CURRÍCULUM VÍTAE NORMALIZADO

María Muñoz Muñoz

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GOBIERNO DE ESPAÑA MINISTERIO DE CIENCIA E INNOVACIÓN

FECYT FUNDACIÓN ESPAÑOLA PARA LA CIENCIA Y LA TECNOLOGÍA

Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

The main topic of her research career has consisted in the study of the genetic influence in complex traits from a wet- and dry-lab double perspective. Her main research areas are based in heritability and genetic correlation estimations, genome scans, candidate gene analyses, transcriptomics analyses and implementation of molecular markers mainly in Animal Breeding although she carried out her postdoc working in Human Genetics.

Her research career comprises 14 years which can be divided in different periods: working in animal breeding and genetics as a PhD student (5 years) and postdoc in Centro I+D en Cerdo Ibérico INIA-Zafra (1.5 years), working in human genetics as postdoc in The Roslin Institute (2.5 years) and working as a postodc in the Centro I+D en Cerdo Ibérico INIA-Zafra (~ 4 years). During this time, she has participated in seven Spanish, two European and one British funding projects.

She carried out three pre-doctoral short stays in internationally outstanding research institutions. Università degli Studi di Bologna, Reggio Emilia (Italy): “Candidate gene analyses and gene expression for meat quality traits on heavy pig traits”. Aarhus University, Tjele: “Analyses of expression profiles of microRNA and protein coding genes during proliferation and differentiation of muscle cells grown in culture. Institut National de la Recherche Agronomique (INRA): “Candidate gene analyses for melanoma predisposition in pigs”.

She has 36 articles published in per-reviewed journals, seven in divulgative journals and 77 participations in international and national conferences. She has also given seminars and practical lessons, participated in one PhD revision panel, a referee and editor in indexed journals, a chairwoman in the X International Symposium of Mediterranean Pig and in the "XIX Jornadas sobre Producción Animal" and attended to courses and workshops to improve her skills and formation.

During her postdoctoral position in The Roslin Institute, she worked with data from the UK Biobank, which contain health data from more than 500,000 participants. The result of this work was published in Nature Genetics journal.
Nowadays, the objective of her research career is to apply the knowledge generated from different –omics to the improvement of traits in Iberian pigs, implementing this information in breeding programs. In fact, she got a grant in the "Jóvenes Investigadores" program from the "Retos 2018" call. This grant covers the expenses of her contract in INIA as a Principal Investigator for 3 years. The project funded with this grant is entitled: "Heat stress effects on the Iberian pig prolificacy through the integration of transcriptome, metagenome and metabolome

data" in which techniques from different -omics will be carried out to analyse heat stress effects on Iberian pigs. At the same time, she collaborates in different projects, searching for alternative and sustainable diets of Iberian pigs, effects of these diets in several traits and in different transcriptome and metagenome studies. In addition, she also works as an Assistant Professor in the Genetics Section of the Universidad Complutense de Madrid giving lessons in the Biology Degree and in two Masters (“Health Biology” and Genetics and Cellular Biology).

Lastly, on September 2020 she got a permanent position and in a close future, she is going to join to the Animal Breeding Department of INIA as a Researcher (Científico Titular).

General quality indicators of scientific research

This section describes briefly the main quality indicators of scientific production (periods of research activity, experience in supervising doctoral theses, total citations, articles in journals of the first quartile, H index...). It also includes other important aspects or peculiarities.

Supervisor of one PhD thesis.
36 publications in per reviewed journals: (13 as a first author and two as a last author).
Total citations: 661
Average of citations per year during the last 5 years (excluding the current year) = 97.8
Total of first quartile (Q1) publications = 25
H - Index = 15
Source: Google scholar (https://scholar.google.es/citations?user=dqw_-0IAAAAJ&hl=es). To highlight: One publication in Nature Genetics journal (IF = 31.62)

María Muñoz Muñoz

Surname(s): **Muñoz Muñoz**
Name: **María**
ORCID: **0000-0002-7018-6977**
Date of birth: **13/07/1982**
Nationality: **Spain**
Contact aut. region/reg.: **Community of Madrid**
Email: **mariamm@inia.es**

Current professional situation

Employing entity: Consejo Superior de Investigaciones Científicas
Type of entity: State agency
Department: INIA
Professional category: Científico Titular
Start date: 16/11/2022
Type of contract: Permanent employment contract
Dedication regime: Full time
Primary (UNESCO code): 240108 - Animal genetics
Performed tasks: Principal investigator of the project: "Heat stress effects on the Iberian pig prolificacy through the integration of transcriptome, metagenome and metabolome data." Genetic parameter estimation of reproductive traits including heat stress. Analysis of heat stress effects on the metabolome of blood and semen, metagenome of vagina and semen and metabolome of blood and semen. Integration of the results from the different -omic data through System Biology approaches. Supervision of PhD students
Identify key words: Computational biology; Population genetics; Genomics; Genetic mapping

Employing entity: Universidad Complutense de Madrid
Type of entity: University
Department: Genética, Fisiología y Microbiología, Facultad de Ciencias Biológicas
Professional category: Assitant Professor/Professor Associado
Start date: 18/10/2018
Type of contract: Temporary
Dedication regime: Part time
Primary (UNESCO code): 240900 - Genetics
Performed tasks: To give practical theoric and practical lessons in the Biology degree and Master related with Genetics. So far, I have given practical lessons in three different subjects (“Methods in Biology”, “Evolutionary Biology” and “Biology Analyses and Quality Control”) belonging to the Biology degree and also two subjects belonging to the “Health Biology” master (“Bioinformatics” and “Diagnosis and Research Techniques”).

Previous positions and activities

	Employing entity	Professional category	Start date
1		Principal Investigator Junior	16/09/2019

	Employing entity	Professional category	Start date
	INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)		
2	Centro I+D en Cerdo Ibérico (INIA)	Titulado Superior en Actividades Técnicas y Profesionales	16/11/2015
3	The University of Edinburgh	Postdoctoral Research Assistant	01/05/2013
4	INIA - Centro en I+D de Cerdo Ibérico	Técnico de Apoyo a la Investigación	01/01/2012
5	INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)	PhD student	08/01/2007
6	Universidad Complutense de Madrid	Collaborator Student	10/2004

1 **Employing entity:** INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
Professional category: Principal Investigator Junior
Start-End date: 16/09/2019 - 15/11/2021 **Duration:** 2 years - 2 months

2 **Employing entity:** Centro I+D en Cerdo Ibérico (INIA) **Type of entity:** R&D Centre
Professional category: Titulado Superior en Actividades Técnicas y Profesionales
Start-End date: 16/11/2015 - 15/09/2019 **Duration:** 4 years - 2 months
Performed tasks: Implementation of breeding programs in Iberian pig farms. Mortality studies in Iberian pigs. Candidate gene analyses on new meat quality traits in Iberian pigs. Traceability studies using a new low density SNP chip. Transcriptome analyses using RNAseq. Diversity analyses using high-density genotyping data. Supervising a PhD student.

3 **Employing entity:** The University of Edinburgh **Type of entity:** University
Department: Genetics and Genomics, The Roslin Institute
Professional category: Postdoctoral Research Assistant **Educational Management (Yes/No):** No
Start-End date: 01/05/2013 - 31/10/2015 **Duration:** 2 years - 6 months
Type of contract: Temporary employment contract
Performed tasks: Estimation of heritability and genetic correlations of complex human diseases from the UKbiobank database, which is an important British resource with data of over 500.000 individuals and has the main objective of improving the prevention, diagnosis and treatment of a large number of non-cancer and cancer illnesses. Analysis of genetic basis of feed efficiency in pigs using the high-density SNP chip Axiom® Porcine Genotyping Array wich includes 658,692 SNPs.

4 **Employing entity:** INIA - Centro en I+D de Cerdo Ibérico **Type of entity:** R&D Centre
Professional category: Técnico de Apoyo a la Investigación
Start-End date: 01/01/2012 - 23/04/2013 **Duration:** 1 year - 3 months - 23 days
Type of contract: Grant-assisted student (pre or post-doctoral, others)
Performed tasks: Studies of traceability and paternity on Iberian pigs using low-density SNP chips. Genetic basis dissection of fatty acid composition in an Iberian x Landrace experimental cross using the Illumina Porcine 60K SNP Beadchip data and GeneChip® Porcine Genome Array expression data.

5 **Employing entity:** INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
Professional category: PhD student

Start-End date: 08/01/2007 - 29/04/2011 **Duration:** 4 years - 4 months - 21 days

Type of contract: Grant-assisted student (pre or post-doctoral, others)

Performed tasks: Study of RBP4 polymorphisms effects on litter size in a Chinese-European porcine line. Influence of porcine chromosome 12 on fatty acids composition. Candidate gene analyses of three genes mapped on porcine chromosme 12, characterization, genotyping and association analyses on Iberian x Landrace pigs and several comercial populations. In addition to this, data of Porcine 60K SNP Beadchip and GeneChip® Porcine Genome Array expression data were used.

6 **Employing entity:** Universidad Complutense de Madrid **Type of entity:** University

Professional category: Collaborator Student

Start-End date: 10/2004 - 06/2005 **Duration:** 8 months

Type of contract: Grant-assisted student (pre or post-doctoral, others)

Performed tasks: Study of parameters related with fitness; correlation and heritability estimation in Drosophila melanogaster.

Education

University education

1st and 2nd cycle studies and pre-Bologna degrees

University degree: Higher degree
Name of qualification: Licenciado en Biología Especialidad Genética
Degree awarding entity: Universidad Complutense de Madrid **Type of entity:** University
Date of qualification: 01/08/2005

Doctorates

Doctorate programme: Genética y biología celular
Degree awarding entity: Universidad Complutense de Madrid **Type of entity:** University
Date of degree: 29/04/2011

Specialised, lifelong, technical, professional and refresher training (other than formal academic and healthcare studies)

1 **Training title:** Metabarcoding of microbial communities
Awarding entity: Physalia Courses **Type of entity:** University Centres and Structures and Associated Bodies
End date: 13/03/2020 **Duration in hours:** 40 hours

2 **Training title:** Modelos Mixtos/Jerárquicos/Multinivel con R
Awarding entity: Universidad Autónoma de Madrid **Type of entity:** University
End date: 23/11/2017 **Duration in hours:** 20 hours

3 **Training title:** Estadística Aplicada con R. Módulo 2: Métodos de regresión y análisis multivariante con R
Awarding entity: Universidad Autónoma de Madrid **Type of entity:** University
End date: 06/10/2017 **Duration in hours:** 15 hours

4 **Training title:** Writing and revising for peer review
Awarding entity: The Roslin Institute **Type of entity:** R&D Centre
End date: 28/03/2014 **Duration in hours:** 38 hours

5 **Training title:** ASREML course
Awarding entity: The Roslin Institute
End date: 21/02/2014 **Duration in hours:** 28 hours

6 **Training title:** Data Analyses
Awarding entity: JOHNS HOPKINS UNIVERSITY'S **Type of entity:** University
End date: 19/03/2013 **Duration in hours:** 40 hours

7 **Training title:** Awk course
Awarding entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 05/11/2012 **Duration in hours:** 8 hours

8 **Training title:** NGS data analysis for beginners: A personal view
Awarding entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 01/10/2012 **Duration in hours:** 8 hours

9 **Training title:** Easy genomic selection using Bayesian and linear models
Awarding entity: Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria **Type of entity:** Public Research Body
End date: 13/06/2012 **Duration in hours:** 24 hours

10 **Training title:** R Course
Awarding entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 23/05/2012 **Duration in hours:** 24 hours

11 **Training title:** Estrategias de Selección
Awarding entity: FUNDACION PARQUE CIENTIFICO DE MADRID
End date: 05/2011 **Duration in hours:** 8 hours

12 **Training title:** Real-Time PCR y secuenciación masiva de DNA: Aplicaciones
Awarding entity: Roche **Type of entity:** Business
End date: 28/03/2011 **Duration in hours:** 6 hours

13 **Training title:** Simposio de PCR en tiempo real (qPCR)
Awarding entity: Applied Biosistems
End date: 02/03/2011 **Duration in hours:** 8 hours

14 **Training title:** Sequencing Simplified
Awarding entity: Illumina **Type of entity:** Business
End date: 02/07/2010 **Duration in hours:** 8 hours

15 **Training title:** Applied Statistical Methods in Animal Genomics. Turning genomic information into understanding
Awarding entity: International Centre of Advanced Mediterranean Agronomic Studies **Type of entity:** Foundation
End date: 19/09/2008 **Duration in hours:** 35 hours

16 **Training title:** XVII International Course of Animal Breeding
Awarding entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 31/10/2007 **Duration in hours:** 110 hours

17 **Training title:** II Workshop Por Alguns Microarrays Mais
Awarding entity: Universidade de Trás-os-Montes e Alto Douro,
End date: 13/10/2007 **Duration in hours:** 34 hours

18 **Training title:** DNA evidence
Awarding entity: Université de Liège **Type of entity:** University
End date: 08/09/2007 **Duration in hours:** 12 hours

19 **Training title:** Genomic and Proteomic Data Analysis
Awarding entity: Université de Liège
End date: 05/09/2007 **Duration in hours:** 12 hours

20 **Training title:** Fortran applied at Animal Breeding
Awarding entity: Universidad Complutense de Madrid **Type of entity:** University
End date: 28/06/2007 **Duration in hours:** 24 hours

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
English		C1	C1	C1	C1

Teaching experience

General teaching experience

1 **Name of the course:** Biología Evolutiva
University degree: Graduado o Graduada en Biología
Start date: 22/09/2020 **End date:** 17/12/2020
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas

2 **Name of the course:** Bioinformática
University degree: Máster en Biología Sanitaria
Start date: 02/12/2020 **End date:** 03/12/2020
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas

3 **Name of the course:** ESTRUCTURA, ORGANIZACIÓN Y EVOLUCIÓN DE LOS GENOMAS
University degree: Máster en Genética y Biología Celular
Start date: 08/10/2020 **End date:** 08/10/2020
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas

4 **Type of teaching:** Official teaching
Name of the course: Genetics
Type of programme: Bachelor's degree **Type of teaching:** Practical work (classroom-problems)
Type of subject: Obligatory

University degree: Graduado o Graduada en Biología
Course given: Second
Start date: 10/02/2020 **End date:** 10/02/2020
Type of hours/ ECTS credits: Hours
Hours/ECTS credits: 18
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas
Department: Genetics, Microbiology and Mhysiology
City of entity: Madrid, Community of Madrid, Spain

5 **Type of teaching:** Official teaching
Name of the course: Bioinformática
Type of programme: Master's degree
University degree: Máster en Biología Sanitaria
Start date: 25/11/2019 **End date:** 28/11/2019
Type of hours/ ECTS credits: Hours
Hours/ECTS credits: 10
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas

6 **Type of teaching:** Official teaching
Name of the course: Evolutionary Biology
Type of programme: Bachelor's degree **Type of teaching:** Practical work (classroom-problems)
Type of subject: Obligatory
University degree: Graduado o Graduada en Biología
Course given: Third
Start date: 15/10/2019 **End date:** 20/11/2019
Type of hours/ ECTS credits: Hours
Hours/ECTS credits: 16
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas
Department: Genetics, Microbiology and Mhysiology
City of entity: Madrid, Community of Madrid, Spain

7 **Type of teaching:** Official teaching
Name of the course: Métodos en Biología
Type of programme: Bachelor's degree
University degree: Graduado o Graduada en Biología
Start date: 18/11/2019 **End date:** 18/11/2019
Type of hours/ ECTS credits: Hours
Hours/ECTS credits: 3
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas

8 **Type of teaching:** Official teaching
Name of the course: Evolutionary Biology
Type of programme: Bachelor's degree **Type of teaching:** In person theory
Type of subject: Obligatory
University degree: Graduado o Graduada en Biología
Course given: Third
Start date: 10/09/2019 **End date:** 13/11/2019

Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 25
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas
Department: Genetics, Microbiology and Mhysiology
City of entity: Madrid, Community of Madrid, Spain

