICROBIOLOGY	1	3	3,9410
84899684802	PLoS ONE	Expression of caveolin 1 is enhanced by DNA demethylation during adipocyte differentiation. Status of insulin signaling	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84899778746	Bailliere's Best Practice and Research in Clinical Endocrinology and Metabolism	Hypothalamic effects of thyroid hormones on metabolism	ENDOCRINOLOGY & METABOLISM	1	2	4,9070
84899900077	International Journal of Obesity	Inflammation and insulin resistance exert dual effects on adipose tissue tumor protein 53 expression	NUTRITION & DIETETICS	1	1	5,3860
84899917128	Fertility and Sterility	Generation of multi-oocyte follicles in the peripubertal rat ovary: Link to the invasive capacity of granulosa cells?	OBSTETRICS & GYNECOLOGY	1	1	4,2950
84899927085	Journal of Nutritional Biochemistry	Increasing long-chain n-3PUFA consumption improves small peripheral artery function in patients at intermediate-high cardiovascular risk	NUTRITION & DIETETICS	1	2	4,5920
84899956174	Journal of Clinical Endocrinology and Metabolism	Disruption of GIP/GIPR axis in human adipose tissue is linked to obesity and insulin resistance	ENDOCRINOLOGY & METABOLISM	1	2	6,3100
84900003460	European Journal of Pain (United Kingdom)	Ecological momentary assessment for chronic pain in fibromyalgia using a smartphone: A randomized crossover study	ANESTHESIOLOGY	1	3	3,2180
84900021428	Scientific Reports	Neonatal events, such as androgenization and postnatal overfeeding, modify the response to ghrelin	MULTIDISCIPLINARY SCIENCES	1	1	5,0780

84900036010	International Journal of Cancer	Coffee and tea consumption, genotype-based CYP1A2 and NAT2 activity and colorectal cancer risk - Results from the EPIC cohort study	ONCOLOGY	1	2	5,0070
84900315541	PLoS ONE	The Lin28/Let-7 system in early human embryonic tissue and ectopic pregnancy	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84900322194	PLoS ONE	Prevalence of abdominal obesity in Spanish children and adolescents. do we need waist circumference measurements in pediatric practice?	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84900322349	BMC Medicine	Polyphenol intake and mortality risk: A re-analysis of the PREDIMED trial	MEDICINE, GENERAL & INTERNAL	1	1	7,2760
84900331508	BMC Medicine	Olive oil intake and risk of cardiovascular disease and mortality in the PREDIMED Study	MEDICINE, GENERAL & INTERNAL	1	1	7,2760
84900387337	Food Chemistry	Olive oil phenolic compounds decrease the postprandial inflammatory response by reducing postprandial plasma lipopolysaccharide levels	FOOD SCIENCE & TECHNOLOGY	1	1	3,2590
84900407381	PLoS ONE	Hypertriglyceridemia influences the degree of postprandial lipemic response in patients with metabolic syndrome and coronary artery disease: From the cordioprev study	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84901161390	Food Research International	Metabolite profiling of olive oil and thyme phenols after a sustained intake of two phenol-enriched olive oils by humans: Identification of compliance markers	FOOD SCIENCE & TECHNOLOGY	1	2	3,0500
84901262084	PLoS ONE	Long-term increased carnitine palmitoyltransferase 1A expression in ventromedial hypotalamus causes hyperphagia and alters the hypothalamic lipidomic profile	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84901334432	Cellular Physiology and Biochemistry	Enhancing hepatic fatty acid oxidation as a strategy for reversing metabolic disorders programmed by maternal undernutrition during gestation	PHYSIOLOGY	1	3	3,5500
84901337869	Diabetes	IL-21 is a major negative regulator of IRF4-dependent lipolysis affecting tregs in adipose tissue and systemic insulin sensitivity	ENDOCRINOLOGY & METABOLISM	1	1	8,4740
84901353736	PLoS ONE	Circulating tryptase as a marker for subclinical atherosclerosis in obese subjects	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84901498378	Nutrition, Metabolism and Cardiovascular Diseases	Inverse association between habitual polyphenol intake and incidence of cardiovascular events in the PREDIMED study	NUTRITION & DIETETICS	1	2	3,8750

