

La red HERACLES de investigación Cardiovascular



www.RedHERACLES.net

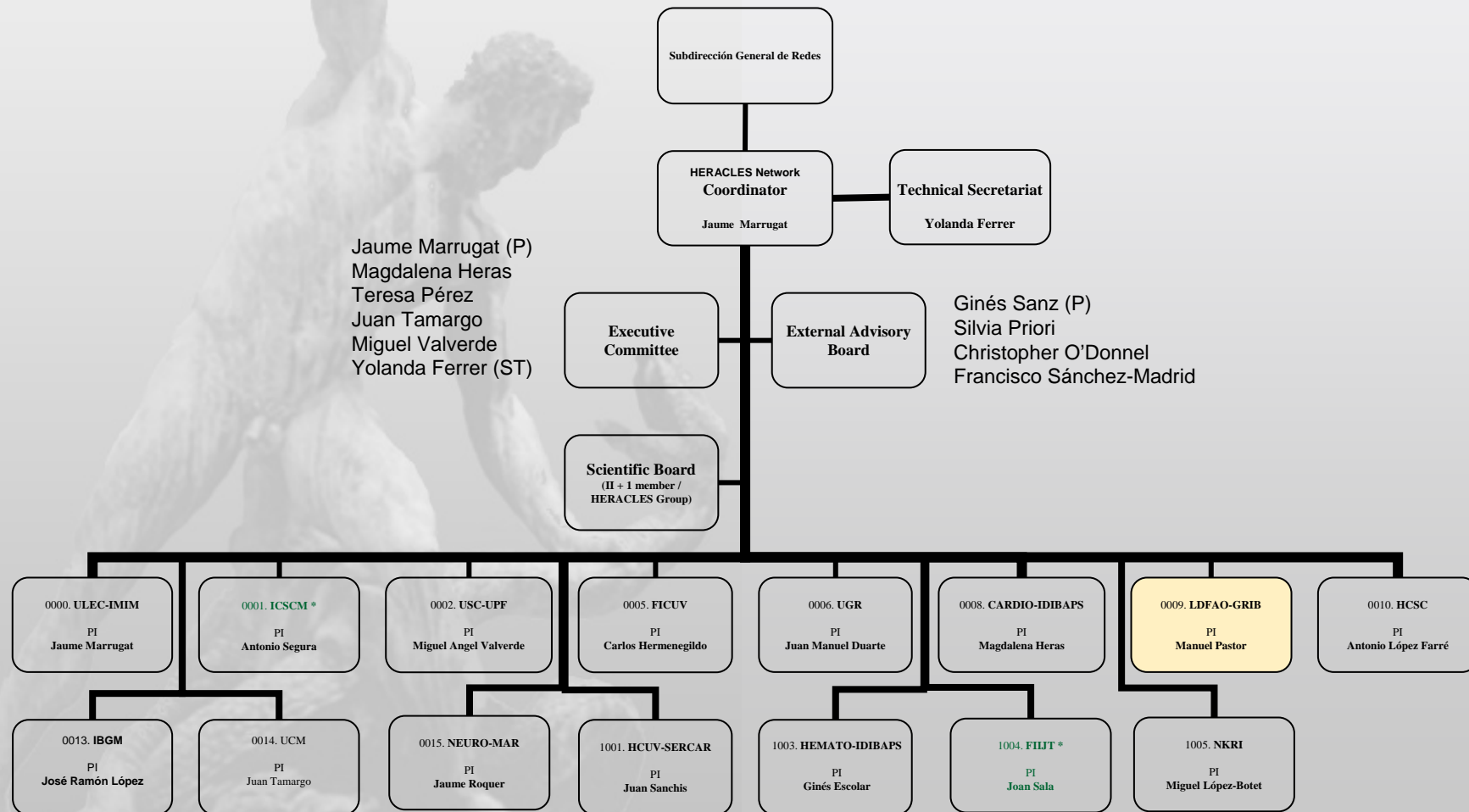
Hipertensión Esencial: Red de Análisis de Canales iónicos y Ligandos de Estrógenos Sintéticos