9 **Name of the course:** ESTRUCTURA, ORGANIZACIÓN Y EVOLUCIÓN DE LOS GENOMAS
Type of programme: Master's degree **Type of teaching:** Seminar
Type of subject: Obligatory
University degree: Master en Genética y Biología Celular
Start date: 09/10/2019 **End date:** 09/10/2019
Type of hours/ ECTS credits: Hours
Hours/ECTS credits: 0,2
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas
Department: Genetics, Microbiology and Physiology

10 **Type of teaching:** Official teaching
Name of the course: Trabajo Fin de Grado
Type of programme: Bachelor's degree
University degree: Graduado o Graduada en Biología
Start date: 18/03/2019 **End date:** 10/05/2019
Type of hours/ ECTS credits: Hours
Hours/ECTS credits: 15
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas

11 **Type of teaching:** Official teaching
Name of the course: Fundamentos de Ingeniería Genética y Genómica
Type of programme: Bachelor's degree
University degree: Graduado o Graduada en Biología
Start date: 06/05/2019 **End date:** 09/05/2019
Type of hours/ ECTS credits: Hours
Hours/ECTS credits: 6
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas

12 **Type of teaching:** Official teaching
Name of the course: Bioinformática
Type of programme: Master's degree
University degree: Máster en Biología Sanitaria
Start date: 19/11/2018 **End date:** 05/12/2018
Type of hours/ ECTS credits: Hours
Hours/ECTS credits: 13
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas

13 **Type of teaching:** Official teaching
Name of the course: Técnicas de diagnóstico e investigación
Type of programme: Master's degree

University degree: Máster en Biología Sanitaria
Start date: 19/11/2018 **End date:** 05/12/2018
Type of hours/ ECTS credits: Hours
Hours/ECTS credits: 25
Entity: Universidad Complutense de Madrid **Type of entity:** University
Faculty, institute or centre: Facultad de Ciencias Biológicas

Other activities/achievements not included above

1 **Description of the activity:** Teacher in course "Detección de QTLs, GWAS y análisis de genes candidatos"
Organising entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 27/09/2016

2 **Description of the activity:** Speaker in "XV Series of Seminar of the Animal Breeding Department" "Inflated heritability estimates by familial shared environment explain dos of missing heritability of common diseases: an analysis of 1,55,906 individuals in UK Biobank"
Organising entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 19/02/2016

3 **Description of the activity:** Speaker in " IX Series of Seminar of the Animal Breeding Department" "Analysis of genetic basic of fatty acid composition in porcine backfat and intramuscular fat
Organising entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 02/04/2013

4 **Description of the activity:** ANECA Habilitation as "Profesor Ayudante Doctor"
Organising entity: Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** ANECA
End date: 20/02/2012

5 **Description of the activity:** Speaker in “VII Series of Seminars of the Animal Breeding Department”. Talk title “Influence of porcine chromosome SSC12 in the intramuscular and subcutaneous fatty acid composition”
Organising entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 13/04/2011

6 **Description of the activity:** Teacher of practical lessons of Cri-Map software: XX International Course of Animal Breeding
Organising entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 29/10/2010

7 **Description of the activity:** Speaker in “V Series of Seminars of the Animal Breeding Department” “Study of RBP4 gene effects on litter size in a synthetic Chinese-European line and in an experimental cross Iberian x Landrace”.
Organising entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
End date: 26/09/2008

Scientific and technological experience

Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

1 **Name of the project:** Heat stress effects on the Iberian pig prolificacy through the integration of transcriptome, metagenome and metabolome data
Type of project: Research and development, including transfer **Geographical area:** European Union
Degree of contribution: Coordinator of total project, network or consortium
Entity where project took place: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): María Muñoz
Nº of researchers: 2
Funding entity or bodies:
Agencia Estatal de Investigación **Type of entity:** State agency
City funding entity: Madrid, Community of Madrid, Spain

Type of participation: Principal investigator
Name of the programme: Restos Investigación 2018-JIN
Start-End date: 16/09/2019 - 15/09/2022 **Duration:** 3 years
Total amount: 169.400 €

2 **Name of the project:** TREASURE-Traditional resources for agricultural diversity and the food chain.
Entity where project took place: Centro I+D en Cerdo Ibérico
Name principal investigator (PI, Co-PI....): Marjeta ?andek-Potokar
Nº of researchers: 95
Start-End date: 01/04/2015 - 31/03/2019
Total amount: 3.395.986,75 €
Applicant's contribution: TREASURE is a project funded by the H2020 which involves 25 partners from 9 countries. The applicants contribute in this proyect as a collaborator getting and mananging samples and carriying out different data analyses as transcriptomic analyses (RNA-seq).

3 **Name of the project:** AT15-001 - Desarrollo de un programa de mejora genética para caracteres productivos en ganaderías del Libro Genealógico del cerdo Ibérico en la finca La Contienda
Entity where project took place: Centro de I+D en Cerdo Ibérico **Type of entity:** R&D Centre
City of entity: Zafra, Spain
Name principal investigator (PI, Co-PI....): Juan García Casco
Nº of researchers: 8
Funding entity or bodies:
INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
City funding entity: Spain

Start-End date: 24/02/2015 - 24/02/2019
Total amount: 416.718,77 €

4 **Name of the project:** Study of HIV reservoir in peripheral blood and its relation to HCV infection, immune system and microRNAs profile
Entity where project took place: Instituto de Salud Carlos III **Type of entity:** Public Research Body
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): Verónica Briz Sebastián; Amanda Fernández Rodriguez
Nº of researchers: 6
Funding entity or bodies:
Instituto de Salud Carlos III **Type of entity:** Public Research Body
City funding entity: Majadahonda, Community of Madrid, Spain

Start-End date: 2016 - 2018
Total amount: 54.800 €

5 **Name of the project:** RTA2013-00063-C03-01. Efectos de nuevas dietas de bajo coste en el crecimiento, la calidad de canal, carne y grasa en cerdos Ibéricos.
Entity where project took place: Centro de I+D en Cerdo Ibérico **Type of entity:** R&D Centre
City of entity: Zafra, Extremadura, Spain
Name principal investigator (PI, Co-PI....): Juan María García Casco
Nº of researchers: 18
Start-End date: 15/09/2014 - 14/09/2017
Total amount: 122.366,4 €

6 **Name of the project:** Heritability in the UK Biobank
Entity where project took place: The Roslin Institute **Type of entity:** R&D Centre
City of entity: Edinburgh, South Western Scotland, United Kingdom
Name principal investigator (PI, Co-PI....): Albert Tenesa
Start-End date: 2012 - 2015
Total amount: 150.000 €

7 **Name of the project:** RZ2012-00006-00-00-DESARROLLO DE UN PANEL REDUCIDO DE SNPS PARA LA VERIFICACIÓN DEL ORIGEN RACIAL EN REPRODUCTORES INSCRITOS EN EL LIBRO GENEALÓGICO DE LA RAZA PORCINA IBÉRICA
Entity where project took place: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): Luis Silió
Nº of researchers: 9
Funding entity or bodies:
INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
City funding entity: Spain

Start-End date: 2012 - 2015
Total amount: 86.002 €

8 **Name of the project:** AGL2008-04818-C03-03 - Genes candidatos e identificación genómica de loci y rutas genéticas que afectan a la calidad de carne en cerdos
Entity where project took place: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
City of entity: Madrid, Community of Madrid, Spain

Name principal investigator (PI, Co-PI....): Ana Isabel Fernández Ávila
Nº of researchers: 6
Funding entity or bodies:
Ministerio de Ciencia e Innovación **Type of entity:** Ministry
City funding entity: Madrid, Community of Madrid, Spain

Start-End date: 01/01/2009 - 31/12/2011
Total amount: 145.200 €

9 **Name of the project:** CPE-C03-010-C3 - Expresión genómica de QTLs y genes candidatos para calidad de carne en diferentes líneas de porcino
Entity where project took place: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): Luis Silio López
Nº of researchers: 6
Funding entity or bodies:
Ministerio de Ciencia y Tecnología **Type of entity:** Public Research Body

Start-End date: 03/11/2004 - 31/12/2008
Total amount: 209.343 €

10 **Name of the project:** PROFIT 96-0174 - Production of swine reproductive females by crossing very high prolific lines and a new synthetic chinese-european line
Entity where project took place: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
City of entity: Madrid, Community of Madrid, Spain
Name principal investigator (PI, Co-PI....): María del Carmen Rodríguez Valdovinos
Funding entity or bodies:
European Union Structural Funds **Type of entity:** Public Research Body

Start-End date: 22/01/2002 - 22/01/2006
Total amount: 159.268 €

R&D non-competitive contracts, agreements or projects with public or private entities

1 **Name of the project:** Implementación y combinación de técnicas clásicas (evaluación BLUP) e innovadoras (-ómicas y computacionales) en un esquema de selección de cerdos Ibéricos de montanera enfocado a la mejora de la calidad de sus productos
Degree of contribution: Researcher
Name principal investigator (PI, Co-PI....): Juan María García Casco
Nº of researchers: 3
Funding entity or bodies:
SANCHEZ ROMERO CARVAJAL - JABUGO, S.A.
City funding entity: Spain

Start date: 2020 **Duration:** 4 years
Total amount: 65,7 €

2 **Name of the project:** EL DESARROLLO DEL PROGRAMA DE MEJORA EN CERDO IBÉRICO CON ESPECIAL ATENCIÓN A CARACTERES DE CALIDAD DE LA MATERIA PRIMA Y DE LOS PRODUCTOS
Degree of contribution: Collaborator

Name principal investigator (PI, Co-PI....): Juan María García Casco; María del Carmen Rodríguez Valdovinos
Nº of researchers: 2
Participating entity/entities: Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria ; SANCHEZ ROMERO CARVAJAL - JABUGO, S.A.
Funding entity or bodies:
SANCHEZ RODRIGUEZ, C.B.
City funding entity: Spain

Start date: 01/07/2015 **Duration:** 4 years
Total amount: 40.000 €

Scientific and technological activities

Scientific production

H index: 15
Date of application: 06/02/2022
Fuente de Indice H: GOOGLE SCHOLAR

Publications, scientific and technical documents

1 María Muñoz; Riccardo Bozzi; Juan García-Casco; Yolanda Nuñez; A Ribani; O Franci; Fabián García; Martin Škrlep; Giussepina Schiavo; Sebastian Bovo; VJ Utzeri; Rui Charneca; Jose M. Martins; Quintanilla Raquel; Joan Tibau; V Margeta; Ivona Djurkin-Kušec; Marie J. Mercat; Riquet Juliette; Jordi Estellé; Christoph Zimmer; Violeta Razmaite; Jose P. Araujo; Cedomir Radovic; Savic Radomir; Danijel Karolyi; Maurizio Gallo; Marjeta ?andek-Potokar; Ana I. Fernández; Luca Fontanesi; Cristina Óvilo. Genomic diversity, linkage disequilibrium and selection signatures in European local pig breeds assessed with a high density SNP chip. Scientific Reports. 9 - 1, pp. 1 - 14. Nature Publishing Group, 19/09/2019. Available on-line at: <https://doi.org/10.1371/journal.pone.0207475>.

Type of production: Scientific paper **Format:** Journal
Position of signature: 1
Corresponding author: No
Impact source: ISI **Category:** Science Edition - MULTIDISCIPLINARY SCIENCES
Impact index in year of publication: 4.525 **Journal in the top 25%:** Yes
Position of publication: 15 **No. of journals in the cat.:** 69

Source of citations: Google Scholar **Citations:** 5

Relevant results: Genetic characterization of local breeds is essential to preserve their genomic variability, to advance conservation policies and to contribute to their promotion and sustainability. Genomic diversity of twenty European local pig breeds and a small sample of Spanish wild pigs was assessed using high density SNP chips. A total of 992 DNA samples were analyzed with the GeneSeek Genomic Profiler (GGP) 70K HD porcine genotyping chip. Genotype data was employed to compute genetic diversity, population differentiation and structure, genetic distances, linkage disequilibrium and effective population size. Our results point out several breeds, such as Turopolje, Apulo Calabrese, Casertana, Mora Romagnola and Lithuanian indigenous wattle, having the lowest genetic diversity, supported by low heterozygosity and very small effective population size, demonstrating the need of enhanced conservation strategies. Principal components analysis showed the clustering of the individuals of the same breed, with few breeds being clearly isolated from the rest. Several breeds were partially overlapped, suggesting genetic closeness, which was particularly marked in the case of Iberian and Alentejana breeds. Spanish wild boar was also narrowly related to other western populations, in agreement with recurrent admixture

between wild and domestic animals. We also searched across the genome for loci under diversifying selection based on FST outlier tests. Candidate genes that may underlie differences in adaptation to specific environments and productive systems and phenotypic traits were detected in potentially selected genomic regions.
Relevant publication: Yes

2 María Muñoz; Riccardo Bozzi; Fabián García; Yolanda Nuñez; Claudia Geraci; Alessando Crovetti; Juan García-Casco; Estefania Alves; Martin Škrlep; Rui Charneca; Jose M. Martins; Quintanilla Raquel; Joan Tibau; Goran Kušec; Ivona Djurkin-Kušec; Marie J. Mercat; Riquet Juliette; Jordi Estellé; Christoph Zimmer; Violeta Razmaite; Jose P. Araujo; Cedomir Radovic; Savi? Radomir; Danijel Karolyi; Maurizio Gallo; Marjeta ?andek-Potokar; Luca Fontanesi; Ana I. Fernández; Cristina Óvilo. Diversity across major and candidate genes in European local pig breeds. PLOS ONE. 13 - 11, pp. 1 - 30. Public Library of Science, 20/11/2018. Available on-line at: <https://doi.org/10.1371/journal.pone.0207475>.

Type of production: Scientific paper
Format: Journal
Corresponding author: No
Impact source: ISI
Category: MULTIDISCIPLINARY SCIENCES
Impact index in year of publication: 2,766
Journal in the top 25%: Yes
Position of publication: 15
No. of journals in the cat.: 64
Source of citations: Google Scholar
Citations: 17

Relevant results: The aim of this work was to analyse the distribution of causal and candidate mutations associated to relevant productive traits in twenty local European pig breeds. Also, the potential of the SNP panel employed for elucidating the genetic structure and relationships among breeds was evaluated. Most relevant genes and mutations associated with pig morphological, productive, meat quality, reproductive and disease resistance traits were prioritized and analyzed in a maximum of 47 blood samples from each of the breeds (Alentejana, Apulo-Calabrese, Basque, Bísara, Majorcan Black, Black Slavonian (Crna slavonska), Casertana, Cinta Senese, Gascon, Iberian, Krškopolje (Krškopoljski), Lithuanian indigenous wattle, Lithuanian White Old Type, Mora Romagnola, Moravka, Nero Siciliano, Sarda, Schwäbisch-Hällisches Schwein (Swabian Hall pig), Swallow-Bellied Mangalitsa and Turopolje). We successfully analyzed allelic variation in 39 polymorphisms, located in 33 candidate genes. Results provide relevant information regarding genetic diversity and segregation of SNPs associated to production and quality traits. Coat color and morphological trait-genes that show low level of segregation, and fixed SNPs may be useful for traceability. On the other hand, we detected SNPs which may be useful for association studies as well as breeding programs. For instance, we observed predominance of alleles that might be unfavorable for disease resistance and boar taint in most breeds and segregation of many alleles involved in meat quality, fatness and growth traits. Overall, these findings provide a detailed catalogue of segregating candidate SNPs in 20 European local pig breeds that may be useful for traceability purposes, for association studies and for breeding schemes. Population genetic analyses based on these candidate genes are able to uncover some clues regarding the hidden genetic substructure of these populations, as the extreme genetic closeness between Iberian and Alentejana breeds and an uneven admixture of the breeds studied. The results are in agreement with available knowledge regarding breed history and management, although largest panels of neutral markers should be employed to get a deeper understanding of the population's structure and relationships.
Relevant publication: Yes

3 María Muñoz Muñoz; Ricardo Pong-Wong; Oriol Canela Xandri; Konrad Rawlik; Chris S Haley; Albert Tenesa. Evaluating the contribution of genetic and familial shared environment to common disease using the UK Biobank. Nature Genetics. Accepted - 48, pp. 980 - 983. Nature Publishing Group, 18/07/2016.