84901536127	Psychopharmacology	Decision-making impairment predicts 3-month hair-indexed cocaine relapse	PHARMACOLOGY & PHARMACY	1	2	3,9880
84901630148	PLoS ONE	Osteopontin deletion prevents the development of obesity and hepatic steatosis via impaired adipose tissue matrix remodeling and reduced inflammation and fibrosis in adipose tissue and liver in mice	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84901708223	Journal of Leukocyte Biology	Cot/tpl2 participates in the activation of macrophages by adiponectin	HEMATOLOGY	1	3	4,3040
84901851121	Atherosclerosis	Lysosomal acid lipase deficiency - An under-recognized cause of dyslipidaemia and liver dysfunction	PERIPHERAL VASCULAR DISEASE	1	3	3,9710
84901926277	Cyberpsychology, Behavior, and Social Networking	Virtual reality for the induction of positive emotions in the treatment of fibromyalgia: A pilot study over acceptability, satisfaction, and the effect of virtual reality on mood	PSYCHOLOGY, SOCIAL	1	2	2,4100
84902023215	European Journal of Human Genetics	Identifying genetic risk variants for coronary heart disease in familial hypercholesterolemia: an extreme genetics approach	GENETICS & HEREDITY	1	3	4,2250
84902075009	Oral Diseases	Interleukin-6 concentration changes in plasma and saliva in bisphosphonate-related osteonecrosis of the jaws	DENTISTRY, ORAL SURGERY & MEDICINE	1	2	2,4040
84902236013	Arthroscopy	Growth Factor Expression After Lesion Creation in the Avascular Zone of the Meniscus: A Quantitative PCR Study in Rabbits	ORTHOPEDICS	1	1	3,1910
84902243154	Hypertension	Associations of birth weight and postnatal weight gain with cardiometabolic risk parameters at 5 years of age	PERIPHERAL VASCULAR DISEASE	1	1	7,6320
84902261965	Acta Physiologica	Fatty acids and cardiac disease: Fuel carrying a message	PHYSIOLOGY	1	2	4,2510
84902298258	Journals of Gerontology - Series A Biological Sciences and Medical Sciences	Postprandial activation of P53-dependent DNA repair is modified by mediterranean diet supplemented with coenzyme Q10 in elderly subjects	GERONTOLOGY	1	1	4,9840
84902298505	International Journal of Obesity	CIDEC/FSP27 and PLIN1 gene expression run in parallel to mitochondrial genes in human adipose tissue, both increasing after weight loss	NUTRITION & DIETETICS	1	1	5,3860
84902449229	PLoS ONE	Nutrient patterns and their food sources in an international study setting: Report from the EPIC study	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84902549150	Hypertension	Mediterranean diet reduces 24-hour ambulatory blood pressure, blood glucose, and lipids: One-year randomized, clinical trial	PERIPHERAL VASCULAR DISEASE	1	1	7,6320

84902598658	Regenerative Medicine	Negative neuronal differentiation of human adipose-derived stem cell clones	ENGINEERING, BIOMEDICAL	1	2	3,5000
84902603349	PLoS ONE	Uridine 5□-triphosphate promotes in vitro Schwannoma cell migration through matrix metalloproteinase-2 activation	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84902792214	International Journal of Clinical Practice	Risk factors associated with retinal vein occlusion	MEDICINE, GENERAL & INTERNAL	1	3	2,5380
84902913346	Neonatology	Placental sprouty 2 (SPRY2): Relation to placental growth and maternal metabolic status	PEDIATRICS	1	3	2,3690
84902925544	Behavior Therapy	Assessing Decentering: Validation, Psychometric Properties, and Clinical Usefulness of the Experiences Questionnaire in a Spanish Sample	PSYCHOLOGY, CLINICAL	1	2	3,0990
84902931852	Clinical Nutrition	Dietary indexes, food patterns and incidence of metabolic syndrome in a Mediterranean cohort: The SUN project	NUTRITION & DIETETICS	1	2	3,9400
84903146539	Psychoneuroendocrinology	Effect of dietary restriction on peripheral monoamines and anxiety symptoms in obese subjects with metabolic syndrome	PSYCHIATRY	1	1	5,5910
84903382613	Nature Neuroscience	Leptin signaling in astrocytes regulates hypothalamic neuronal circuits and feeding	NEUROSCIENCES	1	1	14,9760
84903384930	PLoS ONE	The effects of the Mediterranean diet on biomarkers of vascular wall inflammation and plaque vulnerability in subjects with high risk for cardiovascular disease. A randomized trial	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84903398985	PLoS ONE	Genomic and metabolomic profile associated to microalbuminuria	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84903533926	American Journal of Clinical Nutrition	Effect of the glycemic index of the diet on weight loss, modulation of satiety, inflammation, and other metabolic risk factors: A randomized controlled trial	NUTRITION & DIETETICS	1	1	6,9180
84903535342	Molecular Nutrition and Food Research	Polymorphism at the TNF-alpha gene interacts with Mediterranean diet to influence triglyceride metabolism and inflammation status in metabolic syndrome patients: From the CORDIOPREV clinical trial	FOOD SCIENCE & TECHNOLOGY	1	1	4,9090
84903592210	PLoS ONE	Serum sCD163 levels are associated with type 2 diabetes mellitus and are influenced by coffee and wine consumption: Results of the di@bet.es study	MULTIDISCIPLINARY SCIENCES	1	2	3,5340