Mission of the HERACLES Network

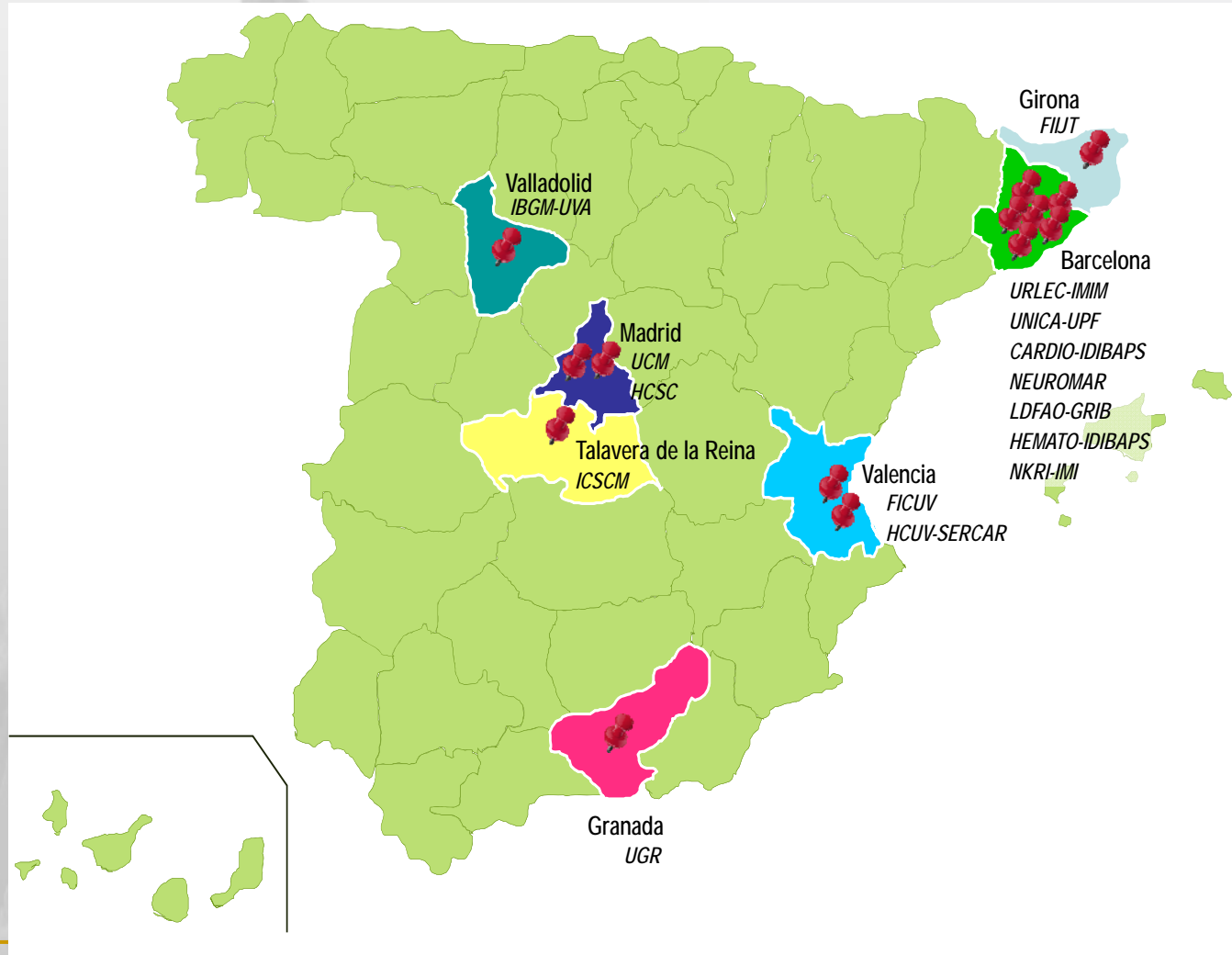
- The purpose of the HERACLES Network for Cardiovascular Research is to investigate in depth the mechanisms of arterial hypertension, and the serious diseases such as ischemic heart disease and cerebrovascular disease that are associated with it, to reduce its social and healthcare-related impact.
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HERACLES organization



* Clínic assistencial

Distribution of the 14 HERACLES centres





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Plataformas



Extracción ADN

Plataforma de alto rendimiento de extracción de ADN de máxima calidad puesta a disposición de todos los investigadores españoles y europeos.