Type of production: Scientific paper
Format: Journal
Corresponding author: No
Impact source: ISI
Category: Genetics
Impact index in year of publication: 31.616
Journal in the top 25%: Yes
Position of publication: 2
No. of journals in the cat.: 166
Source of citations: Google Scholar
Citations: 68

Relevant results: Genome-wide association studies have detected many loci underlying susceptibility to disease, but most of the genetic factors that contribute to disease susceptibility remain unknown. Here we provide evidence that part of the 'missing heritability' can be explained by an overestimation of heritability. We estimated the

heritability of 12 complex human diseases using family history of disease in 1,555,906 individuals of white ancestry from the UK Biobank. Estimates using simple family-based statistical models were inflated on average by ~47% when compared with those from structural equation modeling (SEM), which specifically accounted for shared familial environmental factors. In addition, heritabilities estimated using SNP data explained an average of 44.2% of the simple family-based estimates across diseases and an average of 57.3% of the SEM-estimated heritabilities, accounting for almost all of the SEM heritability for hypertension. Our results show that both genetics and familial environment make substantial contributions to familial clustering of disease.

Relevant publication: Yes

4 María Muñoz; María del Carmen Rodríguez; Estefânia Alves; Josep María Folch; Noelia Ibáñez Escriche; Luis Silió; Ana Isabel Fernández. Genome-wide analysis of porcine backfat and intramuscular fat fatty acid composition using high-density genotyping and expression data. BMC Genomics. 14 - 845, Biomed Central, 02/12/2013.

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: Science Edition - GENETICS & HEREDITY
Impact index in year of publication: 4.397
Journal in the top 25%: Yes
Position of publication: 31
No. of journals in the cat.: 161
Source of citations: Google Scholar
Citations: 41

Relevant results: Porcine fatty acid composition is a key factor for quality and nutritive value of pork. Several QTLs for fatty acid composition have been reported in diverse fat tissues. The results obtained so far seem to point out different genetic control of fatty acid composition conditional on the fat deposits. Those studies have been conducted using simple approaches and most of them focused on one single tissue. The first objective of the present study was to identify tissue-specific and tissue-consistent QTLs for fatty acid composition in backfat and intramuscular fat, combining linkage mapping and GWAS approaches and conducted under single and multitrait models. A second aim was to identify powerful candidate genes for these tissue-consistent QTLs, using microarray gene expression data and following a targeted genetical genomics approach. The single model analyses, linkage and GWAS, revealed over 30 and 20 chromosomal regions, 24 of them identified here for the first time, specifically associated to the content of diverse fatty acids in BF and IMF, respectively. The analyses with multitrait models allowed identifying for the first time with a formal statistical approach seven different regions with pleiotropic effects on particular fatty acids in both fat deposits. The most relevant were found on SSC8 for C16:0 and C16:1(n-7) fatty acids, detected by both linkage and GWAS approaches. Other detected pleiotropic regions included one on SSC1 for C16:0, two on SSC4 for C16:0 and C18:2, one on SSC11 for C20:3 and the last one on SSC17 for C16:0. Finally, a targeted eQTL scan focused on regions showing tissue-consistent effects was conducted with Longissimus and fat gene expression data. Some powerful candidate genes and regions were identified such as the PBX1, RGS4, TRIB3 and a transcription regulatory element close to ELOVL6 gene to be further studied. Complementary genome scans have confirmed several chromosome regions previously associated to fatty acid composition in backfat and intramuscular fat, but even more, to identify new ones. Although most of the detected regions were tissue-specific, supporting the hypothesis that the major part of genes affecting fatty acid composition differs among tissues, seven chromosomal regions showed tissue-consistent effects. Additional gene expression analyses have revealed powerful target regions to carry the mutation responsible for the pleiotropic effects.

Relevant publication: Yes

5 Daniel Valle-Miralles; Óscar Brochado-Kith; Alicia Gómez-Sanz; Luz Martín-Carbonero; Pablo Ryan; Ignacio De los Santos; Juan M Castro; Juan Troya; Mario Mayoral-Muñoz; Guillermo Cuevas; Paula Martínez-Román; Juan Sanz-Sanz; María Muñoz; María A Jiménez Sousa; Salvador Resino; Verónica Briz; Amanda Fernández-Rodríguez. HCV eradication with DAAs differently affects HIV males and females: A whole miRNA sequencing characterization. Biomedicine & Pharmacotherapy. 145, pp. 112405. Elsevier, 01/01/2022.

Type of production: Scientific paper
Format: Journal
Position of signature: 13
Total no. authors: 17
Corresponding author: No
Impact source: ISI
Category: MEDICINE, RESEARCH & EXPERIMENTAL
Impact index in year of publication: 6,53
Journal in the top 25%: Yes
Position of publication: 27
No. of journals in the cat.: 140

6 Muñoz, Maria; Fernandez-Barroso, Miguel A.; Lopez, Adrian; Caraballo, Carmen; Yolanda Núñez; Óvilo, Cristina; Elena Gómez; Garcia-Casco, Juan M.. Consequences of a low protein diet on the liver and longissimus dorsi transcriptome of Duroc × Iberian crossbred pigs. Animal. 15 - 12, pp. 100408. Elsevier, 12/2021.

Type of production: Scientific paper
Format: Journal
Position of signature: 1
Total no. authors: 8
Corresponding author: Yes
Impact source: ISI
Category: AGRICULTURE, DAIRY & ANIMAL SCIENCE
Impact index in year of publication: 3,24
Journal in the top 25%: Yes
Position of publication: 9
No. of journals in the cat.: 63

7 Daniel Valle-Miralles; Óscar Brochado-Kith; Luz Martín-Carbonero; Luz Domínguez-Domínguez; Pablo Ryan; Ignacio De los Santos; Sara De la Fuente; Juan M Castro; María Lagarde; Guillermo Cuevas; Mario Mayoral-Muñoz; Mariano Matarranzz; Victorino Díez; Alicia Gómez-Sanz; Paula Martínez-Román; Celia Crespo-Bermejo; Claudia Palladino; María Muñoz; María A Jiménez Sousa; Salvador Resino; Verónica Briz; Amanda Fernández-Rodríguez. Different HCV Exposure Drives Specific miRNA Profile in PBMCs of HIV Patients. Biomedicines. 9 - 11, pp. 1627. Multidisciplinary Digital Publishing Institute, 01/11/2021.

Type of production: Scientific paper
Format: Journal
Position of signature: 18
Total no. authors: 22
Corresponding author: No
Impact source: ISI
Category: MEDICINE, RESEARCH & EXPERIMENTAL
Impact index in year of publication: 6,081
Journal in the top 25%: Yes
Position of publication: 32
No. of journals in the cat.: 140

8 Miguel Ángel Fernández-Barroso; Parrini Silvia; María Muñoz; Patricia Palma-Granados; Gema Matos; Luisa Ramírez; Alessandro Crovetti; Juan María García-Casco; Riccardo Bozzi. Use of NIRS for the assessment of meat quality traits in open-air free-range Iberian pigs. Journal of Food Composition and Analysis. pp. 104018. 09/2021.

Type of production: Scientific paper
Format: Journal
Corresponding author: No
Impact source: ISI
Category: FOOD SCIENCE & TECHNOLOGY
Impact index in year of publication: 4,556
Journal in the top 25%: Yes
Position of publication: 30
No. of journals in the cat.: 144

9 Yolanda Núñez; Čedomir Radović; Radomir Savić; Juan-María García-Casco; Marjeta Čandek-Potokar; Rita Benítez; Dragan Radojković; Milos Lukić; Marija Gogić; María Muñoz; Luca Fontanesi; Cristina Óvilo. Muscle Transcriptome Analysis Reveals Molecular Pathways Related to Oxidative Phosphorylation, Antioxidant Defense, Fatness and Growth in Mangalitsa and Moravka Pigs. Animals. 11 - 3, pp. 844. MDPI, 16/03/2021.

Type of production: Scientific paper
Format: Journal
Corresponding author: No
Impact source: ISI
Category: AGRICULTURE, DAIRY & ANIMAL SCIENCE
Impact index in year of publication: 2,752
Journal in the top 25%: Yes
Position of publication: 13
No. of journals in the cat.: 63

10 Juan María García-Casco; Carmen L. Delgado-Chavero; Elena Zapata; Andrés Paredes; María Muñoz; Ana I Rey. Discriminant analysis using fatty acids profile, stable carbon isotopes and tocopherols content as tool for feeding system prediction in Iberian pigs. Spanish Journal of Agricultural Research. 18 - 4, SPANISH NATL INST AGRICULTURAL & FOOD RESEARCH & TECHNOLOGY, 09/02/2021.

Type of production: Scientific paper
Format: Journal
Position of signature: 5

Corresponding author: No

Impact source: ISI
Category: AGRICULTURE, MULTIDISCIPLINARY
Impact index in year of publication: 2019
Journal in the top 25%: No
Position of publication: 28
No. of journals in the cat.: 58

Relevant results: Aim of study: The application of three analytical methods (fatty acids: FA, tocopherols: TOC, and isotope ratio: ISO) to distinguish the feeding type received by Iberian pigs during the fattening stage. Area of study: This distinction is very important for the labelling of Iberian high-quality products in the Quercus forest located on the southwest of Iberian Peninsula, where several production systems coexist. Material and methods: Discriminant analysis on fat samples with unknown background obtained from commercial pigs was applied. The feasibility of the combination method to determine the authentication of feeding background was studied on samples from different fattening system: free-range feeding with acorn and pastures (BE); free-range feeding acorn and pastures plus commercial feeds (RE); open-air feeding with commercial feeds (CA); standard feeding with commercial feeds (CE). Main results: In a first application of the methods, the overall success rate was 60.1% for FA, 49.7% for ISO and 49.3% for TOC. When some of the batches were reclassified attending to those previous results and additional information available about farm characteristics, ISO and TOC analyses had a 70% of success rate in the four categories, whereas FA showed 40.5%, attributable to the use of high-oleic commercial diets. The predictions improved with the method combination. The ISO+TOC combination achieved a 84.1% of success in prediction. When it was reduced to just two categories (acorn vs non-acorn), the success reached a 95% for FA+TOC and ISO+TOC. Research highlights: The use of these methods as a complementary tool for quality controls is highly recommended to avoid undesirable misclassifications.

11 Samuele Bovo; Giuseppina Schiavo; Anisa Ribani; Valerio J Utzeri; Valeria Taurisano; Mohamad Ballan; Maria Mu{\~n}oz; Estefania Alves; Jose P Araujo; Riccardo Bozzi; others. Describing variability in pig genes involved in coronavirus infections for a One Health perspective in conservation of animal genetic resources. Scientific Reports. 11 - 1, pp. 1 - 14. Nature Publishing Group, 2021.

Type of production: Scientific paper
Format: Journal
Position of signature: 7
Corresponding author: No

Impact source: ISI
Category: MULTIDISCIPLINARY SCIENCES
Impact index in year of publication: 2019
Journal in the top 25%: Yes
Position of publication: 17
No. of journals in the cat.: 71

12 Schiavo G.; Bovo S.; Muñoz M.; Ribani A; Alves E.; Araújo J.P.; Bozzi R.; Čandek-Potokar M.; Charneca R.; Fernandez A.I.; Gallo M.; García F.; Karolyi D.; Kušec G.; Martins J.M.; Mercat M.J.; Núñez Y.; Quintanilla R.; Radović; Razmaite V.; Riquet J.; Savić R.; Usai G.; Utzeri VJ.; Zimmer C.; Ovilo C.; Fontanesi L.. Runs of homozygosity provide a genome landscape picture of inbreeding and genetic history of European autochthonous and commercial pig breeds. Animal Genetics. 2021. ISSN 02689146

DOI: 10.1111/age.13045
Type of production: Scientific paper
Format: Journal
Position of signature: 3
Corresponding author: No

Impact source: ISI
Category: AGRICULTURE, DAIRY & ANIMAL SCIENCE
Impact index in year of publication: 2,841
Journal in the top 25%: Yes
Position of publication: 6
No. of journals in the cat.: 63

Relevant results: ROHs are long stretches of DNA homozygous at each polymorphic position. The proportion of genome covered by ROHs and their length are indicators of the level and origin of inbreeding. Frequent common ROHs within the same population define ROH islands and indicate hotspots of selection. In this work, we investigated ROHs in a total of 1131 pigs from 20 European local pig breeds and in three cosmopolitan breeds, genotyped with the GGP Porcine HD Genomic Profiler. plink software was used to identify ROHs. Size classes and genomic inbreeding parameters were evaluated. ROH islands were defined by evaluating different thresholds of homozygous SNP frequency. A functional overview of breed-specific ROH islands was obtained via over-representation analyses of GO biological processes. Mora Romagnola and Turopolje breeds had the

largest proportions of genome covered with ROH (~1003 and ~955 Mb respectively), whereas Nero Siciliano and Sarda breeds had the lowest proportions (~207 and 247 Mb respectively). The highest proportion of long ROH (>16 Mb) was in Apulo-Calabrese, Mora Romagnola and Casertana. The largest number of ROH islands was identified in the Italian Landrace (n = 32), Cinta Senese (n = 26) and Lithuanian White Old Type (n = 22) breeds. Several ROH islands were in regions encompassing genes known to affect morphological traits. Comparative ROH structure analysis among breeds indicated the similar genetic structure of local breeds across Europe. This study contributed to understanding of the genetic history of the investigated pig breeds and provided information to manage these pig genetic resources.

13 Fernandez-Barroso, Miguel A.; Silio, Luis; Rodriguez, Carmen; Palma-Granados, Patricia; Lopez, Adrian; Caraballo, Carmen; Sanchez-Esquiliche, Fernando; Gomez-Carballar, Fernando; Garcia-Casco, Juan M.; Muñoz, Maria. Genetic parameter estimation and gene association analyses for meat quality traits in open-air free-range Iberian pigs. JOURNAL OF ANIMAL BREEDING AND GENETICS. 137 - 6, pp. 581 - 598. Wiley Online, 11/2020. ISSN 0931-2668

DOI: 10.1111/jbg.12498

PMID: 32761820

Type of production: Scientific paper

Format: Journal

Position of signature: 10

Corresponding author: No

Impact source: ISI

Category: AGRICULTURE, DAIRY & ANIMAL SCIENCE

Impact index in year of publication: 1,822

Journal in the top 25%: Yes

Position of publication: 13

No. of journals in the cat.: 63

Source of citations: WOS

Citations: 1

Relevant results: Meat quality of Iberian pigs is defined by the combination of their genetic characteristics and the particular production system. To carry out a genetic analysis of the main meat quality traits, we estimated their heritabilities, genetic correlations and the association effects of 32 selected SNPs of 12 candidate genes. A total of ten traits were measured in longissimus dorsi samples from 1,199 Iberian pigs fattened in the traditional free-range system: water holding capacity (thawing, cooking and centrifuge force water losses), instrumental colour (lightness L*, redness a* and yellowness b*), myoglobin content, shear force on cooked meat, and shear force and maximum compression force on dry-cured loin. Estimated heritability values were low to moderate (0.01 to 0.43) being the lowest for L* and the highest for cooking loss. Strong genetic correlations between water holding capacity traits (0.93 to 0.96) and between myoglobin content and a* (0.94) were observed. The association analyses revealed 19 SNPs significantly associated with different traits. Consistent and strong effects were observed between PRKAG3 SNPs (rs319678464G > C and rs330427832C > T), MYH3_rs81437544T > C, CASP3_rs319658214G > T and CTSL_rs332171512A > G and water losses. Also for CAPN1_rs81358667G > A and CASP3_rs319658214G > T and shear force. The SNPs mapping on PRKAG3 showed the highest effects on Minolta colour traits. Genotyping of these SNPs could be useful for the selection of Iberian young boars with similar estimated breeding values for productive traits.