84903690553	Journal of Proteome Research	Novel multimetabolite prediction of walnut consumption by a urinary biomarker model in a free-living population: The predimed study	BIOCHEMICAL RESEARCH METHODS	1	2	5,0010
84903718397	Fish and Shellfish Immunology	Effect of dietary supplementation of probiotics and palm fruits extracts on the antioxidant enzyme gene expression in the mucosae of gilthead seabream (Sparus aurata L.)	FISHERIES	1	1	3,0340
84903735461	Circulation	Extravirgin olive oil consumption reduces risk of atrial fibrillation: The PREDIMED (Prevención con Dieta Mediterránea) trial	CARDIAC & CARDIOVASCULAR SYSTEMS	1	1	14,9480
84903771194	Journal of Nutritional Biochemistry	Extra virgin olive oil intake delays the development of amyotrophic lateral sclerosis associated with reduced reticulum stress and autophagy in muscle of SOD1G93A mice	NUTRITION & DIETETICS	1	2	4,5920
84903785854	PLoS ONE	Explicit and implicit emotional expression in bulimia nervosa in the acute state and after recovery	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84903830531	American Journal of Clinical Nutrition	A provegetarian food pattern and reduction in total mortality in the Prevención con Dieta Mediterránea (PREDIMED) study	NUTRITION & DIETETICS	1	1	6,9180
84903852376	American Journal of Clinical Nutrition	Nuts in the prevention and treatment of metabolic syndrome	NUTRITION & DIETETICS	1	1	6,9180
84903859076	Age	Influence of endothelial dysfunction on telomere length in subjects with metabolic syndrome: LIPGENE study	GERIATRICS & GERONTOLOGY	1	3	3,4450
84903884898	Journal of Hypertension	European society of hypertension practice guidelines for ambulatory blood pressure monitoring	PERIPHERAL VASCULAR DISEASE	1	2	4,2220
84904043360	Cell Metabolism	Estradiol regulates brown adipose tissue thermogenesis via hypothalamic AMPK	CELL BIOLOGY	1	1	16,7470
84904065515	Journal of Hypertension	Target blood pressure in elderly hypertensive patients and in patients with diabetes mellitus	PERIPHERAL VASCULAR DISEASE	1	2	4,2220
84904243574	Hippocampus	Regional vulnerability of hippocampal subfields to aging measured by structural and diffusion MRI	NEUROSCIENCES	1	3	4,3020
84904246205	Addiction Biology	Modulation of brain structure by catechol-O-methyltransferase Val 158Met polymorphism in chronic cannabis users	SUBSTANCE ABUSE	1	1	5,9290
84904272022	Molecular and Cellular Endocrinology	Role of aquaglyceroporins and caveolins in energy and metabolic homeostasis	ENDOCRINOLOGY & METABOLISM	1	3	4,2410

84904391853	Annals of Internal Medicine	Prevention of diabetes with Mediterranean diets: In response	MEDICINE, GENERAL & INTERNAL	1	1	16,1040
84904414428	Genes and Nutrition	Dietary fat modifies lipid metabolism in the adipose tissue of metabolic syndrome patients	NUTRITION & DIETETICS	1	3	3,4190
84904427876	Genes and Nutrition	Fatty acid synthase methylation levels in adipose tissue: Effects of an obesogenic diet and phenol compounds	NUTRITION & DIETETICS	1	3	3,4190
84904503997	Journal of Acquired Immune Deficiency Syndromes	A 48-week study of fat molecular alterations in HIV naive patients starting tenofovir/ emtricitabine with lopinavir/ ritonavir or efavirenz	INFECTIOUS DISEASES	1	2	4,3940
84904556276	Journal of Nutrition	Serum lipid responses to weight loss differ between overweight adults with familial hypercholesterolemia and those with Familial combined hyperlipidemia	NUTRITION & DIETETICS	1	2	4,2270
84904627256	NeuroImage	Does motion-related brain functional connectivity reflect both artifacts and genuine neural activity?	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	1	1	6,1320
84904739386	BMC Medicine	Definitions and potential health benefits of the Mediterranean diet: Views from experts around the world	MEDICINE, GENERAL & INTERNAL	1	1	7,2760
84904959817	Endocrinology	Kisspeptin receptor haplo-insufficiency causes premature ovarian failure despite preserved gonadotropin secretion	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84904987148	Food Research International	Metabolic profiling of Goji berry extracts for discrimination of geographical origin by non-targeted liquid chromatography coupled to quadrupole time-of-flight mass spectrometry	FOOD SCIENCE & TECHNOLOGY	1	2	3,0500
84904987404	European Journal of Public Health	Geographical and climatic factors and depression risk in the SUN project	PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH	1	2	2,4590
84904991273	Phytomedicine	A Fraxinus excelsior L. seeds/ fruits extract benefits glucose homeostasis and adiposity related markers in elderly overweight/obese subjects: A longitudinal, randomized, crossover, double-blind, placebo-controlled nutritional intervention study	INTEGRATIVE & COMPLEMENTARY MEDICINE	1	1	2,8770
84905007209	Food and Function	Effect of DHA on plasma fatty acid availability and oxidative stress during training season and football exercise	FOOD SCIENCE & TECHNOLOGY	1	2	2,9070