[Más >>](#)



Colección de muestras de arterias

La red HERACLES pone su colección de muestras arteriales humanas a disposición de los investigadores de la red HERACLES y otros, para estudios de expresión y estudios funcionales, mediante convenios de colaboración y prestación de servicios.

[Más >>](#)



Data Management y bioestadística

La red HERACLES posee un enorme conocimiento sobre informatización de datos biomédicos y su análisis estadístico que pone a disposición de todos los investigadores españoles mediante convenios de colaboración y prestación de servicios.

[Más >>](#)



BECAS DE MOVILIDAD



ACTIVIDADES DE TRASLACIÓN Y DE TRANSFERENCIA



PROYECTOS COLABORATIVOS

Noticias

[Ver todas >>](#)

HERACLES estrena una página web renovada

La red de investigación Cardiovascular HERACLES financiada por Feder-ISCIII, ha renovado completamente su sitio en la web. Una página dinámica con sistemas de actualización y mantenimiento muy mejorados, atractiva, alegre

Reunión Científica Red HERACLES 2010

Los días 13, 14 y 15 de diciembre de 2010 la ciudad de Granada acogerá la Reunión Científica Anual de Red HERACLES.

Susana Novella, premio a la mejor comunicación oral del 32 Congreso de la Sociedad Española de Farmacología

El pasado 17 de septiembre la Dra. Susana Novella recibió el premio a la mejor comunicación oral del 32 congreso de la Sociedad Española de Farmacología, celebrado en León.

Comité Científico Asesor Externo



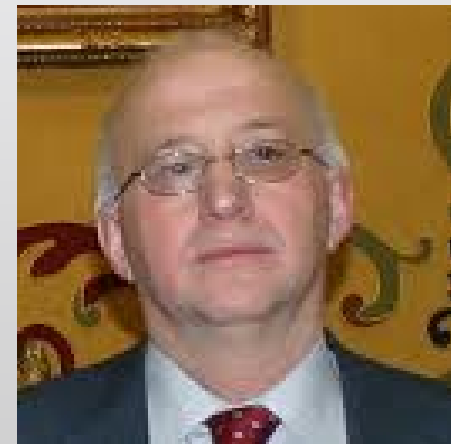
Dr. Ginés Sanz
CNIC, Madrid, España



Dr. Christopher O'Donnell
Director
Framingham Heart Study
Boston, USA



Dra. Silvia Priori
Director of Molecular Cardiology
and Electrophysiology Laboratories
IRCCS Fondazione Salvatore Maugeri,
Pavia, Italia



Prof. Francisco Sánchez-Madrid
Catedrático de Inmunología
Jefe de servicio de inmunología
Hospital de La Princesa
Madrid, España

Informe del CCExterno



INTERNATIONAL ADVISORY BOARD EVALUATION OF THE HERACLES CARDIOVASCULAR NETWORK

The objective of this evaluation is to provide the HERACLES Scientific Board, formed by the PI of each of its 15 HERACLES research groups and no more than 1 additional member of each group, with advice and suggestions to optimize the research potential of this network established in Spain in 2003. For your individual evaluation, please provide your signature below; all members are asked to sign the final combined evaluation summary.

Expert: Christopher O'Donnell Bethesda MD USA	Expert: Silvia Priori Italy/New York, NY USA	Expert: Francisco Sánchez- Madrid. Madrid. SPAIN	Expert: Ginés Sanz Barcelona. SPAIN
Date: 18/05/2009	Date: 18/05/2009	Date: 18/05/2009	Date: 18/05/2009
Signature: 	Signature: 	Signature: 	Signature:

Evaluation report of the HERACLES
Cardiovascular Research Network
(please complete either in Spanish or in English)

HERACLES is one of three networks dedicated to cardiovascular research. HERACLES was constituted in 2003 with 5 research groups and 2 associated clinical groups. Eight additional groups joined HERACLES in 2007-2008 following a second call. The main objective of the RETICS (health investigation networks) Programme launched by the Ministry of Health back in 2003 was to promote research by funding well established research groups in order to create adequate infrastructure, to train and hire technical personnel and to facilitate interaction.

The HERACLES External Scientific Advisory Board (ESAB) has met by the first time and it has analyzed in great detail the information provided by the HERACLES Executive Committee.