14 Bovo, Samuele; Ribani, Anisa; Munoz, Maria; Alves, Estefania; Araujo, Jose P.; Bozzi, Riccardo; Candek-Potokar, Marjeta; Charneca, Rui; Di Palma, Federica; Etherington, Graham; Fernandez, Ana, I; Garcia, Fabian; Garcia-Casco, Juan; Karolyi, Danijel; Gallo, Maurizio; Margeta, Vladimir; Martins, Jose Manuel; Mercat, Marie J.; Moscatelli, Giulia; Nunez, Yolanda; Quintanilla, Raquel; Radovic, Cedomir; Razmaite, Violeta; Riquet, Juliette; Savic, Radomir; Schiavo, Giuseppina; Usai, Graziano; Utzeri, Valerio J.; Zimmer, Christoph; Ovilo, Cristina; Fontanesi, Luca. Whole-genome sequencing of European autochthonous and commercial pig breeds allows the detection of signatures of selection for adaptation of genetic resources to different breeding and production systems. GENETICS SELECTION EVOLUTION. 52 - 1, pp. 1 - 19. 26/06/2020. ISSN 0999-193X

Type of production: Scientific paper

Format: Journal

Corresponding author: No

Impact source: ISI

Category: AGRICULTURE, DAIRY & ANIMAL SCIENCE

Impact index in year of publication: 3,95

Journal in the top 25%: Yes

Position of publication: 4

No. of journals in the cat.: 63

Relevant results: Natural and artificial directional selection in cosmopolitan and autochthonous pig breeds and wild boars have shaped their genomes and resulted in a reservoir of animal genetic diversity. Signatures of selection are the result of these selection events that have contributed to the adaptation of breeds to different environments and production systems. In this study, we analysed the genome variability of 19 European autochthonous pig breeds (Alentejana, Bísara, Majorcan Black, Basque, Gascon, Apulo-Calabrese, Casertana, Cinta Senese, Mora Romagnola, Nero Siciliano, Sarda, Krškopolje pig, Black Slavonian, Turopolje, Moravka, Swallow-Bellied Mangalitsa, Schwäbisch-Hällisches Schwein, Lithuanian indigenous wattle and Lithuanian White old type) from nine countries, three European commercial breeds (Italian Large White, Italian Landrace and Italian Duroc), and European wild boars, by mining whole-genome sequencing data obtained by using a DNA-pool sequencing approach. Signatures of selection were identified by using a single-breed approach with two statistics [within-breed pooled heterozygosity (HP) and fixation index (FST)] and group-based FST approaches, which compare groups of breeds defined according to external traits and use/specialization/type. We detected more than 22 million single nucleotide polymorphisms (SNPs) across the 23 compared populations and identified 359 chromosome regions showing signatures of selection. These regions harbour genes that are already known or new genes that are under selection and relevant for the domestication process in this species, and that affect several morphological and physiological traits (e.g. coat colours and patterns, body size, number of vertebrae and teats, ear size and conformation, reproductive traits, growth and fat deposition traits). Wild boar related signatures of selection were detected across all the genome of several autochthonous breeds, which suggests that crossbreeding (accidental or deliberate) occurred with wild boars. Our findings provide a catalogue of genetic variants of many European pig populations and identify genome regions that can explain, at least in part, the phenotypic diversity of these genetic resources.

15 Bovo, S.; Ribani, A.; Munoz, M.; Alves, E.; Araujo, J. P.; Bozzi, R.; Charneca, R.; Di Palma, F.; Etherington, G.; Fernandez, A., I; Garcia, F.; Garcia-Casco, J.; Karolyi, D.; Gallo, M.; Gvozdanovic, K.; Martins, J. M.; Mercat, M. J.; Nunez, Y.; Quintanilla, R.; Razmaite, V; Riquet, J.; Savic, R.; Schiavo, G.; Skrlep, M.; Usai, G.; Utzeri, V. J.; Zimmer, C.; Ovilo, C.; Fontanesi, L.; Radovie, C.. Genome-wide detection of copy number variants in European autochthonous and commercial pig breeds by whole-genome sequencing of DNA pools identified breed-characterising copy number states. ANIMAL GENETICS. 51, 08/06/2020. ISSN 0268-9146

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: AGRICULTURE, DAIRY & ANIMAL SCIENCE
Impact index in year of publication: 2,841
Journal in the top 25%: Yes
Position of publication: 6
No. of journals in the cat.: 63

Relevant results: In this study, we identified copy number variants (CNVs) in 19 European autochthonous pig breeds and in two commercial breeds (Italian Large White and Italian Duroc) that represent important genetic resources for this species. The genome of 725 pigs was sequenced using a breed-specific DNA pooling approach (30–35 animals per pool) obtaining an average depth per pool of 42×. This approach maximised CNV discovery as well as the related copy number states characterising, on average, the analysed breeds. By mining more than 17.5 billion reads, we identified a total of 9592 CNVs (~683 CNVs per breed) and 3710 CNV regions (CNVRs; 1.15% of the reference pig genome), with an average of 77 CNVRs per breed that were considered as private. A few CNVRs were analysed in more detail, together with other information derived from sequencing data. For example, the CNVR encompassing the KIT gene was associated with coat colour phenotypes in the analysed breeds, confirming the role of the multiple copies in determining breed-specific coat colours. The CNVR covering the MSRB3 gene was associated with ear size in most breeds. The CNVRs affecting the ELOVL6 and ZNF622 genes were private features observed in the Lithuanian Indigenous Wattle and in the Turopolje pig breeds respectively. Overall, the genome variability unravelled here can explain part of the genetic diversity among breeds and might contribute to explain their origin, history and adaptation to a variety of production systems.

16 M Muñoz; JM García-Casco; E Alves; R Benítez; C Barragán; C Caraballo; AI Fernández; F García; Y Núñez; C Óvilo; A Fernández; C; L. Development of a 64 SNV panel for breed authentication in Iberian pigs and their derived meat products. Meat Science. pp. 108152 - 108152. Elsevier, 2020.

Type of production: Scientific paper
Format: Journal
Corresponding author: Yes

17 Fernandez-Barroso, Miguel Angel; Caraballo, Carmen; Silio, Luis; Rodriguez, Carmen; Nunez, Yolanda; Sanchez-Esquiliche, Fernando; Matos, Gema; Garcia-Casco, Juan Maria; Munoz, Maria. Differences in the Loin Tenderness of Iberian Pigs Explained through Dissimilarities in Their Transcriptome Expression Profile. ANIMALS. 10 - 9, pp. 1715. MDPI, 2020. ISSN 2076-2615

DOI: 10.3390/ani10091715

PMID: 32971875

Type of production: Scientific paper
Format: Journal
Corresponding author: No
Impact source: ISI
Category: AGRICULTURE, DAIRY & ANIMAL SCIENCE
Impact index in year of publication: 2019
Journal in the top 25%: Yes
Position of publication: 10
No. of journals in the cat.: 63

Relevant results: enderness is one of the most important meat quality traits and it can be measured through shear force with the Warner–Bratzler test. In the current study, we use the RNA-seq technique to analyze the transcriptome of Longissimus dorsi (LD) muscle in two groups of Iberian pigs (Tough and Tender) divergent for shear force breeding values. We identified 200 annotated differentially expressed genes (DEGs) and 245 newly predicted isoforms. The RNAseq expression results of 10 genes were validated with quantitative PCR (qPCR). Functional analyses showed an enrichment of DE genes in biological processes related to proteolysis (CTSC, RHOD, MYH8, ACTC1, GADD45B, CASQ2, CHRNA9 and ANKRD1), skeletal muscle tissue development (ANKRD1, DMD, FOS and MSTN), lipid metabolism (FABP3 and PPARGC1A) and collagen metabolism (COL14A1). The upstream analysis revealed a total of 11 transcription regulatory factors that could regulate the expression of some DEGs. Among them, IGF1, VGLL3 and PPARG can be highlighted since they regulate the expression of genes involved in biological pathways that could affect tenderness. The experiment revealed a set of candidate genes and regulatory factors suggestive to search polymorphisms that could be incorporated in a breeding program for improving meat tenderness.

18 Daniel Crespo; Lourdes Migura-Garcia; Jordi Estellé; Lourdes Criado-Mesas; Manuel Revilla; Anna Castelló; María Muñoz; Juan M García-Casco; Ana Isabel Fernández; María Ballester; Josep María Folch. Association between the pig genome and its gut microbiota composition. Scientific Reports. 9 - 1, pp. 1 - 11. Nature Publishing Group, 19/06/2019.

Type of production: Scientific paper
Format: Journal
Corresponding author: No
Impact source: ISI
Category: MULTIDISCIPLINARY SCIENCES
Impact index in year of publication: 4.011
Journal in the top 25%: Yes
Position of publication: 15
No. of journals in the cat.: 69

Source of citations: Google Scholar
Citations: 5

Relevant results: The gut microbiota has been evolving with its host along the time creating a symbiotic relationship. In this study, we assess the role of the host genome in the modulation of the microbiota composition in pigs. Gut microbiota compositions were estimated through sequencing the V3-V4 region of the 16S rRNA gene from rectal contents of 285 pigs. A total of 1,261 operational taxonomic units were obtained and grouped in 18 phyla and 101 genera. Firmicutes (45.36%) and Bacteroidetes (37.47%) were the two major phyla obtained, whereas at genus level Prevotella (7.03%) and Treponema (6.29%) were the most abundant. Pigs were also genotyped with a high-throughput method for 45,508 single nucleotide polymorphisms that covered the entire pig genome. Subsequently, genome-wide association studies were made among the genotypes of these pigs and their gut microbiota composition. A total of 52 single-nucleotide polymorphisms distributed in 17 regions along the pig genome were associated with the relative abundance of six genera; Akkermansia, CF231, Phascolarctobacterium, Prevotella, SMB53, and Streptococcus. Our results suggest 39 candidate genes that may be modulating the microbiota composition and manifest the association between host genome and gut microbiota in pigs.

19 María Muñoz; Juan María García-Casco; Carmen Caraballo; Miguel Ángel Fernández-Barroso; Fernando Sánchez-Esquiliche; Fernando Gómez; María del Carmen Rodríguez; Luis Silió. Identification of Candidate Genes and Regulatory Factors Underlying Intramuscular Fat Content Through Longissimus Dorsi Transcriptome

Analyses in Heavy Iberian Pigs. Frontiers in Genetics. 9, pp. 608 - 608. 04/12/2018. Available on-line at: <https://www.frontiersin.org/article/10.3389/fgene.2018.00608>. ISSN 1664-8021

Type of production: Scientific paper
Format: Journal
Corresponding author: Yes

Impact source: ISI
Category: GENETICS & HEREDITY
Impact index in year of publication: 4,151
Journal in the top 25%: Yes
Position of publication: 36
No. of journals in the cat.: 171

Source of citations: Google-Scholar
Citations: 2

Relevant results: One of the most important determinants of meat quality is the intramuscular fat (IMF) content. The development of high-throughput techniques as RNA-seq allows identifying gene pathways and networks with a differential expression (DE) between groups of animals divergent for a particular trait. The Iberian pig is characterized by having an excellent meat quality and a high content of intramuscular fat. The objectives of the present study were to analyze the longissimus dorsi transcriptome of purebred Iberian pigs divergent for their IMF breeding value to identify differential expressed genes and regulatory factors affecting gene expression. RNA-seq allowed identifying ~10,000 of the 25,878 annotated genes in the analyzed samples. In addition to this, 42.46% of the identified transcripts corresponded to newly predicted isoforms. Differential expression analyses revealed a total of 221 DE annotated genes and 116 DE new isoforms. Functional analyses identified an enrichment of overexpressed genes involved in lipid metabolism (FASN, SCD, ELOVL6, DGAT2, PLIN1, CIDEC, and ADIPOQ) in animals with a higher content of IMF and an enrichment of overexpressed genes related with myogenesis and adipogenesis (EGR1, EGR2, EGR3, JUNB, FOSB, and SEMA4D) in the animals with a lower content of IMF. In addition to this, potential regulatory elements of these DE genes were identified. Co-expression networks analyses revealed six long non-coding RNAs (lncRNAs) (ALDBSSCG0000002079, ALDBSSCG0000002093, ALDBSSCG0000003455, ALDBSSCG0000004244, ALDBSSCG0000005525, and ALDBSSCG0000006849) co-expressed with SEMA4D and FOSB genes and one (ALDBSSCG0000004790) with SCD, ELOVL6, DGAT2, PLIN1, and CIDEC. Analyses of the regulatory impact factors (RIFs) revealed 301 transcriptionally regulatory factors involved in expression differences, with five of them involved in adipogenesis (ARID5B, CREB1, VDR, ATF6, and SP1) and other three taking part of myogenesis and development of skeletal muscle (ATF3, KLF11, and MYF6). The results obtained provide relevant insights about the genetic mechanisms underlying IMF content in purebred Iberian pigs and a set of candidate genes and regulatory factors for further identification of polymorphisms susceptible of being incorporated in a selection program.

20 Ángel M Martínez-Montes; Almudena Fernández; María Muñoz; Jose Luis Noguera; Josep María Folch; Ana Isabel Fernández. Using genome wide association studies to identify common QTL regions in three different genetic backgrounds based on Iberian pig breed. Plos One. 13(3): e0190184, PLOS, 09/03/2018.

Type of production: Scientific paper
Format: Journal
Corresponding author: No

Impact source: ISI
Category: MULTIDISCIPLINARY SCIENCES
Impact index in year of publication: 2,766
Journal in the top 25%: Yes
Position of publication: 15
No. of journals in the cat.: 64

Source of citations: Google Scholar
Citations: 1

Relevant results: One of the major limitation for the application of QTL results in pig breeding and QTN identification has been the limited number of QTL effects validated in different animal material. The aim of the current work was to validate QTL regions through independent and joined genome wide association analyses for growth, fatness and premier cut yields in three different genetic backgrounds based on Iberian pigs, which has a major role in the analysis due to its high productive relevance. The results revealed 22 common QTL regions located on nine different autosomes, 15 identified in at least two of the independent backcrosses and the merged dataset, and seven regions identified in the merge dataset (joined analysis) and no identified in the independent analyses. Moreover, 58 QTL regions were specifically identified in one of the three backcrosses. Beyond identifying and validating QTLs, candidate genes and mutation within the most interesting regions have been explored using functional annotation, gene expression data and polymorphisms identification from RNA-Seq data. A total of 105 candidate genes were selected, 24 genes for the common QTL regions and 81 genes for specific backcross QTL regions, and a list of polymorphisms on genes CAST, IL4R, CAV1, MLH1, HP, SELL, SELP and CXCR4 are proposed as candidate mutation to be further investigated.

21 María Muñoz Muñoz; Fernando Sánchez Esquilache; Carmen Caraballo; Jose María Pariente; Carmen Rodríguez Valdovinos; Luis Silió López; Juan María García Casco. Animal breeding scheme applied to the quality of Bellota 100% Iberian pig. Archivos de Zootecnia. 67 - Supplement, pp. 9 - 11. Universidad de Córdoba, 15/01/2018.

Type of production: Scientific paper
Format: Journal
Corresponding author: Yes
Impact source: SJR
Category: Agricultural and Biological Sciences Animal Science and Zoology
Impact index in year of publication: 0.248
Journal in the top 25%: No
Position of publication: 1.343
No. of journals in the cat.: 1.954
Source of citations: Google Scholar
Citations: 1

Relevant results: Selection programs are not frequent in the extensive Iberian porcine sector. The traditional company of Iberian pig products located in Jabugo (Sierra de Huelva), Sánchez Romero Carvajal (SRC), with the collaboration and assessment of the Animal Breeding Department of INIA, is making from the year 2012 an unusual effort to develop and implement a breeding selection scheme focused on the Iberian purebred products labelled as Bellota. The animals involved in this program belong to one herd which is placed in two different farms, Montecastilla and Tejarejo (La Granada de Riotinto). 1,205 animals of known pedigree were controlled for selection of growth, body composition, meat and fat quality traits. The main registered traits were average daily gain in montanera, slaughter and carcass weight and weight of premium cuts (ham, shoulders and loins). Besides, backfat fatty acid profile and quality traits as intramuscular fat percentage, color, melted and cooked water loss and shear force were measured in loin as quality traits. Breeding values for these traits were estimated using an Animal model. Genetic predictions for maternal traits (number of piglets born alive and litter weight at weaning) were performed also using Animal models. Data from 5,134 litters born in 88 batches of, 1456 dams and 22 sires were used. This information allowed estimating heritability and genetic correlation as well as to build a combined index for each trait weighting the genetic values by their corresponding economic values. In addition to this, molecular genetic studies on some of the traits cited above are also being implemented. These studies will allow increasing the efficiency of the conventional selection program in the future.