84905018799	Endocrinology	The opposing effects of ghrelin on hypothalamic and systemic inflammatory processes are modulated by its acylation status and food intake in male rats	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84905041425	Endocrinology	Physiological roles of gonadotropin-inhibitory hormone signaling in the control of mammalian reproductive axis: Studies in the NPFF1 receptor null mouse	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84905043716	PLoS ONE	Obesity indexes and total mortality among elderly subjects at high cardiovascular risk: The PREDIMED study	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84905046586	Food and Function	High levels of Bifidobacteria are associated with increased levels of anthocyanin microbial metabolites: A randomized clinical trial	FOOD SCIENCE & TECHNOLOGY	1	2	2,9070
84905046890	Endocrinology	Loss of NTRK2/KISS1R signaling in oocytes causes premature Ovarian failure	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84905161234	Free Radical Biology and Medicine	Plasma selenium levels and oxidative stress biomarkers: A gene-environment interaction population-based study	BIOCHEMISTRY & MOLECULAR BIOLOGY	1	2	5,7100
84905227471	FASEB Journal	Polymerase I and transcript release factor (PTRF) regulates adipocyte differentiation and determines adipose tissue expandability	BIOLOGY	1	1	5,4800
84905372264	American Journal of Clinical Nutrition	MicroRNA-410 regulated lipoprotein lipase variant rs13702 is associated with stroke incidence and modulated by diet in the randomized controlled PREDIMED trial	NUTRITION & DIETETICS	1	1	6,9180
84905393352	Journal of Epidemiology and Community Health	The use of expensive technologies instead of simple, sound and effective lifestyle interventions: A perpetual delusion	PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH	1	1	3,2940
84905436855	Journal of Epidemiology and Community Health	Association between dietary intakes of PCBs and the risk of obesity: The SUN project	PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH	1	1	3,2940
84905454612	PLoS ONE	Moderate-vigorous physical activity across body mass index in females: Moderating effect of endocannabinoids and temperament	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84905551020	International Journal of Obesity	Cafeteria diet overfeeding in young male rats impairs the adaptive response to fed/fasted conditions and increases adiposity independent of body weight	NUTRITION & DIETETICS	1	1	5,3860

84905581254	Diabetologia	Fine-tuned iron availability is essential to achieve optimal adipocyte differentiation and mitochondrial biogenesis	ENDOCRINOLOGY & METABOLISM	1	1	6,8800
84905636614	Clinical Nutrition	Dietary total antioxidant capacity is associated with leukocyte telomere length in a children and adolescent population	NUTRITION & DIETETICS	1	2	3,9400
84905683417	Chemosphere	Consumption of foods of animal origin as determinant of contamination by organochlorine pesticides and polychlorobiphenyls: Results from a population-based study in Spain	ENVIRONMENTAL SCIENCES	1	2	3,4990
84905684151	Genes and Nutrition	Blood cells transcriptomics as source of potential biomarkers of articular health improvement: Effects of oral intake of a rooster combs extract rich in hyaluronic acid	NUTRITION & DIETETICS	1	3	3,4190
84905823640	Journal of Clinical Endocrinology and Metabolism	Activation of noncanonical wnt signaling through WNT5A in visceral adipose tissue of obese subjects is related to inflammation	ENDOCRINOLOGY & METABOLISM	1	2	6,3100
84905887309	Obesity Surgery	Maternal and Perinatal Outcomes After Bariatric Surgery: a Spanish Multicenter Study	SURGERY	1	1	3,7390
84905906211	PLoS ONE	Dietary squalene increases high density lipoprotein-cholesterol and paraoxonase 1 and decreases oxidative stress in mice	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84905999431	Clinical Nutrition	Evolution of urinary iodine excretion over eleven years in an adult population	NUTRITION & DIETETICS	1	2	3,9400
84906247596	Journal of Medical Internet Research	A functional magnetic resonance imaging assessment of small animals' phobia using virtual reality as a stimulus	HEALTH CARE SCIENCES & SERVICES	1	1	4,6690
84906298429	Molecular Nutrition and Food Research	Effect of dietary fat modification on subcutaneous white adipose tissue insulin sensitivity in patients with metabolic syndrome	FOOD SCIENCE & TECHNOLOGY	1	1	4,9090
84906324467	Advances in Nutrition	Mediterranean diet and cardiovascular health: Teachings of the PREDIMED Study	NUTRITION & DIETETICS	1	2	4,8910
84906351144	Journal of Agricultural and Food Chemistry	Pterostilbene, a dimethyl ether derivative of resveratrol, reduces fat accumulation in rats fed an obesogenic diet	AGRICULTURE, MULTIDISCIPLINARY	1	1	3,1070
84906529768	Nutrition, Metabolism and Cardiovascular Diseases	Effects of alcohol and polyphenols from beer on atherosclerotic biomarkers in high cardiovascular risk men: A randomized feeding trial	NUTRITION & DIETETICS	1	2	3,8750