The ESAB has made the following consideration:

- Information regarding the network activities has been presented in a clear and comprehensive manner.



- The management structure of the network is well developed and includes an Executive Committee, the Scientific-Technical Council and the ESAB. Communication among the different groups seems appropriate.
- HERACLES investigators have managed to create a high-throughput DNA extraction platform which gives support to the all HERACLES groups, as well as other external investigators.
- Also in line with the RETICS objectives, a certified biobank with a significant number of samples has been organized.
- The objectives of the HERACLES network are well delineated. Although the study of ion channels in vascular bed, particularly in hypertension, was the main field of interest at the beginning, back in 2003, the research lines have been redefined, more in accordance with the real capabilities and know-how of the 15 groups. In addition to the genetics aspects and molecular mechanisms of hypertension, this new strategy incorporates epidemiology and clinical approaches. Furthermore, the research scope is further extended to ischemic heart and cerebrovascular diseases.
- Since its creation in 2003, this network has produced a significant number of peer-review publications, however only 12% of them (76/607) have been the result of collaboration within the network. The same is true for competitive grants; only 14 of 92 are collaborative. It would be interesting to analyze the temporal trends of these two parameters.
- The 2003 initial network was well balanced in terms of basic-clinical expertise, with two groups undertaken basic research (ion-channels) another group with expertise in genetics and epidemiology, one group with both basic (endothelium) and clinical expertise and the remaining group with a large experience in ischemic heart disease.
- These five founders account for the larger scientific production of this network; however, only two of these groups have more than 75% of its papers in first quartile journals. The IP of these groups have an acceptable number of citations and their "h factor" ranges between 13 and 34.
- Collaborative efforts among these groups are still modest as assessed by the number of ongoing collaborative projects. Even more, one of them has not share projects.



- The eight new groups that have been incorporated since year 2006 might increase the research potential of HERACLES. Five of them are pure basic groups and the remaining three are pure clinic (2) or with some basic component.
- The expertise of these eight groups seems in line with the new objectives and research strategies. However, the potential interaction with other members appears to be limited for the HEMATO-IDIBAPS and the INMUNO groups. Both groups have entered the HERACLES network without collaborative projects.
- The quality and research experience of some of the recently incorporated members is very high, particularly the most basic groups. The PI of these groups show a considerable number of citations.
- It is difficult to evaluate the contribution of these recently incorporated groups.
- The Scientific Committee agrees that the performance and evolution of the HERACLES Network has been positive and the Committee puts forward the following recommendations:

Handwritten signature and initials: A. [unclear] de Hg CEO

- 1) Since the number of different objectives and research lines seem too large to this Committee we recommend that each group should focus in two or three of them, particularly the clinical groups.
- 2) The role of the new incorporated groups, HEMATO and INMUNO should be redefined in accordance with the main objectives of the HERACLES Network.
- 3) The Biobank should be reorganised in order to provide it with a well defined infrastructure, and facilitate the access of different groups to the samples as well as clinical data.
- 4) It is strongly recommended to organise a new platform able to provide bioinformatics and biostatistics expertise to the whole network.
- 5) In order to facilitate the Committee work in the future and also to improve the transparency it could be advisable to restrict the list of publications to those that are the result of collaborative efforts. Bibliometric information for these publications should be provided. In addition major achievements of the group should be highlighted. A clearer list of cooperation between two or more groups should be also provided instead of the graphic.

100 investigadores de 14 Grupos HERACLES-2011

- **URLEC-IMIM 2003**
Unitat de Recerca en Lípids i Epidemiologia
Cardiovascular, REPICA
IMIM-Hosp

- **HCSC 2003**
Hospital Clínico San Carlos, Madrid

- **ICSCM * 2006**
Instituto de Investigación
Castilla-La

- **UNICA-UP**
Unidad de
Universitat

- **FICUV 2006**
Fundación
Universitat

- **UGR 2006**
Universida

- **CARDIO-I**
Servei de
Institut d'In
Sunyer, Ba

- **UCM 2006**
Universida



The young Heraclides investigators
(the sons of Herakles)