22 Carmen Caraballo; María Muñoz Muñoz; Carmen Rodríguez Valdovinos; Luis Silió López; Juan María García Casco. Racial verification of Iberian ham and shoulders commercialized in Spanish supermarkets. Archivos de Zootecnia. 67 - Supplement, pp. 5 - 8. Universidad de Córdoba, 15/01/2018.

Type of production: Scientific paper
Format: Journal
Corresponding author: Yes
Impact source: SJR
Category: Agricultural and Biological Sciences Animal Science and Zoology
Impact index in year of publication: 0.248
Journal in the top 25%: No
Position of publication: 1.343
No. of journals in the cat.: 1.954
Source of citations: Google Scholar
Citations: 1

Relevant results: 116 problem samples of sliced packs commercialized as “Iberian” (50% Iberian origin x 50% Duroc origin) were genotyped with a genetic traceability chip. The genotyping data was analysed using BAPS 5.3. A percentage of Iberian genome lower than 40% was estimated for the 34.5% of samples, which do not follow the regulation of genetic origin. It is worth to note that five of the 116 samples were 100% Duroc. None of the suppliers included in the study met the law strictly. These results show that, in general, the Quality Standard has not been obeyed for a long time. A future new sampling will show if the more strict controls of the animals set by the 2014 law has been useful to improve the legal compliance.

23 Anixa Muiños-Bühl; Óscar González-Recio; María Muñoz; Cristina Óvilo; Juan María García-Casco; Ana I. Fernández. Evaluating protocols for porcine faecal microbiome recollection, storage and DNA extraction: from the farm to the lab. Current Microbiology. pp. https://doi.org/10.1007/s00284-017-1429-1. Springer, 09/01/2018.

Type of production: Scientific paper
Format: Journal
Corresponding author: No
Impact source: ISI
Category: Microbiology

Impact index in year of publication: 1.373 **Journal in the top 25%:** No
Position of publication: 105 **No. of journals in the cat.:** 125

Source of citations: Google Scholar **Citations:** 1

Relevant results: There is a growing interest in understanding the role of the gut microbiome on productive and meat quality related traits in livestock species in order to develop new useful tools for improving pig production systems and industry. Faecal samples are analyzed as a proxy of gut microbiota and here the selection of suitable protocols for faecal sampling and DNA isolation is a critical first step in order to obtain reliable results, even more to compare results obtained from different studies. The aim of the current study was to establish in a cost-effective way, using automated ribosomal intergenic spacer analysis technique, a protocol for porcine faecal sampling and storage at farm and slaughterhouse and to determine the most efficient microbiota DNA isolation kit among those most widely used. Operational Taxonomic Unit profiles were compared from Iberian pig faecal samples collected from rectum or ground, stored with liquid N2, ambient temperature or RNAlater, and processed with QIAmp DNA Stool (Qiagen), PowerFecal DNA Isolation (Mobio) or SpeedTools Tissue DNA extraction (Biotools) commercial kits. The results, based on DNA yield and quality, OTU number and Sørensen similarity indexes, indicate that the recommended protocol for porcine faecal microbiome sampling at farm should include: the collection from porcine rectum to avoid contamination; the storage in liquid N 2 or even at ambient temperature, but not in RNAlater; and the isolation of microbiota DNA using PowerFecal DNA Isolation kit. These conditions provide more reliable DNA samples for further microbiome analysis.

24 María Muñoz; Mari Carmen Rodríguez; Luis Alberto García Cortés; Angel González; Juan María García Casco; Luis Silió. Direct and maternal additive effects are not the main determinants of Iberian piglet perinatal mortality. Journal of Animal Breeding and Genetics. Wiley, 01/12/2017.

Type of production: Scientific paper **Format:** Journal
Corresponding author: Yes

Impact source: ISI **Category:** Agriculture Dairy & Animal Science
Impact index in year of publication: 1.877 **Journal in the top 25%:** Yes
Position of publication: 7 **No. of journals in the cat.:** 58

Source of citations: Google Scholar **Citations:** 1

Relevant results: Data of 127,800 Iberian piglets were used to study genetic parameters of mortality at birth at the piglet level. These records proceed from three datasets: 4,987 litters of 2,156 sows of a dam line, 2,768 litters of 817 sows of a complete diallel cross between four Iberian strains and 7,153 litters of 2,113 sows of the Torbiscal composite line. Perinatal mortality was considered as a binary trait, and Bayesian threshold animal models were fitted to separately analyze the three datasets. The posterior means of direct heritability were 0.010, 0.004 and 0.003, and those of maternal heritability were 0.034, 0.011 and 0.014 for dam line, diallel cross and Torbiscal line, respectively. Important effects of litter size and parity order were inferred in the three datasets, of within-breed crossbreeding parameters in the diallel cross, and of sex and sow handling in the Torbiscal line Therefore, the inclusion of perinatal mortality in the objective of selection is questionable in this breed, and strategies for reducing piglet mortality successful in other breeds should be considered.

25 Ana Isabel Fernádez Ávila; María Muñoz Muñoz; Estefania Alves; Josep María Folch; Jose Luis Noguera; Miguel Pérez Enciso; Maria del Carmen Rodríguez Valdovinos; Luis Silió López. Recombination of the porcine X chromosome: a high density linkage map. BMC Genetics. 15 - 148, BMC, 20/12/2014.

Type of production: Scientific paper **Format:** Journal

Impact source: ISI **Category:** Genetics
Impact index in year of publication: 2.356 **Journal in the top 25%:** No
Position of publication: 99 **No. of journals in the cat.:** 165

Source of citations: Google Scholar **Citations:** 9

Relevant results: Linkage maps are essential tools for the study of several topics in genome biology. High density linkage maps for the porcine autosomes have been constructed exploiting the high density data provided by the PorcineSNP60 BeadChip. However, a high density SSCX linkage map has not been reported up to date. The aim of the current study was to build an accurate linkage map of SSCX to provide precise estimates of recombination rates along this chromosome and creating a new tool for QTL fine mapping. A female-specific high density linkage

map was built for SSCX using Sscrofa10.2 annotation. The total length of this chromosome was 84.61 cM; although the average recombination rate was 0.60 cM/Mb, both cold and hot recombination regions were identified. A Bayesian probabilistic to genetic groups and revealed that the animals used in the current study for linkage map construction were likely to be carriers of X chromosomes of European origin. Finally, the newly generated linkage map was used to fine-map a QTL at 16 cM for intramuscular fat content (IMF) measured on longissimus dorsi. The sulfatase isozyme S gene constitutes a functional and positional candidate gene underlying the QTL effect. The current study presents for the first time a high density linkage map for SSCX and supports the presence of cold and hot recombination intervals along this chromosome. The large cold recombination region in the central segment of the chromosome is not likely to be due to structural differences between X chromosomes of European and Asian origin. In addition, the newly generated linkage map has allowed us to fine-map a QTL on SSCX for fat deposition.

26 Manuel Revilla; Yuliaxis Ramayo-Caldas; Anna Castelló; Jordi Corominas; Anna Puig-Oliveras; Noelia Ibañez Escriche; María Muñoz Muñoz; María Ballester; Josep María Folch. New insight into the SSC8 genetic determination of fatty acid composition in pigs. Genetic Selection and Evolution. 46(1) - 28, pp. 46 - 28. Biomed Central, 04/2014.

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: Science Edition - AGRICULTURE, DAIRY & ANIMAL SCIENCE
Impact index in year of publication: 3.747
Journal in the top 25%: Yes
Position of publication: 1
No. of journals in the cat.: 52
Source of citations: Google Scholar
Citations: 16

Relevant results: Fat content and fatty acid composition in swine are becoming increasingly studied because of their effect on sensory and nutritional quality of meat. A QTL (quantitative trait locus) for fatty acid composition in backfat was previously detected on porcine chromosome 8 (SSC8) in an Iberian x Landrace F2 intercross. More recently, a genome-wide association study detected the same genomic region for muscle fatty acid composition in an Iberian x Landrace backcross population. ELOVL6, a strong positional candidate gene for this QTL, contains a polymorphism in its promoter region (ELOVL6:c.-533C < T), which is associated with percentage of palmitic and palmitoleic acids in muscle and adipose tissues. Here, a combination of single-marker association and the haplotype-based approach was used to analyze backfat fatty acid composition in 470 animals of an Iberian x Landrace F2 intercross genotyped with 144 SNPs (single nucleotide polymorphisms) distributed along SSC8. Two trait-associated SNP regions were identified at 93 Mb and 119 Mb on SSC8. The strongest statistical signals of both regions were observed for palmitoleic acid (C16:1(n-7)) content and C18:0/C16:0 and C18:1(n-7)/C16:1 (n-7) elongation ratios. MAML3 and SETD7 are positional candidate genes in the 93 Mb region and two novel microsatellites in MAML3 and nine SNPs in SETD7 were identified. No significant association for the MAML3 microsatellite genotypes was detected. The SETD7:c.700G > T SNP, although statistically significant, was not the strongest signal in this region. In addition, the expression of MAML3 and SETD7 in liver and adipose tissue varied among animals, but no association was detected with the polymorphisms in these genes. In the 119 Mb region, the ELOVL6:c.-533C > T polymorphism showed a strong association with percentage of palmitic and palmitoleic fatty acids and elongation ratios in backfat. Our results suggest that the polymorphisms studied in MAML3 and SETD7 are not the causal mutations for the QTL in the 93 Mb region. However, the results for ELOVL6 support the hypothesis that the ELOVL6:c.-533C > T polymorphism has a pleiotropic effect on backfat and intramuscular fatty acid composition and that it has a role in the determination of the QTL in the 119 Mb region.

27 Juan María García Casco; María Muñoz; Luis Silió; María del Carmen Rodríguez. Genotype by environment interaction for carcass traits and intramuscular fat content in heavy Iberian pigs fattened in two different free-range systems. Spanish Journal of Agricultural Research. 12 - 2, pp. 388 - 395. INIA, 20/02/2014.

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: Agriculture/Multidisciplinary
Impact index in year of publication: 0.514
Journal in the top 25%: No
Position of publication: 38
No. of journals in the cat.: 56
Source of citations: Google Scholar
Citations: 11

Relevant results: Genotype by environment interaction (G×E) is a potential source of reduced efficiency in genetic improvement programs in livestock. The objective of the current work consisted of checking the existence of G×E interaction in carcass traits and in intramuscular fat content (IMF) in Iberian pigs fattened in two free-range systems. Genetic component and estimated breeding values (EBV) of the percentage of hams, shoulders and loins and IMF in loin were obtained from records of 4,348 and 1,818 pigs fattened in campo (C) and montanera (M) systems, respectively. A multitrait model where the performances of each system are considered as different traits was implemented. Three selection indexes were built with different treatments about the quality trait, two of them based in the optimal trait theory. The Pearson correlation between EBV and indexes and the Spearman correlation between the rankings of progenies of 21 boars fattened in both systems were calculated. Heritability results were different in both systems (h2 range from 0.43 to 0.66 and from 0.24 to 0.33 in C and M system, respectively) and genetic correlation of same traits expressed in the two systems also pointed out to a weak G×E interaction (0.64, 0.67 and 0.66 in hams, shoulders and IMF, respectively). Pearson and Spearman correlations were always significantly different to 1. The obtained results advised to consider this G×E interaction in the analysis model of a breeding program focused on free range production system and to include IMF in the index selection assuming an optimum range for this quality trait, in order to avoid negative effects of selection for carcass performances.

28 Amanda Fernández Rodríguez; Jordi Estellé; Amandine Blin; María Muñoz; Créchet Françoise; Florence Demenais; Vincent-Naulleau Silvia; Emmanuelle Bourneuf. c-kit and Melanoma Predisposition in Pigs : Sequence Variants and Association Analysis. Animal Genetics. doi: 10.1111/age.121, Wiley Online Library, 16/01/2014.

Type of production: Scientific paper

Impact source: ISI
Category: Agriculture Dairy & Animal Science
Impact index in year of publication: 2.21
Journal in the top 25%: Yes
Position of publication: 3
No. of journals in the cat.: 52

Source of citations: Google Scholar
Citations: 6

Relevant results: KIT mutations have been detected in different cancer subtypes, including melanoma. The gene also has been extensively studied in farm animals for its prominent role in coat color. The present work aimed at detecting KIT variants in a porcine model of cutaneous melanoma, the melanoblastoma-bearing Libechov Minipig (MeLiM). By sequencing exons and intron borders, 36 SNPs and one indel were identified. Of 10 coding SNPs, three were non-synonymous mutations, likely to affect the protein conformation. A promising variant, located in exon 19 (p.Val870Ala), was genotyped in a MeLiM 9 Duroc cross, and an association analysis was conducted on several melanoma-related traits. This variant showed a significant association with melanoma development, tumor ulceration and cutaneous invasion. In conclusion, although the KIT gene would not be a major causal gene for melanoma development in pig, its genetic variation could be influencing this trait.

29 María Muñoz; Ana Isabel Fernández; Rita Benítez; Ramona N. Pena; Josep María Folch; María del Carmen Rodríguez; Luis Silió; Estefânia Alves. Disentangling two QTL on porcine chromosome 12 for backfat fatty acid composition. Animal Biotechnology. 24 - 3, pp. 168 - 186. Taylor and Francis Online, 18/06/2013.

Type of production: Scientific paper
Format: Journal

Impact source: ISI
Category: Animal Science and Zoology
Impact index in year of publication: 0.882
Journal in the top 25%: No
Position of publication: 26
No. of journals in the cat.: 54

Source of citations: Google Scholar
Citations: 9

Relevant results: A previous study allowed the identification of two QTL regions at positions 11–34cM (QTL1) and 68–76cM (QTL2) on porcine chromosome SSC12 affecting several backfat fatty acids in an Iberian x Landrace F2 intercross. In the current study, different approaches were performed in order to better delimit the quoted QTL regions and analyze candidate genes. A new chromosome scan, using 81 SNPs selected from the Porcine 60KBeadChip and six previously genotyped microsatellites have refined the QTL positions. Three new functional candidate genes (ACOX1, ACLY, and SREBF1) have been characterized. Moreover, two putative promoters of porcine ACACA gene have also been investigated. New isoforms and 24 SNPs were detected in the four candidate genes, 19 of which were genotyped in the population. ACOX1 and ACLY SNPs failed to explain the effects of QTL1 on palmitic and gadoleic fatty acids. QTL2, affecting palmitoleic, stearic, and vaccenic fatty acids, maps close to the ACACA gene location. The most significant associations have been detected between one intronic (g.53840T>C) and one synonymous (c.5634T>C) ACACA SNPs and these fatty acids. Complementary analyses

including ACACA gene expression quantification and association studies in other porcine genetic types do not support the expected causal effect of ACACA SNPs.

30 Juan María García Casco; María Muñoz; Elena González. Predictive ability of feeding system by several analytical methods in Iberian pig. International Journal of Fats and Oils. 64 - 2, pp. 191 - 200. Consejo Superior Investigaciones Científicas, 26/01/2013.

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: Food Science
Impact index in year of publication: 0,74
Journal in the top 25%: No
Position of publication: 80
No. of journals in the cat.: 124
Source of citations: Google Scholar
Citations: 11

Relevant results: The reliability of several analytical methods proposed to predict the feeding system received by Iberian pigs during the fattening period has been contrasted. Samples of subcutaneous adipose tissue were analyzed from 38 batches of pigs fattened in three seasons of montanera (acorn and pastures feeding). They corresponded to the four categories described in the Quality Standard for Iberian pig products: 251 samples of bellota, 164 of recebo, 197 of cebo de campo and 137 of cebo. To perform the study, the following analytical methods were used: fatty acid quantification, NIR, alpha and gamma tocopherol, chemical sensor, triacilglycerides, stable isotopes and neophytadiene. The laboratories received the samples without any information about the fattening system to which they belonged and remitted their predictions with respect to the above categories. The results showed a high percentage of accurate predictions of the methods when the fattening type corresponds to the extreme categories (bellota and cebo), however, the methods had difficulty in discerning between samples from a mixed feeding regime with acorn and feed (recebo) and problems when pigs are fattened with compound feeds including vegetable fats with high levels of oleic acid. Although a simplification into only two categories (cebo/campo and recebo/bellota) results in a success rate higher than 90% for some methods, the combination of two or three techniques with problematic samples allows for differentiating among the four categories with the same accuracy.