84906547962	Food and Function	Modulation of hyperglycemia and TNFα-mediated inflammation by helichrysum and grapefruit extracts in diabetic db/db mice	FOOD SCIENCE & TECHNOLOGY	1	2	2,9070
84906568597	Food and Function	Piceid presents antiproliferative effects in intestinal epithelial Caco-2 cells, effects unrelated to resveratrol release	FOOD SCIENCE & TECHNOLOGY	1	2	2,9070
84906573155	Food and Function	Phenolic metabolites and substantial microbiome changes in pig feces by ingesting grape seed proanthocyanidins	FOOD SCIENCE & TECHNOLOGY	1	2	2,9070
84906707213	Journal of Cellular Physiology	Expression of Adenine Nucleotide Translocase (ANT) Isoform Genes Is Controlled by PGC-1α Through Different Transcription Factors	PHYSIOLOGY	1	2	3,8740
84906761662	Obesity	Human Aquaporin-11 is a water and glycerol channel and localizes in the vicinity of lipid droplets in human adipocytes	NUTRITION & DIETETICS	1	2	4,3890
84906798152	European Journal of Clinical Investigation	FNDC5 could be regulated by leptin in adipose tissue	MEDICINE, GENERAL & INTERNAL	1	2	2,8340
84906914182	Advances in Nutrition	Epigenetics in adipose tissue, obesity, weight loss, and diabetes	NUTRITION & DIETETICS	1	2	4,8910
84906935362	Surgical Endoscopy and Other Interventional Techniques	Comparative effects of gastric bypass and sleeve gastrectomy on plasma osteopontin concentrations in humans	SURGERY	1	1	3,3130
84906937288	European Journal of Nutrition	Determinants of the transition from a cardiometabolic normal to abnormal overweight/ obese phenotype in a Spanish population	NUTRITION & DIETETICS	1	3	3,8400
84906938419	Arteriosclerosis, Thrombosis, and Vascular Biology	Olive oil polyphenols enhance high-density lipoprotein function in humans: A randomized controlled trial	HEMATOLOGY	1	2	5,5330
84907211065	Biochemical Journal	FGF21 expression and release in muscle cells: Involvement of MyoD and regulation by mitochondria-driven signalling	BIOCHEMISTRY & MOLECULAR BIOLOGY	1	3	4,7790
84907212740	Endocrinology	Disparate changes in kisspeptin and neurokinin B expression in the arcuate nucleus after sex steroid manipulation reveal differential regulation of the two KNDy peptides in rats	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84907278137	American Journal of Clinical Nutrition	Association between Mediterranean and Nordic diet scores and changes in weight and waist circumference: Influence of FTO and TCF7L2 loci	NUTRITION & DIETETICS	1	1	6,9180
84907344450	Food and Chemical Toxicology	Peripheral blood mononuclear cells as in vivo model for dietary intervention induced systemic oxidative stress	FOOD SCIENCE & TECHNOLOGY	1	2	2,6100

84907422130	Food and Chemical Toxicology	The antioxidant butylated hydroxyanisole potentiates the toxic effects of propylparaben in cultured mammalian cells	FOOD SCIENCE & TECHNOLOGY	1	2	2,6100
84907452298	PLoS ONE	A high dietary glycemic index increases total mortality in a mediterranean population at high cardiovascular risk	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84907482535	PLoS ONE	Oxidative stress is associated with an increased antioxidant defense in elderly subjects: A multilevel approach	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84907485620	Diabetes	Browning of white adipose cells by intermediate metabolites: An adaptive mechanism to alleviate redox pressure	ENDOCRINOLOGY & METABOLISM	1	1	8,4740
84907494174	PLoS ONE	The apolipoprotein e polymorphism rs7412 associates with body fatness independently of plasma lipids in middle aged men	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84907495079	Diabetes	GLP-1 agonism stimulates brown adipose tissue thermogenesis and browning through hypothalamic AMPK	ENDOCRINOLOGY & METABOLISM	1	1	8,4740
84907541026	Journal of Medical Internet Research	Physiological and brain activity after a combined cognitive behavioral treatment plus video game therapy for emotional regulation in bulimia nervosa: A case report	HEALTH CARE SCIENCES & SERVICES	1	1	4,6690
84907546286	Diabetes	Regulation of substrate oxidation preferences in muscle by the peptide hormone adropin	ENDOCRINOLOGY & METABOLISM	1	1	8,4740
84907602136	Journal of Clinical Endocrinology and Metabolism	Circulating betatrophin concentrations are decreased in human obesity and type 2 diabetes	ENDOCRINOLOGY & METABOLISM	1	2	6,3100
84907611172	Obesity	α-Lipoic acid reduces fatty acid esterification and lipogenesis in adipocytes from overweight/obese subjects	NUTRITION & DIETETICS	1	2	4,3890
84907808486	Food Research International	Reversion to a control balanced diet is able to restore body weight and to recover altered metabolic parameters in adult rats long-term fed on a cafeteria diet	FOOD SCIENCE & TECHNOLOGY	1	2	3,0500
84907817687	Environmental Research	Blood pressure in relation to contamination by polychlorobiphenyls and organochlorine pesticides: Results from a population-based study in the Canary Islands (Spain)	ENVIRONMENTAL SCIENCES	1	1	3,9510
84907874644	PloS one	CB1 blockade potentiates down-regulation of lipogenic gene expression in perirenal adipose tissue in high carbohydrate diet-induced obesity.	MULTIDISCIPLINARY SCIENCES	1	2	3,5340