ust Pi i Sunyer,

Trueta,

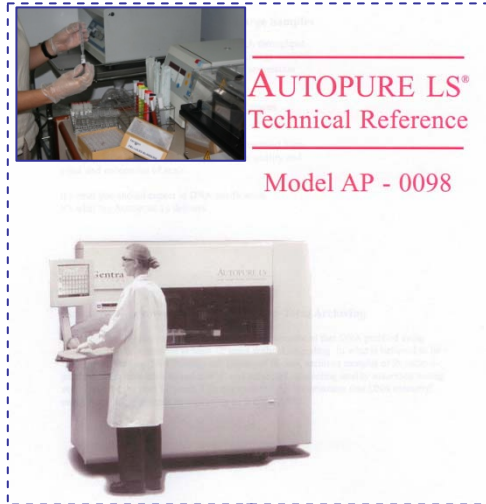
* Centro Clínico asistencial

Plataformas HERACLES

- Plataforma de extracción & normalización de ADN de alto rendimiento. Nodo Barcelona, IMIM (P). *
- Colección con 15000 muestras de ADN, suero y plasma de 10000 sujetos sanos, 2000 con IAM, y 1000 con ACV. Nodo Barcelona, IMIM.
- Colección con ~200 muestras arteriales humanas. Valladolid IBGM-UVA(P), Nodos Valencia FICUV, IMIM y Cardio IDIBAPS. Colaboran centros RECAVA.
- Sistema de informatización automatizada TeleForm® de datos y análisis bioestadístico avanzado.

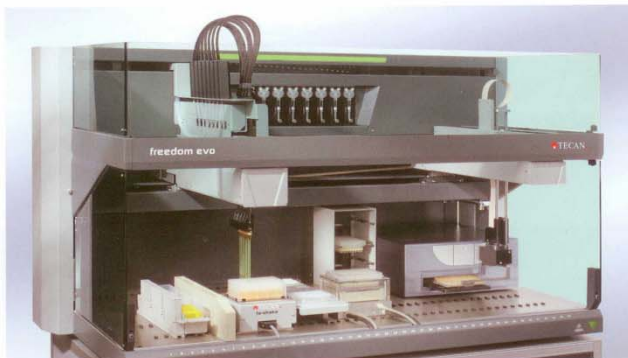
* Única financiada por la Red

Plataformas en HERACLES: Extracción de ADN de alto rendimiento



2008: 2 técnicos

ISO 15189 implementada in 2010



Sample normalization prior to sample preparation.

2008: Robot Tecan: Distribución de placas & normalización de las muestras de ADN

2009: replicación de placas

2010: Funciona a pleno rendimiento (~12000 muestras)

Control de calidad :
Nanodrop & picogreen

Infinite M200 con monocromadores para medidas de Absorbancia, concentración de ADN con pequeños volúmenes y Fluorescencia



HERACLES facts: a service to the Scientific Community



EXTRACCIÓN Y NORMALIZACIÓN DE ALTO RENDIMIENTO HIGH THROUGHPUT NUCLEIC ACID EXTRACTION AND NORMALIZATION

- El laboratorio de Biología Molecular de L'ARS.Services ofrece el servicio de ADN genómico humano de alto rendimiento, pensado específicamente a partir de:
 - The L'ARS.Services molecular biology laboratory offers automatic genomic DNA extraction from:

Sangre total fresco o congelada (de volúmenes mínimos de 2 ml a 10 ml)
Fresh or frozen whole blood (final volume of 2 ml to 10 ml)
Interface celular (1 ml a 2 ml de volumen)
Cellular interface (volume of 1 ml to 2 ml)

- Una vez extraído el ADN, L'ARS.Services puede realizar los siguientes servicios:
 - After extracting the DNA, L'ARS.Services offers the following services:

Purificación del ADN para eliminar proteínas
DNA purification to eliminate proteins
Alcalización del ADN
DNA alkylating
Cuantificación de la concentración de ADN
Quantification of DNA concentration
Normalización del ADN
DNA normalization
Preparación de las muestras para PCR cuantitativa
Sample preparation for quantitative PCR

- Consulte también la disponibilidad de otros servicios como:
 - Contact us about the availability of these procedures:

Extracción de RNA de diferentes tejidos
RNA extraction from several tissues
Extracción de ADN a partir de hisopos bucales
DNA extraction from internal cheek swab