31 Jordi Corominas; Yuliaxis Ramayo-Caldas; Anna Castelló; María Muñoz; Noelia Ibáñez Escriche; Josep María Folch; María Ballester. Evaluation of the porcine ACSL4 gene as a candidate gene for meat quality traits in pigs.Animal Genetics. 43 - 6, pp. 714 - 720. 11/03/2012.

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: Agriculture Dairy & Animal Science
Impact index in year of publication: 2.403
Journal in the top 25%: Yes
Position of publication: 3
No. of journals in the cat.: 54
Source of citations: Google Scholar
Citations: 13

Relevant results: Long-chain acyl-CoA synthetase (ACSL) family members catalyse the formation of long chain acyl-CoA from fatty acid, ATP and CoA, thus playing an important role in both de novo lipid synthesis and fatty acid catabolism. Previous studies in our group evaluated ACSL4 as a positional candidate gene for quantitative trait loci located on chromosome X in an Iberian 9 Landrace cross. A DQ144454:c.2645G>A SNP located in the 3? untranslated region of the ACSL4 gene was associated with the percentages of oleic and monounsaturated fatty acids. The aim of the present work was to evaluate the functional implication of this genetic variant. An expression analysis was performed for 120 individuals with different genotypes for the DQ144454:c.2645G>A polymorphism using realtime quantitative PCR. Differences between genotypes were identified in liver, with the ACSL4 mRNA expression levels higher in animals with the G allele than in animals with the A allele. A SNP genome-wide association study with ACSL4 relative expression levels showed significant positions on chromosomes 6 and 12. Description of positional candidate genes for ACSL4 regulation on chromosomes 6 and 12 is provided.

32 María Muñoz; Estefania Alves; Jordi Corominas; Josep María Folch; Joaquim Casellas; José Luis Noguera; Luis Silió; Ana Isabel Fernádez. Survey of SSC12 regions affecting fatty acid composition of intramuscular fat using high density SNP data. Frontiers in Genetics. 2 - 101, Frontiers, 05/01/2012.

Type of production: Scientific paper
Format: Journal
Source of citations: Google Scholar
Citations: 11

Relevant results: Fatty acid composition is a critical aspect of pork because it affects sensorial and technological aspects of meat quality and it is relevant for human health. Previous studies identified significant QTLs in porcine chromosome 12 for fatty acid profile of backfat and intramuscular fat. In the present study 374 SNPs mapped in SSC12 from the 60K Porcine SNP Beadchip were used. We have combined linkage and association analyses with expression data analysis in order to identify regions of SSC12 that could affect fatty acid composition of intramuscular fat in longissimus muscle. The QTL scan showed a region around 60 cM position that significantly affects palmitic fatty acid and the unsaturated and saturated fatty acid indexes. The Iberian Q allele of the QTL increased the palmitic content (+2.6%). This QTL does not match any of those reported in the previous study about fatty acid composition of backfat, suggesting different genetic control acting at both tissues. The SNP association analyses showed significant associations with linolenic and palmitic besides several indexes. Among the polymorphisms that affect palmitic fatty acid and match the QTL region at 60 cM, there were three that map in Phosphatidylcholine Transfer Protein (PCTP) gene and one in Acetyl-CoA Carboxylase ? gene (ACACA). Interestingly one of the PCTP SNPs also affected significantly unsaturated, and double bound indexes and the ratio between polyunsaturated/monounsaturated fatty acids. Finally, differential expression was assessed on longissimus muscle conditional on the genotype of the QTL and on the most significant SNPs, according to the results obtained in the former analyses. Results from microarray expression analysis, validated by RT-qPCR, showed that PCTP expression levels significantly vary depending on the QTL as well as on the own PCTP genotype. The ensemble of results obtained with the different approaches points out PCTP gene as powerful candidate underlying QTL for palmitic content.

33 María Muñoz; Estefania Alves; Yuliaxis Ramayo-Caldas; Joaquim Casellas; Carmen Rodríguez; Josep María Folch; Luis Silió; Ana Isabel Fernádez. Recombination rates across porcine autosomes inferred from high-density linkage maps. Animal Genetis. 43 - 5, pp. 620 - 623. Wiley Online Library, 07/12/2011.

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: Agriculture Dairy & Animal Science
Impact index in year of publication: 2.5203
Journal in the top 25%: Yes
Position of publication: 3
No. of journals in the cat.: 54
Source of citations: Google Scholar
Citations: 21

Relevant results: Studies of the variation in recombination rate across the genome provide a better understanding of evolutionary genomics and are also an important step towards mapping and dissecting complex traits in domestic animals. With the recent completion of the porcine genome sequence and the availability of a high-density porcine single nucleotide polymorphism (SNP) array, it is now possible to construct a high-density porcine linkage map and estimate recombination rate across the genome. A total of 416 animals were genotyped with the Porcine SNP60BeadChip, and high-density chromosome linkage maps were constructed using CRI-MAP, assuming the physical order of the Sscrofa10 assembly. The total linkage map length was 2018.79 cM, using 658 meioses and 14 503 SNPs. The estimated average recombination rate across the porcine autosomes was 0.86 cM/Mb. However, a large variation in recombination rate was observed among chromosomes. The estimated average recombination rates (cM/Mb) per chromosome ranged from 0.48 in SSC1 to 1.48 in SSC10, displaying a significant negative correlation with the chromosome sizes. In addition, the analysis of the variation in the recombination rates taking 1-Mb sliding windows has allowed us to demonstrate the variation in recombination rates within chromosomes. In general, a larger recombination rate was observed in the extremes than in the centre of the chromosome. Finally, the ratio between female and male recombination rates was also inferred, obtaining a value of 1.38, with the heterogametic sex having the least recombination.

34 B. Yang; N. Navarro; Jose Luis Noguera; María Muñoz; T.F. Guo; K.X. Yang; J.W. Ma; Josep María Folch; L.S. Huang; Miguel Pérez-Enciso. Building phenotype networks to improve QTL detection: A comparative analysis of fatty acid and fat traits in pigs. Journal of Animal Breeding and Genetics. Journal of Animal Breeding and Genetics. 128 - 5, pp. 329 - 343. Blackwell Verlag GmbH, 10/2011.

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: Science Edition - AGRICULTURE, DAIRY & ANIMAL SCIENCE
Impact index in year of publication: 1,574
Journal in the top 25%: Yes
Position of publication: 5
No. of journals in the cat.: 55
Source of citations: Google Scholar
Citations: 12

Relevant results: Models in QTL mapping can be improved by considering all potential variables, i.e. we can use remaining traits other than the trait under study as potential predictors. QTL mapping is often conducted by correcting for a few fixed effects or covariates (e.g. sex, age), although many traits with potential causal relationships between them are recorded. In this work, we evaluate by simulation several procedures to identify optimum models in QTL scans: forward selection, undirected dependency graph and QTL-directed dependency graph (QDG). The latter, QDG, performed better in terms of power and false discovery rate and was applied to fatty acid (FA) composition and fat deposition traits in two pig F2 crosses from China and Spain. Compared with the typical QTL mapping, QDG approach revealed several new QTL. To the contrary, several FA QTL on chromosome 4 (e.g. Palmitic, C16:0; Stearic, C18:0) detected by typical mapping vanished after adjusting for phenotypic covariates in QDG mapping. This suggests that the QTL detected in typical mapping could be indirect. When a QTL is supported by both approaches, there is an increased confidence that the QTL have a primary effect on the corresponding trait. An example is a QTL for C16:1 on chromosome 8. In conclusion, mapping QTL based on causal phenotypic networks can increase power and help to make more biologically sound hypothesis on the genetic architecture of complex traits.

35 Amanda Fernández Rodriguez; María Muñoz; Almudena Fernández; Ramona N. Pena; Anna Tomás; Jose Luis Noguera; Cristina Óvilo; Ana Isabel Fernádez. Differential Gene Expression in Ovaries of Pregnant Pigs with High and Low Prolificacy Levels and Identification of Candidate Genes for Litter Size. Biology of Reproduction. 84, pp. 299 - 307. Society for the Study of Reproduction, 06/10/2010.

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: Reproductive Biology
Impact index in year of publication: 3.3
Journal in the top 25%: Yes
Position of publication: 5
No. of journals in the cat.: 26
Source of citations: Google Scholar
Citations: 32

Relevant results: Previous results from a genome scan in an F2 Iberian 3 Meishan pig intercross showed several chromosome regions associated with litter size traits in this species. In order to identify candidate genes underlying these quantitative trait loci (QTL), we performed an ovary gene expression analysis during the sow's pregnancy. F2 sows were ranked by their estimated breeding values for prolificacy: six sows with the highest estimated breeding value (EBV) (i.e., high prolificacy) and six sows with the lowest EBV (low prolificacy) were selected. Samples were hybridized using an Affymetrix GeneChip porcine genome array. Statistical analysis with a mixed model approach identified 221 differentially expressed probes, representing 189 genes. These genes were functionally annotated in order to identify genetic pathways overrepresented in this list. Among the functional groups most represented was, in first position, immune system response activation against external stimulus. The second group consisted of integrated genes that regulate maternal homeostasis by complement and coagulation cascades. A third group was involved in lipid and fatty acid enzymes of metabolic processes, which participate in the steroidogenesis pathway. In order to identify powerful candidate genes for prolificacy, the second approach of this study was to merge microarray data with the QTL positional information affecting litter size, previously detected in the same experimental cross. As a result, we have identified 27 differentially expressed genes colocalizing with QTL for litter size traits, which fulfill the biological, positional, and functional criteria.

36 María Muñoz; Ana Isabel Fernádez; Cristina Óvilo; Gloria Muñoz; Carmen Rodríguez; Almudena Fernández; Estefania Alves; Luis Silió. Non-additive effects of RBP4, ESR1 and IGF2 polymorphisms on litter size at different parities in a Chinese-European porcine line. Genetics Selection Evolution. 42 - 23, Biomed Central, 25/06/2010.

Type of production: Scientific paper
Format: Journal
Impact source: ISI
Category: AGRICULTURE, DAIRY & ANIMAL SCIENCE
Impact index in year of publication: 3.75
Journal in the top 25%: Yes
Position of publication: 1
No. of journals in the cat.: 52
Source of citations: Google Scholar
Citations: 23

Relevant results: The aim of this work was to study the effects on litter size of variants of the porcine genes RBP4, ESR1 and IGF2, currently used in genetic tests for different purposes. Moreover, we investigated a possible effect of the interaction between RBP4-MspI and ESR1-PvuII polymorphisms. The IGF2-intron3-G3072A polymorphism is actually used to select lean growth, but other possible effects of this polymorphism on

reproductive traits need to be evaluated. Detection of polymorphisms in the genomic and cDNA sequences of RBP4 gene was carried out. RBP4-MspI and IGF2-intron3-G3072A were genotyped in a hyperprolific Chinese-European line (Tai-Zumu) and three new RBP4 polymorphisms were genotyped in different pig breeds. A bivariate animal model was implemented in association analyses considering the number of piglets born alive at early (NBA12) and later parities (NBA3+) as different traits. A joint analysis of RBP4-MspI and ESR1-PvuII was performed to test their possible interaction. In the IGF2 analysis, paternal or maternal imprinting effects were also considered.

37 María Muñoz; Elena Dieguez-Garbayo; Mercedes Izquierdo-Cebrián; Diego Silvero; Javier Viguera-Rubio; Carmen Caraballo; Susana García-Torres; Juan María García-Casco. Frecuencias de polimorfismos para la calidad de carne y análisis de asociación en los cerdos del grupo operativo de IBERDEFENSE. Sólo Cerdo Ibérico. 44, pp. 80 - 89. AECERIBER, 2021.
Type of production: Popular science article **Format:** Journal
Corresponding author: No

38 María Muñoz; Rita Benítez; Estefania Alves; Juan María García-Casco; Carmen Barragán; Carmen Caraballo; Ana I Fernández; Fabián García; Yolanda Núñez; Cristina Óvilo; Almudena Fernández; Carmen Rodríguez; Luis Silió. Desarrollo de un panel de 64 SNVs para la autentificación de raza en cerdos ibéricos y en sus productos cárnicos. Sólo Cerdo Ibérico. 43, pp. 64 - 75. AECERIBER, 2020.
Type of production: Popular science article **Format:** Journal
Corresponding author: Yes

39 Elena Dieguez-Garbayo; Mercedes Izquierdo Cebrián; María Muñoz; Juan María García-Casco. Grupo operativo Iberdefense: defensa y producción del cerdo Ibérico puro.Sólo Cerdo Ibérico. 42, pp. 44 - 49. AECERIBER, 2019.
Type of production: Popular science article **Format:** Journal
Corresponding author: No

40 María Muñoz; Ricardo Bozzi; Alessandro Crovetti; Rui Charneca; Jose Manuel Martins; Ana I. Fernández; Luca Fontanesi; Juan M. García-Casco; Cristina Óvilo. Diversidad genética de las razas porcinas ibérica y alentejana mediante el genotipado de variantes genéticas en genes mayores y genes candidatos. Sólo Cerdo Ibérico. 39, pp. 12 - 16. AECERIBER, 01/04/2018.
Type of production: Popular science article **Format:** Journal
Corresponding author: Yes

41 Juan M. García-Casco; María Muñoz; Jose M. Martínez-Torres; Adrián López-García; Miguel A. Fernández-Barroso; Elena González-Sánchez. Utilización de alperujo en la alimentación de cerdos Ibéricos de montanera durante el periodo de crecimiento. Sólo Cerdo Ibérico. 39, pp. 34 - 39. AECERIBER, 01/04/2018.
Type of production: Popular science article **Format:** Journal
Corresponding author: No

42 Miguel Fernández-Barroso; Adrián López-García; María Muñoz Muñoz; Carmen Caraballo; Juan María García Casco; Elena González Sánchez. Efecto de la restricción proteica en el transcriptoma durante la fase de crecimiento de cerdos Ibéricos cruzados. Sólo Cerdo Ibérico. 38, pp. 18 - 22. AECERIBER, 01/10/2017.
Type of production: Popular science article **Format:** Journal
Corresponding author: No

43 Juan María García Casco; María Muñoz Muñoz; Elena González Sánchez. Predicción del sistema de cebo en cerdo ibéricos mediante varios métodos analíticos.Sólo Cerdo Ibérico. 30, pp. 60 - 72. AECERIBER, 01/04/2013.
Type of production: Popular science article **Format:** Journal
Corresponding author: No

Works submitted to national or international conferences

1 **Title of the work:** Characterization of circulating microRNA profile in Iberian pigs with and without heat stress
Name of the conference: 38th International Society for Animal Genetics Virtual Conference
Corresponding author: No
City of event: Virtual,
Date of event: 26/07/2021
End date: 30/07/2021
Muñoz, M; Fernández-Rodríguez, A; García, F; García-Cabrero, A; Caraballo, C; Gómez, G; Matos, G; García-Casco, JM; Óvilo, C. "SNP discovery and association study for growth and fatness traits in crossbred Iberian Pigs".

2 **Title of the work:** SNP discovery and association study for growth and fatness traits in crossbred Iberian Pigs
Name of the conference: 38th International Society for Animal Genetics Virtual Conference
Corresponding author: No
City of event: Virtual,
Date of event: 26/07/2021
End date: 30/07/2021
Óvilo, C; Trakooljul, N; Hadlich, F; Murani, E; Ayuso, M; García-Contreras, C; Vázquez-Gómez, M; Benítez, R; Núñez, Y; Rey, A; González-Bulnes, A; Isabel, B; Wimmers, K; Muñoz, M. "SNP discovery and association study for growth and fatness traits in crossbred Iberian Pigs".