84907952984	BMC Medicine	Combined impact of healthy lifestyle factors on colorectal cancer: A large European cohort study	MEDICINE, GENERAL & INTERNAL	1	1	7,2760
84907970671	Cell Reports	Central ceramide-induced hypothalamic lipotoxicity and ER stress regulate energy balance	CELL BIOLOGY	1	2	7,2070
84908024700	Pediatric Obesity	Muscular fitness, fatness and inflammatory biomarkers in adolescents	PEDIATRICS	1	2	2,4190
84908032914	Endocrinology	Somatotropinomas, but not nonfunctioning pituitary adenomas, maintain a functional apoptotic RET/Pit1/ARF/p53 pathway that is blocked by excess GDNF	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84908089997	Surgery for Obesity and Related Diseases	CCNG2 and CDK4 is associated with insulin resistance in adipose tissue	SURGERY	1	1	4,9420
84908134440	Food and Function	Walnut polyphenol metabolites, urolithins A and B, inhibit the expression of the prostate-specific antigen and the androgen receptor in prostate cancer cells	FOOD SCIENCE & TECHNOLOGY	1	2	2,9070
84908150682	Molecular Nutrition and Food Research	Dietary fat alters the expression of cortistatin and ghrelin systems in the PBMCs of elderly subjects: Putative implications in the postprandial inflammatory response	FOOD SCIENCE & TECHNOLOGY	1	1	4,9090
84908157921	Behavior Therapy	Assessing Decentering: Validation, Psychometric Properties, and Clinical Usefulness of the Experiences Questionnaire in a Spanish Sample	PSYCHOLOGY, CLINICAL	1	2	3,0990
84908178847	PLoS ONE	The serenity of the meditating mind: A cross-cultural psychometric study on a two-factor higher order structure of mindfulness, its effects, and mechanisms related to mental health among experienced meditators	MULTIDISCIPLINARY SCIENCES	1	2	3,5340
84908179543	International Journal of Obesity	Leptin administration activates irisin-induced myogenesis via nitric oxide-dependent mechanisms, but reduces its effect on subcutaneous fat browning in mice	NUTRITION & DIETETICS	1	1	5,3860
84908179567	Diabetes Care	Increased cardiometabolic risk factors and inflammation in adipose tissue in obese subjects classified as metabolically healthy	ENDOCRINOLOGY & METABOLISM	1	1	8,5700
84908180730	Molecular Nutrition and Food Research	Effects of obesity/fatty acids on the expression of GPR120	FOOD SCIENCE & TECHNOLOGY	1	1	4,9090
84908230040	Journal of Organic Chemistry	Catalytic C-H activation of phenylethylamines or benzylamines and their annulation with allenes	CHEMISTRY, ORGANIC	1	2	4,6380