EXTRACCIÓN Y NORMALIZACIÓN DE ALTO RENDIMIENTO DE ÁCIDOS NUCLÉICOS

HIGH THROUGHPUT NUCLEIC ACID EXTRACTION AND NORMALIZATION



EXTRACCIÓN Y NORMALIZACIÓN DE ALTO RENDIMIENTO DE ÁCIDOS NUCLÉICOS



HIGH THROUGHPUT NUCLEIC ACID EXTRACTION AND NORMALIZATION

En el método ELISA
By ELISA
 kits de estudios microarrays o seleccionar según los kits disponibles en la tecnología
 kits by Bio-Plex, selected from commercially available kits adapted to X-MAP technology
 kits avanzados de datos de investigación biomédica
 kits, using advanced biomedical research methods of data preparation and analysis

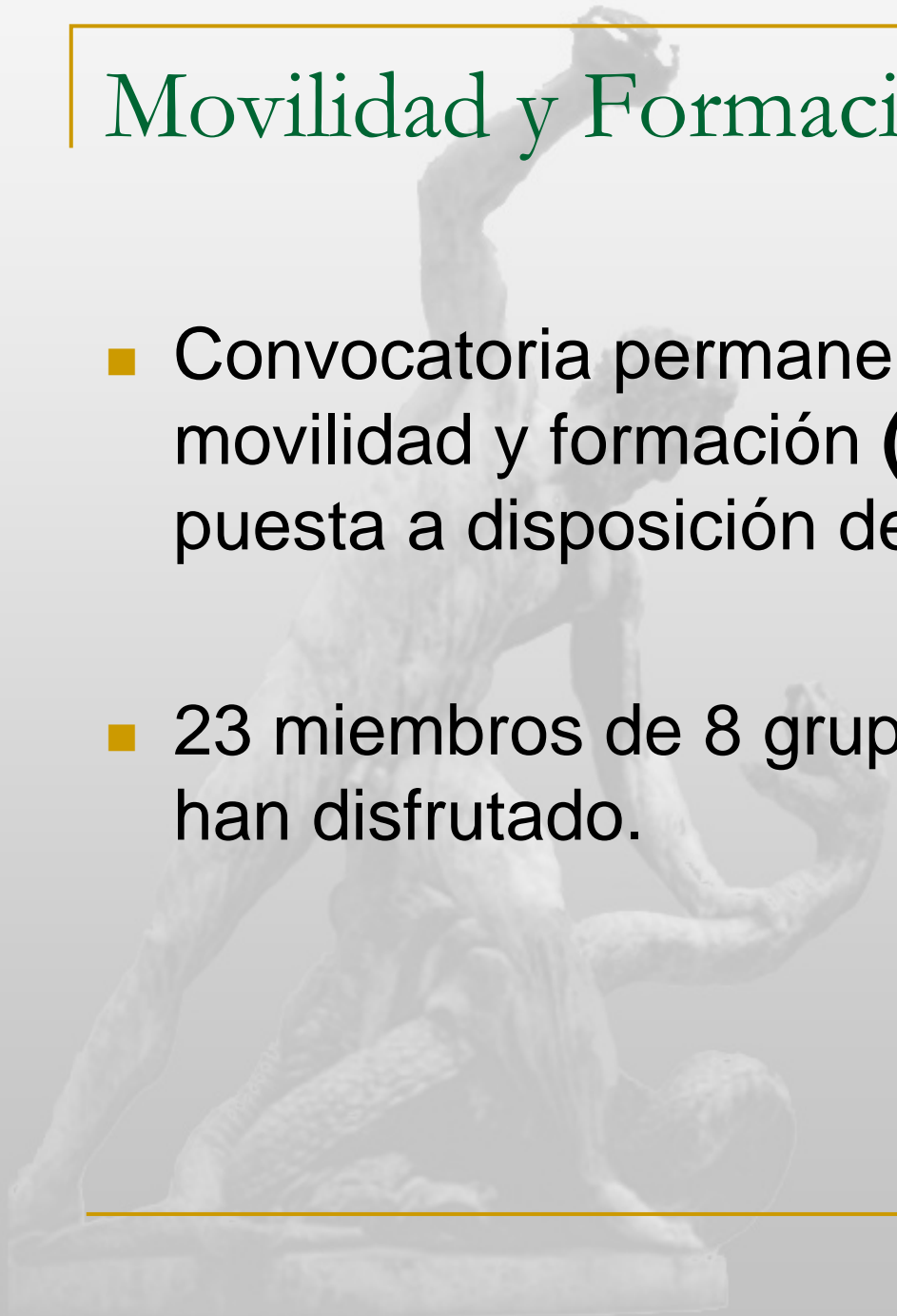


HERACLES Research Areas

- Molecular mechanisms of arterial hypertension
 - Clinical and inflammation research
 - Endothelial dysfunction
-