3 **Title of the work:** Structural genetic basis of differential gene expression in loin muscle of Iberian pigs
Name of the conference: 38th International Society for Animal Genetics Virtual Conference
Corresponding author: No
City of event: Virtual,
Date of event: 26/07/2021
End date: 30/07/2021
López-García, A; Peiró, R; Muñoz, M; García-Contreras, C; Vázquez-Gómez, M; Isabel, B; Rey, A; González-Bulnes, A; Óvilo, C. "Structural genetic basis of differential gene expression in loin muscle of Iberian pigs".

4 **Title of the work:** LABORATORIO EN ABIERTO: aPrendiendo a CopiaR el ADN
Name of the conference: XLII Congreso de la Sociedad Española de Genética
Corresponding author: No
City of event: Online,
Date of event: 14/06/2021
End date: 18/06/2021
Organising entity: Sociedad Española de Genética
Blasio, F; Fernández, N; García, I; Lantero, E; Lira, J; Méndez,B; Martinez, M; Arana, P; Ballesteros, I; Callejas, C; Cuñado, N; Espino, FJ; Figueiras, A; Gallego, FJ; González, M; González, MT; Gil, F; Gorfinkiel, N; Hórreo, JL; Muñoz, M; de la Peña, A; Pradillo, M; Vega, JM. "LABORATORIO EN ABIERTO: aPrendiendo a CopiaR el ADN".

5 **Title of the work:** Análisis del transcriptoma de longissimus dorsi de ibéricos de montanera divergentes para el contenido en mioglobina
Name of the conference: XIX JORNADAS SOBRE PRODUCCIÓN ANIMAL
Corresponding author: No

City of event: Online,
Date of event: 01/06/2021
End date: 02/06/2021
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Fernández-Barroso, MA; Muñoz, M; García, F; Núñez, Y; Matos-Moreno, G; Ramírez-Hidalgo, L; García-Casco, JM. "Análisis del transcriptoma de longissimus dorsi de ibéricos de montanera divergentes para el contenido en mioglobina".

6 **Title of the work:** Análisis genómico y huellas de la selección en razas porcinas europeas
Name of the conference: XIX JORNADAS SOBRE PRODUCCIÓN ANIMAL
Corresponding author: No
City of event: Online,
Date of event: 01/06/2021
End date: 02/06/2021
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Óvilo, C; Muñoz, M; Bozzi, R; García-Casco, JM; Núñez, Y; Čandek-Potokar, M; Ribani, A; Schiavo, G; Bovo, S; Tinarelli, S; Gallo, M; Fernández, AI; Fontanesi , L; TREASURE CONSORTIUM. "Análisis genómico y huellas de la selección en razas porcinas europeas".

7 **Title of the work:** Effects of heat stress on prolificacy in Iberian pigs
Name of the conference: EAAP Virtual Meeting
Type of event: Conference
Corresponding author: Yes
City of event: On-line,
Date of event: 01/12/2020
End date: 04/12/2020
Organising entity: European Federation of Animal Science **Type of entity:** Associations and Groups
María Muñoz; Carmen Caraballo; Patricia Palma-Granados; Gerardo Gómez; Gema Matos; Fernando Sánchez-Esquiliche.

8 **Title of the work:** Genomic analysis and selection signatures in local European pig breeds
Name of the conference: X International Symposium of Mediterranean Pig
Corresponding author: No
City of event: Florence, Toscana, Italy
Date of event: 16/10/2019
End date: 19/10/2019
Organising entity: Universita degli Studi di Firenzi **Type of entity:** University
City organizing entity: Florence, Toscana, Italy
Cristina Óvilo; María Muñoz; Riccardo Bozzi; Juan María García-Casco; Yolanda Núñez; Marjeta Čandek-Potokar; A Ribani; Giuseppina Schiavo; Samuelle Bovo; S Tinarelli; M Gallo; Ana Isabel Fernández; Luca Fontanesi; TREASURE CONSORTIUM. "Genomic analysis and selection signatures in local European pig breeds".

9 **Title of the work:** Association analyses for intramuscular fat content on purebred Iberian pigs using a costumed SNP panel from RNAseq data
Name of the conference: X International Symposium of Mediterranean Pig
Corresponding author: Yes
City of event: Florence, Toscana, Italy
Date of event: 16/10/2019
End date: 19/10/2019
Organising entity: Universita degli Studi di Firenzi **Type of entity:** University

City organizing entity: Florence, Toscana, Italy
María Muñoz; Carmen Caraballo; Luis Silió; Carmen Rodríguez; Fernando Gómez; Fernando Sánchez; Juan María García-Casco. "Association analyses for intramuscular fat content on purebred Iberian pigs using a costumed SNP panel from RNAseq data".

10 **Title of the work:** Genomic inbreeding in European autochthonous pig breeds: analysis of runs of homozygosity
Name of the conference: X International Symposium of Mediterranean Pig
Corresponding author: No
City of event: Florence, Toscana, Italy
Date of event: 16/10/2019
End date: 19/10/2019
Organising entity: Universita degli Studi di Firenzi **Type of entity:** University
City organizing entity: Florence, Toscana, Italy
Giuseppina Schiavo; María Muñoz; Samuelle Bovo; A Ribani; Juan María García-Casco; Yolanda Núñez; S Tinarelli; Utzeri V.J.; Maurizio Gallo; Riccardo Bozzi; Marjeta Čandek-Potokar; Ana Isabel Fernández; Cristina Óvilo; Luca Fontanesi; TREASURE CONSORTIUM. "Genomic inbreeding in European autochthonous pig breeds: analysis of runs of homozygosity".

11 **Title of the work:** Growth description of Iberian x Duroc crossbred pig through the evaluation of nonlinear mathematical models
Name of the conference: X International Symposium of Mediterranean Pig
Corresponding author: Yes
City of event: Florence, Toscana, Italy
Date of event: 16/10/2019
End date: 19/10/2019
Organising entity: Universita degli Studi di Firenzi **Type of entity:** University
City organizing entity: Florence, Toscana, Italy
Elena González; María Muñoz; Carmen Rodríguez; Carmen Caraballo; Juan María García-Casco. "Growth description of Iberian x Duroc crossbred pig through the evaluation of nonlinear mathematical models".

12 **Title of the work:** SNP association analyses for myoglobin content and water holding capacity in a purebred Iberian pig population
Name of the conference: X International Symposium of Mediterranean Pig
Corresponding author: No
City of event: Florence, Toscana, Italy
Date of event: 16/10/2019
End date: 19/10/2019
Organising entity: Universita degli Studi di Firenzi **Type of entity:** University
City organizing entity: Florence, Toscana, Italy
Miguel Ángel Fernández-Barroso; Carmen Caraballo; Fernando Gómez; Patricia Palma-Granados; Juan María García-Casco; María Muñoz. "SNP association analyses for myoglobin content and water holding capacity in a purebred Iberian pig population".

13 **Title of the work:** Technical validation of longissimus dorsi transcriptomic expression on purebred Iberian pigs divergent for meat tenderness from a RNAseq experiment
Name of the conference: X International Symposium of Mediterranean Pig
Corresponding author: No
City of event: Florence, Toscana, Italy
Date of event: 16/10/2019
End date: 19/10/2019
Organising entity: Universita degli Studi di Firenzi **Type of entity:** University

City organizing entity: Florence, Toscana, Italy
Miguel Ángel Fernández-Barroso; Yolanda Núñez; Carmen Caraballo; Fernando Gómez; María Muñoz; Juan María García-Casco. "Technical validation of longissimus dorsi transcriptomic expression on purebred Iberian pigs divergent for meat tenderness from a RNAseq experiment".

14 **Title of the work:** Use of NIRs for the assessment of meat quality traits in Iberian montanera pigs
Name of the conference: X International Symposium of Mediterranean Pig
Corresponding author: No
City of event: Florence, Toscana, Italy
Date of event: 16/10/2019
End date: 19/10/2019
Organising entity: Universita degli Studi di Firenzi **Type of entity:** University
City organizing entity: Florence, Toscana, Italy
Miguel Ángel Fernández-Barroso; Silvia Parrini; Patricia Palma-Granados; María Muñoz; Alessandro Crovetti; Juan María García-Casco; Riccardo Bozzi. "Use of NIRs for the assessment of meat quality traits in Iberian montanera pigs".

15 **Title of the work:** Whole genome resequencing detects signature of selection in 23 European pig breeds and wild boars
Name of the conference: 70th Annual Meeting of the European Federation of Animal Science
Corresponding author: No
City of event: Ghent, Belgium
Date of event: 26/08/2019
End date: 30/08/2019
Organising entity: Flanders Research Institute of Agriculture, Fisheries and Food (ILVO) **Type of entity:** R&D Centre
City organizing entity: Ghent, Belgium
Samuelle Bovo; Giuseppina Schiavo; A Ribani; María Muñoz; Utzeri VJ; Maurizio Gallo; Riquet Juliette; G Usai; Rui Charneca; J.P. Araujo; Raquel Quintanilla; Violeta Razmaite; Marjeta Čandek-Potokar; AI Fernández; Cristina Óvilo; Luca Fontanesi; TREASURE CONSORTIUM. "Whole genome resequencing detects signature of selection in 23 European pig breeds and wild boars".

16 **Title of the work:** Differences in longissimus transcriptome between Iberian pigs divergent for meat tenderness
Name of the conference: ISAG 2019 37th International Society of Animal Genetics
Corresponding author: No
City of event: Lleida, Catalonia, Spain
Date of event: 08/07/2019
End date: 12/07/2019
Organising entity: Universitat de Lleida **Type of entity:** University
City organizing entity: Lleida, Catalonia, Spain
M.A. Fernández-Barroso; Juan María García-Casco; Luis Silió; Carmen Rodríguez; Yolanda Núñez; Fernando Sánchez-Esquiliche; Carmen Caraballo; María Muñoz. "Differences in longissimus transcriptome between Iberian pigs divergent for meat tenderness".

17 **Title of the work:** The gut microbiota composition at slaughter as a potential certification tool for the Iberian pig traditional farming system
Name of the conference: ISAG 2019 37th International Society of Animal Genetics
Corresponding author: No
City of event: Lleida, Catalonia, Spain
Date of event: 08/07/2019
End date: 12/07/2019

Organising entity: Universitat de Lleida **Type of entity:** University
City organizing entity: Lleida, Catalonia, Spain
Juan María García-Casco; María Muñoz; G Lemonnier; J.M. Babilliot; O Bouchez; Ana Isabel Fernández; F.R. Massacci; M.A. Fernández-Barroso; López-García A; Carmen Caraballo; Cristina Óvilo; Jordi Estellé. "The gut microbiota composition at slaughter as a potential certification tool for the Iberian pig traditional farming system".

18 **Title of the work:** Runs of homozygosity provide a genome landscape picture of inbreeding and genetic history of European autochthonous and cosmopolitan pig breeds
Name of the conference: ISAG 2019 37th International Society of Animal Genetics
Corresponding author: No
City of event: Lleida, Catalonia, Spain
Date of event: 08/07/2019
End date: 12/07/2019
Organising entity: Universitat de Lleida **Type of entity:** University
City organizing entity: Lleida, Catalonia, Spain
Giuseppina Schiavo; María Muñoz; Samuelle Bovo; Juan María García-Casco; A Ribani; S Tinarelli; Djurkin-Kušec I.; Radovic C; Savic R; Maurizio Gallo; Marjeta Čandek-Potokar; Ana Isabel Fernández; Cristina Óvilo; Luca Fontanesi; TREASURE CONSORTIUM. "Runs of homozygosity provide a genome landscape picture of inbreeding and genetic history of European autochthonous and cosmopolitan pig breeds".

19 **Title of the work:** Unraveling the genomic diversity and population structure of 20 autochthonous European pig breeds
Name of the conference: ISAG 2019 37th International Society of Animal Genetics
Corresponding author: No
City of event: Lleida, Catalonia, Spain
Date of event: 08/07/2019
End date: 12/07/2019
Organising entity: Universitat de Lleida **Type of entity:** University
City organizing entity: Lleida, Catalonia, Spain
María Muñoz; Riccardo Bozzi; Juan María García-Casco; Yolanda Núñez; A Ribani; Martin Škrlep; Raquel Quintanilla; Marie Jose Mercat; Juliette Riquet; Estellé J; Marjeta Čandek-Potokar; Ana Isabel Fernández; Luca Fontanesi; Cristina Óvilo; TREASURE CONSORTIUM. "Unraveling the genomic diversity and population structure of 20 autochthonous European pig breeds".

20 **Title of the work:** Marcadores genéticos para caracteres de calidad de la carne en cerdo Ibérico
Name of the conference: Jornada Inauguración Grupos Operativos Iberianpro e Iberdefense
City of event: Mérida, Extremadura, Spain
Date of event: 13/06/2019
End date: 13/06/2019
Organising entity: Grupo Operativo Iberdenfese
City organizing entity: Mérida, Extremadura, Spain
María Muñoz; Juan María García-Casco. "Marcadores genéticos para caracteres de calidad de la carne en cerdo Ibérico".

21 **Title of the work:** Análisis de terneza en lomo curado de una línea comercial de cerdos ibéricos puros
Name of the conference: AIDA XVIII Jornadas de Producción Animal
Corresponding author: Yes
City of event: Zaragoza, Aragon, Spain
Date of event: 07/05/2019
End date: 08/05/2019

Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Miguel Ángel Barroso; Fernando Gómez; Carmen Caraballo; Fernando Sánchez-Esquiliche; Luisa Ramírez; Adrián López-García; Ana Tavero; Patricia Palma; Juan María García-Casco; María Muñoz. "Análisis de terneza en lomo curado de una línea comercial de cerdos ibéricos puros".

22 **Title of the work:** Concentración de ácidos grasos volátiles en heces de cerdos ibéricos alimentados con alperujo de durante el periodo de crecimiento
Name of the conference: AIDA XVIII Jornadas de Producción Animal
Corresponding author: No
City of event: Zaragoza, Aragon, Spain
Date of event: 07/05/2019
End date: 08/05/2019
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Patricia Palma; Juan María García-Casco; María Muñoz; Adrián López-García; A Muñoz-Mejías; Elena González. "Concentración de ácidos grasos volátiles en heces de cerdos ibéricos alimentados con alperujo de durante el periodo de crecimiento".

23 **Title of the work:** Influencia de la restricción proteica en el transcriptoma de músculo de cerdos cruzados durante la fase de crecimiento
Name of the conference: AIDA XVIII Jornadas de Producción Animal
Corresponding author: Yes
City of event: Zaragoza, Aragon, Spain
Date of event: 07/05/2019
End date: 08/05/2019
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
María Muñoz; Miguel Ángel Barroso; Adrián López-García; Carmen Caraballo; Yolanda Núñez; Juan María García-Casco; Elena González. "Influencia de la restricción proteica en el transcriptoma de músculo de cerdos cruzados durante la fase de crecimiento".

24 **Title of the work:** Resultados de un panel de SNP de trazabilidad racial ibérico-duroc para la aplicación de la norma de calidad
Name of the conference: AIDA XVIII Jornadas de Producción Animal
Corresponding author: No
City of event: Zaragoza, Aragon, Spain
Date of event: 07/05/2019
End date: 08/05/2019
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Carmen Caraballo; María Muñoz; Carmen Delgado-Chavero; Manuel González; Juan María García-Casco. "Resultados de un panel de snp de trazabilidad racial ibérico-duroc para la aplicación de la norma de calidad".

25 **Title of the work:** miRNAs Profile of PBMCs Show Higher Disruption of TFG-beta Signaling Pathway in HIV/HCV Patients
Name of the conference: HIVR4P
Corresponding author: No
Date of event: 21/10/2018
End date: 25/10/2018
Organising entity: MARY ANN LIEBERT, INC 140 HUGUENOT STREET, 3RD FL, NEW ROCHELLE, NY 10801 USA
Type of contribution: Scientific book or monograph
Oscar Brochado-Kith; Alicia Gomez-Sanz; Luz Martin-Carbonero; Lourdes Dominguez; Pablo Ryan; Ignacio de los Santos; Sara de la Fuente; Juan Miguel Castro; Jesus Troya; Maria Lagarde; Mario Mayoral Muñoz; Mariano Matarranz; Guillermo Cuevas; Mireia Santacreu; Victorino Díez Viñas; María Muñoz

Muñoz; Claudia Palladino; Salvador Resino; Verónica Briz-Sebastián; Amanda Fernández-Rodríguez; Multidisciplinary Group of ViralCoinfection VIH/Hepatitis (COVIHEP). "AIDS RESEARCH AND HUMAN RETROVIRUSES". 34, pp. 377 - 377. 2018.