84908283336	European Journal of Nutrition	Effect of polyphenol supplements on redox status of blood cells: a randomized controlled exercise training trial	NUTRITION & DIETETICS	1	3	3,8400
84908292915	Journal of Psychiatry and Neuroscience	Disruption of brain white matter microstructure in women with anorexia nervosa	PSYCHIATRY	1	1	7,4920
84908340345	Research in Autism Spectrum Disorders	Anthropometric measures of Spanish children with autism spectrum disorder	REHABILITATION	1	1	2,3780
84908432913	Experimental Gerontology	Successful aging, dietary habits and health status of elderly individuals: A k-dimensional approach within the multi-national MEDIS study	GERIATRICS & GERONTOLOGY	1	2	3,5290
84908500784	Thrombosis and Haemostasis	Lysyl oxidase (LOX) in vascular remodelling: Insight from a new animal model	HEMATOLOGY	1	1	5,7600
84908503032	Neuropharmacology	Memory and mood during MDMA intoxication, with and without memantine pretreatment	PHARMACOLOGY & PHARMACY	1	1	4,8190
84908541529	Journal of Molecular Medicine	Transducin-like enhancer of split 3 (TLE3) in adipose tissue is increased in situations characterized by decreased PPARγ gene expression	GENETICS & HEREDITY	1	2	4,7390
84908574425	Pediatric Research	Elaidic, vaccenic, and rumenic acid status during pregnancy: Association with maternal plasmatic LC-PUFAs and atopic manifestations in infants	PEDIATRICS	1	2	2,8400
84908667982	Food Research International	Metabolite profiling of olive oil and thyme phenols after a sustained intake of two phenol-enriched olive oils by humans: Identification of compliance markers	FOOD SCIENCE & TECHNOLOGY	1	2	3,0500
84908687480	European Journal of Clinical Investigation	FNDC5 could be regulated by leptin in adipose tissue	MEDICINE, GENERAL & INTERNAL	1	2	2,8340
84908896632	Nutrition Reviews	Single-nucleotide polymorphisms and DNA methylation markers associated with central obesity and regulation of body weight	NUTRITION & DIETETICS	1	1	5,5410
84909993855	Journal of Clinical Endocrinology and Metabolism	Adipose tissue μ-crystallin is a thyroid hormone-binding protein associated with systemic insulin sensitivity	ENDOCRINOLOGY & METABOLISM	1	2	6,3100
84910029573	Biochimica et Biophysica Acta - Molecular Basis of Disease	Downregulation of G protein-coupled receptor kinase 2 levels enhances cardiac insulin sensitivity and switches on cardioprotective gene expression patterns	BIOCHEMISTRY & MOLECULAR BIOLOGY	1	2	5,0890
84910122918	Diabetes Care	Beneficial effect of pistachio consumption on glucose metabolism, insulin resistance, inflammation, and related metabolic risk markers: A randomized clinical trial	ENDOCRINOLOGY & METABOLISM	1	1	8,5700

84910127339	Diabetes Care	Brain iron overload, insulin resistance, and cognitive performance in obese subjects: A preliminary MRI case-control study	ENDOCRINOLOGY & METABOLISM	1	1	8,5700
84910138234	Diabetes Care	Increased serum calcium levels and risk of type 2 diabetes in individuals at high cardiovascular risk	ENDOCRINOLOGY & METABOLISM	1	1	8,5700
84910143325	International Journal of Obesity	Adipocyte morphology and implications for metabolic derangements in acquired obesity	NUTRITION & DIETETICS	1	1	5,3860
84910144126	Current Hypertension Reports	Polycystic Ovary Syndrome as a Paradigm for Prehypertension, Prediabetes, and Preobesity	PERIPHERAL VASCULAR DISEASE	1	3	3,9020
84910153105	Advances in Nutrition	Principles and pitfalls in the differential diagnosis and management of childhood obesities	NUTRITION & DIETETICS	1	2	4,8910
84910628664	Obesity	Peripheral blood mononuclear cells as a potential source of biomarkers to test the efficacy of weight-loss strategies	NUTRITION & DIETETICS	1	2	4,3890
84911366156	Research in Autism Spectrum Disorders	Anthropometric measurements and nutritional assessment in autism spectrum disorders: A systematic review	REHABILITATION	1	1	2,3780
84911375849	CMAJ	Mediterranean diets and metabolic syndrome status in the PREDIMED randomized trial	MEDICINE, GENERAL & INTERNAL	1	1	5,8080
84911435044	American Journal of Clinical Nutrition	Erratum: A provegetarian food pattern and reduction in total mortality in the Prevención con Dieta Mediterránea (PREDIMED) study (American Journal of Clinical Nutrition (2014) 100:1 (320S-328S))	NUTRITION & DIETETICS	1	1	6,9180
84911457414	American Journal of Clinical Nutrition	Fiber intake and all-cause mortality in the Prevención con Dieta Mediterránea (PREDIMED) study	NUTRITION & DIETETICS	1	1	6,9180
84911933228	Biochimica et Biophysica Acta - Molecular and Cell Biology of Lipids	Fructose supplementation impairs rat liver autophagy through mTORC activation without inducing endoplasmic reticulum stress	BIOPHYSICS	1	2	4,4950
84911933807	Nature Reviews Endocrinology	Personalized weight loss strategies—the role of macronutrient distribution	ENDOCRINOLOGY & METABOLISM	1	1	12,9580
84911991743	Nutrition, Metabolism and Cardiovascular Diseases	Yogurt consumption, weight change and risk of overweight/obesity: The SUN cohort study	NUTRITION & DIETETICS	1	2	3,8750
84912017134	Experimental Gerontology	Effects of age and caloric restriction on the cardiac and coronary response to endothelin-1 in rats	GERIATRICS & GERONTOLOGY	1	2	3,5290