Movilidad y Formación en HERACLES

- Convocatoria permanente de becas de movilidad y formación (www.reheracles.net) puesta a disposición de nuestro personal:
- 23 miembros de 8 grupos HERACLES ya las han disfrutado.



Cursos/reuniones HERACLES 2007-2011

- **7 reuniones científicas anuales HERACLES**
 - **13 simposia internacionales,**
 - **1 curso internacional**
 - **6 cursos nacionales**
 - **1ª reunión del Comité Científico Asesor Externo (External Scientific Advisory Board) 18-05-2009**
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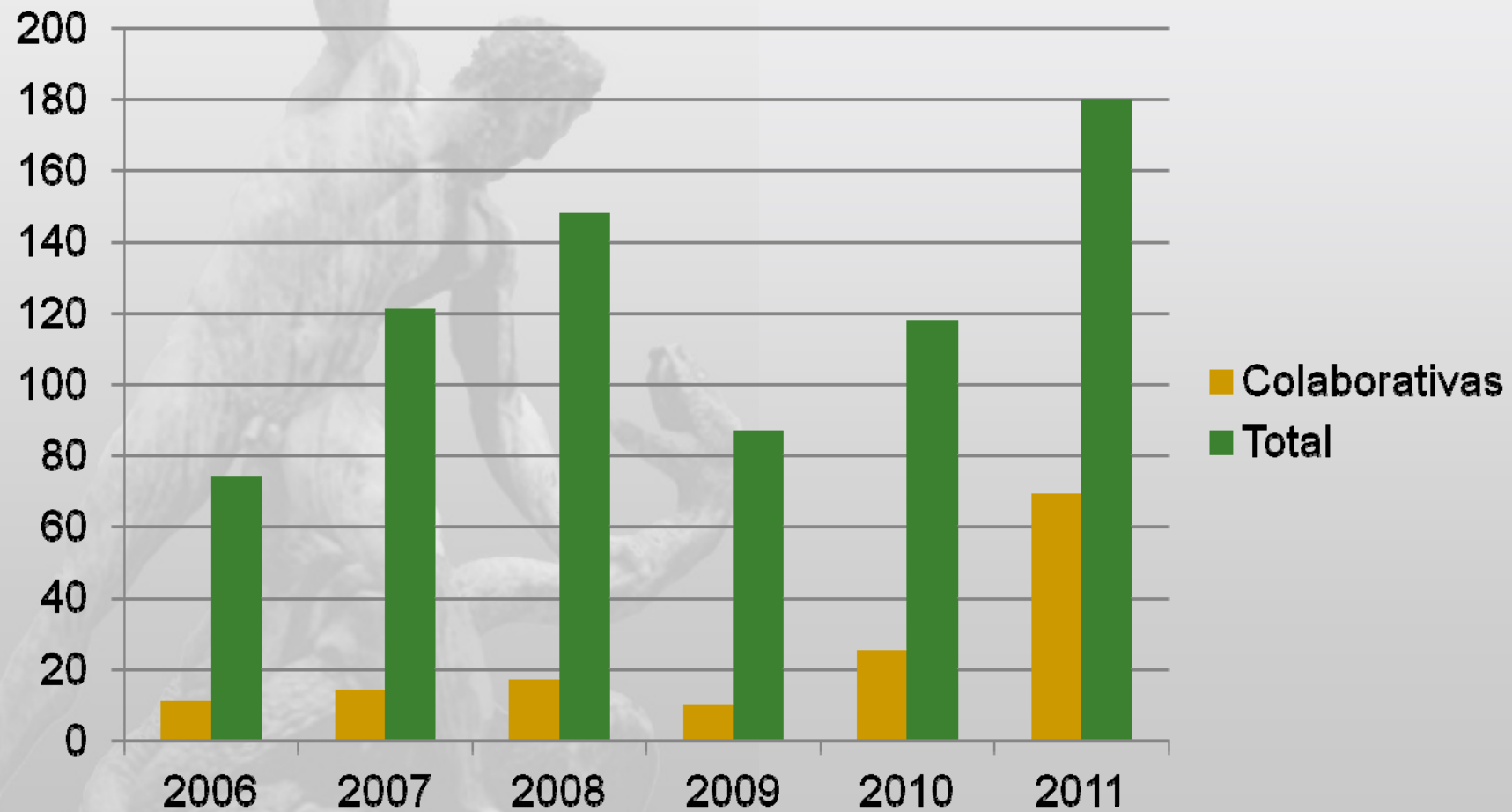
Dudas en la filosofía de las RETICS

- Grupos potentes con colaboración moderada y muchas publicaciones

Vs.,

- Grupo de baja calidad con mucha colaboración y pocas publicaciones

Evolución de las publicaciones colaborativas en HERACLES



A faint, light-colored statue of Prometheus, a figure from Greek mythology, is visible in the background. The statue depicts a muscular man with a bird (an eagle) on his back, holding a torch aloft in his right hand. The background is a light gray gradient with a thin orange line at the top and bottom.

Mejora en el número de proyectos colaborativos

- ✓ **Mayo 2010** **20/110 = 18%**
- ✓ **Octubre 2010** **23/121 = 19%**
- ✓ **Noviembre 2011** **25/125 = 20%**

Internacionalización de la red HERACLES

- La mayor parte de las 180 publicaciones son internacionales: 43 en 1er cuartil, de las que 20 en 1er decil
- Coordinamos un proyecto Europeo (EURHOBOP) en que participan: ULEC-IMIM (P), CARDIO-IDIBAPS, HCSC, NEURO-MAR, FIIJT, ISCCM y HCUV-SERCAR.
- Pertenece a consorcios internacionales de investigación genética como MIGene del NIH.
- Mantenemos relaciones estables con multitud de grupos internacionales con los que se publican estudios colaborativos

Translational accomplishments in HERACLES

Patents

- patent (200400883) presented on march 2004;. (URLEC-IMIM RD06/0009/0000 & UNICA-UPF RD06/0009/0002).
- patent (08105518.8) presented en Octubre de 2008 por los grupos CARDIO-IDIBAPS RD06/0009/00008 y IBGM-UVA RD06/0009/0013, Under negotiation with industry
- patent (09162329.8 1222) presented on June 2009. RDI of IMIM with Gendiag. Exploitation initiated November 2009. URLEC-IMIM RD06/0009/0000
- Patent EP09382220 presented November 2009 by UNICA-UPF RD06/0009/0002). Exploitation initiated in 2010

I+D+i

- contract with GENDIAG & possible spin-off with a CIDEM grant (*Centre d'Innovació i Desenvolupament Empresarial*) (URLEC-IMIM RD06/0009/0000 & FIJT RD06/0009/1004).

Other translational accomplishments in HERACLES

- ❑ Development and validation of an adaptation of the Framingham cardiovascular risk function in Spain. The REGICOR adapted function is currently used officially by the NHS of Catalonia, Basque Country and Balearic Islands. Some added values
 - Cassandra project (www.redheracles.net/cassandra)
 - DARIOS (www.DARIOS.IMIM.es)
- ❑ Other HERACLES groups have been collaborating in the development of a scoring system to assess the risk of patients admitted with non-ST elevation acute coronary syndromes (HCUV-SERCAR, CARDIO-IDIBAPS, URLEC-IMIM).
- ❑ The NKRI-IMIM group has three license agreements with e-Biosciences (USA), Biologend (USA), and Immunostep (Spain).
- ❑ We have improved a computerized system GRANMO to estimate the necessary sample size in biomedical study designs.

The HERACLES Teams

www.redheracles.net

Fundación de HERACLES
Barcelona, IMIM 2003



Continuación/ampliación HERACLES
Valladolid, IBGM 2007



Valencia, FICUV-HCUV 2009




Nuevas incorporaciones
Madrid, HCSC - UCM 2008



Granada, UGR 2010





La verdadera grandeza de la ciencia acaba valorándose por su utilidad.

The true value of science ends up valuing itself by its applicability.

Gregorio Marañón