84912080001	Diabetes, Obesity and Metabolism	Insulin lispro low mixture twice daily versus basal insulin glargine once daily and prandial insulin lispro once daily in patients with type 2 diabetes requiring insulin intensification: A randomized phase IV trial	ENDOCRINOLOGY & METABOLISM	1	2	5,4560
84912123327	Food and Function	Sustained exposure to diets with an unbalanced macronutrient proportion alters key genes involved in energy homeostasis and obesity-related metabolic parameters in rats	FOOD SCIENCE & TECHNOLOGY	1	2	2,9070
84912125270	European Journal of Clinical Investigation	Beer elicits vasculoprotective effects through Akt/eNOS activation	MEDICINE, GENERAL & INTERNAL	1	2	2,8340
84913558532	Hypertension	Prognostic Value of Microalbuminuria During Antihypertensive Treatment in Essential Hypertension	PERIPHERAL VASCULAR DISEASE	1	1	7,6320
84914133446	Molecular and Cellular Endocrinology	Connecting metabolism and reproduction: Roles of central energy sensors and key molecular mediators	ENDOCRINOLOGY & METABOLISM	1	3	4,2410
84914142916	Molecular and Cellular Endocrinology	Cross-talk between SIRT1 and endocrine factors: Effects on energy homeostasis	ENDOCRINOLOGY & METABOLISM	1	3	4,2410
84914148307	Molecular and Cellular Endocrinology	Cellular energy sensors: AMPK and beyond	ENDOCRINOLOGY & METABOLISM	1	3	4,2410
84914173605	Endocrinology	The absence of GH signaling affects the susceptibility to high-fat diet-induced hypothalamic inflammation in male mice	ENDOCRINOLOGY & METABOLISM	1	2	4,6440
84914178934	Molecular and Cellular Endocrinology	Role of aquaglyceroporins and caveolins in energy and metabolic homeostasis	ENDOCRINOLOGY & METABOLISM	1	3	4,2410
84916908662	Hypertension	Ambulatory Blood Pressure Monitoring Is Ready to Replace Clinic Blood Pressure in the Diagnosis of Hypertension: Con Side of the Argument	PERIPHERAL VASCULAR DISEASE	1	1	7,6320
84917730933	Obesity Surgery	Impact of Different Criteria on Type 2 Diabetes Remission Rate After Bariatric Surgery	SURGERY	1	1	3,7390
84919360661	Psychopharmacology	Changes in serotonin transporter (5-HTT) gene expression in peripheral blood cells after MDMA intake	PHARMACOLOGY & PHARMACY	1	2	3,9880
84919394618	Neonatology	Need to optimize nutritional support in very-low-birth-weight infants	PEDIATRICS	1	3	2,3690
84919742817	Genes and Nutrition	Riboflavin status modifies the effects of methylenetetrahydrofolate reductase (MTHFR) and methionine synthase reductase (MTRR) polymorphisms on homocysteine	NUTRITION & DIETETICS	1	3	3,4190

84919929945	Genes and Nutrition	A genetic risk tool for obesity predisposition assessment and personalized nutrition implementation based on macronutrient intake	NUTRITION & DIETETICS	1	3	3,4190
84919940723	Genes and Nutrition	White adipose tissue reference network: A knowledge resource for exploring health-relevant relations	NUTRITION & DIETETICS	1	3	3,4190
84919946337	Genes and Nutrition	Design and baseline characteristics of the Food4Me study: a web-based randomised controlled trial of personalised nutrition in seven European countries	NUTRITION & DIETETICS	1	3	3,4190
84920044584	Journal of Functional Foods	Gamma-aminobutyric acid as a bioactive compound in foods: A review	FOOD SCIENCE & TECHNOLOGY	1	1	4,4800
84920107546	Clinical Nutrition	Longitudinal relationship of diet and oxidative stress with depressive symptoms in patients with metabolic syndrome after following a weight loss treatment: The RESMENA project	NUTRITION & DIETETICS	1	2	3,9400
84920158677	Clinical Nutrition	Omega 3:6 ratio intake and incidence of glaucoma: The SUN cohort	NUTRITION & DIETETICS	1	2	3,9400
84920284435	Journal of Proteome Research	Metabolomic pattern analysis after mediterranean diet intervention in a nondiabetic population: A 1- and 3-year follow-up in the PREDIMED study	BIOCHEMICAL RESEARCH METHODS	1	2	5,0010
84920848162	Fertility and Sterility	Influence of adrenal hyperandrogenism on the clinical and metabolic phenotype of women with polycystic ovary syndrome	OBSTETRICS & GYNECOLOGY	1	1	4,2950
84921894847	Addiction	Gambling in Spain: Update on experience, research and policy	SUBSTANCE ABUSE	1	1	4,5960
84922702114	Molecular Nutrition and Food Research	ß-Carotene during the suckling period is absorbed intact and induces retinoic acid dependent responses similar to preformed vitamin A in intestine and liver, but not adipose tissue of young rats	FOOD SCIENCE & TECHNOLOGY	1	1	4,9090

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