26 **Title of the work:** Exploiting genomic data of autochthonous pig breeds: conservation genetics comes of age
Name of the conference: 69th Annual Meeting of the European Federation of Animal Science
Corresponding author: No
City of event: Dubrovnik, Croatia
Date of event: 27/08/2018
End date: 31/08/2018
Organising entity: European Federation of Animal Science **Type of entity:** Associations and Groups
Luca Fontanesi; G Schiavo; S Bovo; A Ribani; Claudia Geraci; María Muñoz; Ana I Fernández; Juan María García Casco; Riccardo Bozzi; Peter Dovc; M Gallo; E Servin; J Riquette; Marjeta ?andek-Potokar; Cristina Óvilo; Treasure Consortium. "Exploiting genomic data of autochthonous pig breeds: conservation genetics comes of age".

27 **Title of the work:** Genetic structure of autochthonous and commercial pig breeds using a high-density SNP chip
Name of the conference: 69th Annual Meeting of the European Federation of Animal Science
Corresponding author: Yes
City of event: Dubrovnik, Croatia
Date of event: 27/08/2018
End date: 31/08/2018
Organising entity: European Federation of Animal Science **Type of entity:** Associations and Groups
María Muñoz; Juan María García Casco; Ana I Fernández; Fabián García; Claudia Geraci; Luca Fontanesi; Marjeta ?andek-Potokar; Cristina Óvilo. "Genetic structure of autochthonous and commercial pig breeds using a high-density SNP chip".

28 **Title of the work:** Gut microbiota composition in Iberian pigs fed with olive oil by-products during the growing period
Name of the conference: 69th Annual Meeting of the European Federation of Animal Science
Corresponding author: Yes
City of event: Dubrovnik, Croatia
Date of event: 27/08/2018
End date: 31/08/2018
Organising entity: European Federation of Animal Science **Type of entity:** Associations and Groups
María Muñoz; Juan María García Casco; G Lemonier; D Jardet; O Bouchez; Miguel Ángel Fernández-Barroso; FR Massaci; Ana I Fernández; Adrián López-García; Carmen Caraballo; Elena González-Sánchez; Cristina Óvilo; Jordi Estellé. "Gut microbiota composition in Iberian pigs fed with olive oil by-products during the growing period".

29 **Title of the work:** Major differences in gut microbiota composition of Iberian pigs in montanera vs commercial systems
Name of the conference: 69th Annual Meeting of the European Federation of Animal Science
Corresponding author: No
City of event: Dubrovnik, Croatia
Date of event: 27/08/2018
End date: 31/08/2018
Type of entity: Associations and Groups

Organising entity: European Federation of Animal Science

Juan María García Casco; María Muñoz; G Lemonier; JM Babilliot García; O Bouchez; Ana I Fernández; FR Massaci; Miguel Ángel Fernández-Barroso; Adrián López-García; Carmen Caraballo; Cristina Óvilo; Jordi Estellé. "Major differences in gut microbiota composition of Iberian pigs in montanera vs commercial systems".

30 **Title of the work:** An alternative to restricted feeding in Iberian pigs using an agro-industrial by-product of olive oil

Name of the conference: 69th Annual Meeting of the European Federation of Animal Science

Corresponding author: No

City of event: Dubrovnik, Croatia

Date of event: 26/08/2018

End date: 31/08/2018

Organising entity: European Federation of Animal Science **Type of entity:** Associations and Groups

Juan María García Casco; María Muñoz; Miguel Ángel Fernández Barroso; Adrián López García; Carmen Caraballo; José Manuel Martínez-Torres; Elena González-Sánchez. "Alternative feeding in Iberian pigs during growth period: incorporation of olive cake in a dry or wet (silage) form".

31 **Title of the work:** Análisis de asociación y expresión de genes candidatos para caracteres de calidad en una línea comercial de cerdos ibéricos

Name of the conference: XIX Reunión Nacional de Mejora Genética Animal

Corresponding author: No

City of event: León, Castile and León, Spain

Date of event: 14/06/2018

End date: 15/06/2018

Organising entity: Universidad de León **Type of entity:** University

City organizing entity: León, Spain

Miguel Ángel Fernández Barroso; Carmen Caraballo; Luis Silió; Carmen Rodríguez; Jose María Pariente; Fernando Sánchez- Esquilache; Fernando Gómez-Carballar; Juan María García Casco; María Muñoz. "Análisis de asociación y expresión de genes candidatos para caracteres de calidad en una línea comercial de cerdos ibéricos".

32 **Title of the work:** Diferencias de expresión de transcriptoma de hígado y testículo entre cerdos machos Ibéricos enteros e inmunocastrados

Name of the conference: XIX Reunión Nacional de Mejora Genética Animal

Corresponding author: Yes

City of event: León, Castile and León, Spain

Date of event: 14/06/2018

End date: 15/06/2018

Organising entity: Universidad de León **Type of entity:** University

City organizing entity: León, Castile and León, Spain

Maria Muñoz; Mercedes Izquerdo; Carmen Caraballo; Adrián López-García; Juan M. García-Casco; Nicolás Garrido; Francisco Hernández-García. "Diferencias de expresión de transcriptoma de hígado y testículo entre cerdos machos Ibéricos enteros e inmunocastrados".

33 **Title of the work:** Programa de evaluación genética de verracos de distintos orígenes ganaderos para caracteres de calidad

Name of the conference: XIX Reunión Nacional de Mejora Genética Animal

Corresponding author: No

City of event: León, Castile and León, Spain

Date of event: 14/06/2018

End date: 15/06/2018
Organising entity: Universidad de León **Type of entity:** University
City organizing entity: León, Castile and León, Spain
Juan Luis Duarte; Paloma Ureta; Elena Diéguez; Bartolomé Moreno; Santiago Navarro; Carmen Caraballo; Miguel Fernández-Barroso; Adrián López-García; María Muñoz; Juan García-Casco. "Programa de evaluación genética de verracos de distintos orígenes ganaderos para caracteres de calidad".

34 **Title of the work:** Identification of genes affecting intramuscular fat content in Iberian pigs through Longissimus dorsi transcriptomic analyses
Name of the conference: World Congress on Genetics Applied to Livestock Production
Corresponding author: No
City of event: Auckland, New Zealand
Date of event: 11/02/2018
End date: 16/02/2018
Organising entity: University of New Zealand
Maria Muñoz; Juan M. García-Casco; Fernando Sánchez-Esquiliche; Fabian García; Miguel Ángel Fernández-Barroso; Jose María Pariente; Fernando Gómez; María del Carmen Rodríguez; Luis Silió.

35 **Title of the work:** Protein restriction differentially modifies liver transcriptome at different stages of the growing period of Duroc x Iberian crossbred pigs
Name of the conference: World Congress on Genetics Applied to Livestock Production
Corresponding author: Yes
City of event: Auckland, New Zealand
Date of event: 11/02/2018
End date: 16/02/2018
Organising entity: University of New Zealand
Maria Muñoz; Miguel Ángel Fernández-Barroso; Adrián López-García; Carmen Caraballo; María del Carmen Rodríguez; Luis Silió; Juan M. García-Casco; Elena González.

36 **Title of the work:** Breeding program for carcass and meat quality traits in a closed commercial population of Iberian sows using boars from the Herdbook
Name of the conference: Fatty Pigs
Corresponding author: No
City of event: Badajoz, Extremadura, Spain
Date of event: 23/11/2017
End date: 25/11/2017
Organising entity: CICYTEX **Type of entity:** Public Research Body
City organizing entity: BADAJOZ, Extremadura, Spain
Juan Luis Duarte; Elena Diéguez; Adrián López-García; Miguel Fernández-Barroso; Carmen Caraballo; María Muñoz; Santiago Navarro; Bartolomé Moreno; Juan García-Casco.

37 **Title of the work:** Diversity across major and candidate genes in european local pig breeds
Name of the conference: Fatty Pigs
Corresponding author: No
City of event: Badajoz, Extremadura, Spain
Date of event: 23/11/2017
End date: 25/11/2017
Organising entity: CICYTEX **Type of entity:** Public Research Body
City organizing entity: BADAJOZ, Extremadura, Spain
Cristina Óvilo; Ricardo Bozzi; Fabian García; Yolanda Nuñez; C Geraci; Alessandro Crovetti; Juan García-Casco; Estefania Alves; M Skrlep; Rui Charneca; Raquel Quintanilla; G Kusec; J Riquet; MJ Mercat;

C Zimmer; V Razmaite; JP Araujo; Cedomir Radovic; R Savic; Marjeta Candek-Potokar; Luca; Ana I. Fernández; María Muñoz.

38 **Title of the work:** Genetic verification of F1 Duroc x Iberian crossbred boars
Name of the conference: Fatty Pigs
Corresponding author: No
City of event: Badajoz, Extremadura, Spain
Date of event: 23/11/2017
End date: 25/11/2017
Organising entity: CICYTEX **Type of entity:** Public Research Body
City organizing entity: BADAJOZ, Extremadura, Spain
Carmen Caraballo; María del Carmen Rodríguez; Luis Silió; Manuel Delgado; Andrés Paredes; Carmen Delgado; Juan García-Casco; María Muñoz.

39 **Title of the work:** Low-protein diet for Duroc x Iberian crossbred pigs: Influence on fatty acid composition of subcutaneous adipose tissue
Name of the conference: Fatty Pigs
Corresponding author: No
City of event: Badajoz, Extremadura, Spain
Date of event: 23/11/2017
End date: 25/11/2017
Organising entity: CICYTEX **Type of entity:** Public Research Body
City organizing entity: BADAJOZ, Extremadura, Spain
Elena González; María Muñoz; Miguel Fernández-Barroso; Adrián López-García; Carmen Caraballo; Juan García-Casco.

40 **Title of the work:** Low-protein diet for Iberian – Duroc crossbred pigs: effects on some meat quality traits (water holding capacity and collagen and myoglobin content)
Name of the conference: Fatty Pigs
Corresponding author: No
City of event: Badajoz, Extremadura, Spain
Date of event: 23/11/2017
End date: 25/11/2017
Organising entity: CICYTEX **Type of entity:** Public Research Body
City organizing entity: BADAJOZ, Extremadura, Spain
Juan García-Casco; Adrián López-García; Miguel Fernández-Barroso; Carmen Caraballo; María Muñoz; Elena González.

41 **Title of the work:** Olive cake-based growing diet for montanera Iberian pigs: effects on meat quality traits
Name of the conference: Fatty Pigs
Corresponding author: No
City of event: Badajoz, Extremadura, Spain
Date of event: 23/11/2017
End date: 25/11/2017
Organising entity: CICYTEX **Type of entity:** Public Research Body
City organizing entity: BADAJOZ, Extremadura, Spain
Adrián López-García; Miguel Fernández-Barroso; Juan García-Casco; Carmen Caraballo; María Muñoz; Elena González.

42 **Title of the work:** Fatty acid profile after growing period in iberian pigs fed with olive cake in a dry or wet (silage) form
Name of the conference: 11th International symposium modern trends in livestock production

Corresponding author: No
City of event: Belgrado, Serbia
Date of event: 11/10/2017
End date: 13/10/2017
Organising entity: Institute for Animal Husbandry
Adrián López García; Juan María García Casco; María Muñoz; José Manuel Martínez Torres; Miguel Ángel Fernández Barroso; Elena González Sánchez. "Fatty acid profile after growing period in iberian pigs fed with olive cake in a dry or wet (silage) form".

43 **Title of the work:** Genetic diversity of alentejano and iberian breeds assesed by polymorphisms of major genes
Name of the conference: 11th International symposium modern trends in livestock production
Corresponding author: Yes
City of event: Belgrado, Serbia
Date of event: 11/10/2017
End date: 13/10/2017
Organising entity: Institute for Animal Husbandry
Cristina Óvilo; Juan María García Casco; María Muñoz; Riccardo Bozzi; Alessandro Crovetti; Rui Charneca; Jose M Martins; Ana Isabel Fernández; Luca Fontanesi. "Genetic diversity of alentejano and iberian breeds assesed by polymorphisms of major genes".

44 **Title of the work:** Alternative feeding in Iberian pigs during growth period: incorporation of olive cake in a dry or wet (silage) form
Name of the conference: Animal Science Days
Corresponding author: No
City of event: Teichalm Region, Austria
Date of event: 20/09/2017
End date: 22/09/2017
Organising entity: University of Natural Resources and Life Sciences **Type of entity:** University
Juan María García Casco; María Muñoz; José Manuel Martínez Torres; Adrián López García; Miguel Ángel Fernández Barroso; Elena González Sánchez. "Alternative feeding in Iberian pigs during growth period: incorporation of olive cake in a dry or wet (silage) form".

45 **Title of the work:** Analyses of hypothalamic transcriptome to explore porcine growth and fatness regulation in Iberian genetic backgrounds
Name of the conference: 36th Conference of the International Society for Animal Genetics
Corresponding author: Yes
City of event: Dublin, Ireland
Date of event: 16/07/2017
End date: 21/07/2017
Organising entity: International Society for Animal Genetics
María Muñoz; Ángel A Martínez Montes; Almudena Fernández; Yolanda Nuñez; Josep María Folch; Ana Isabel Fernández. "Analyses of hypothalamic transcriptome to explore porcine growth and fatness regulation in Iberian genetic backgrounds".

46 **Title of the work:** Distribution of polymorphisms in major and candidate genes for productive and domestication-related traits in European local pig breeds
Name of the conference: 36th Conference of the International Society for Animal Genetics
Corresponding author: No
City of event: Dublin, Ireland
Date of event: 16/07/2017

End date: 21/07/2017
Organising entity: International Society for Animal Genetics
Ana Isabel Fernández; María Muñoz; Fabian García; Yolanda Nuñez; Claudia Geracci; Alessandro Crovetti; Juan María García Casco; Estefania Alves; Martin Skrlep; Juliette Riquet; Maria Jose Mercat; Ricardo Bozzi; Meta Candek-Potokar; Luca Fontanesi; Cristina Óvilo. "Distribution of polymorphisms in major and candidate genes for productive and domestication-related traits in European local pig breeds".

47 **Title of the work:** SNP association analyses for meat tenderness and thaw and cooking losses in a commercial Iberian pig population
Name of the conference: 36th Conference of the International Society for Animal Genetics
Corresponding author: No
City of event: Dublin, Ireland
Date of event: 16/07/2017
End date: 21/07/2017
Organising entity: International Society for Animal Genetics
Miguel Ángel Fernández Barroso; Estefania Alves; Luis Silió; Carmen Rodríguez; Juan María García Casco; María Muñoz. "SNP association analyses for meat tenderness and thaw and cooking losses in a commercial Iberian pig population".

48 **Title of the work:** Polimorfismos en las regiones reguladoras del gen CAST: Efectos in vivo y postmortem en cerdos de tipo iberico
Name of the conference: AIDA XVII Conference on Animal Production
Corresponding author: No
City of event: Zaragoza, Aragon, Spain
Date of event: 30/05/2017
End date: 31/05/2017
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Estefania Alves; Rita Benitez; Juan María García Casco; María Muñoz; Carmen Caraballo; Fabian García; Luis Silió; María del Carmen Rodriguez. "Polimorfismos en las regiones reguladoras del gen CAST: Efectos in vivo y postmortem en cerdos de tipo iberico".

49 **Title of the work:** Restricción proteica en la fase de crecimiento de cerdos ibéricos cruzados y su influencia en caracteres de calidad de la carne
Name of the conference: AIDA XVII Conference on Animal Production
Corresponding author: No
City of event: Zaragoza, Aragon, Spain
Date of event: 30/05/2017
End date: 31/05/2017
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Adrián López; Miguel Ángel Fernández Barroso; Juan María García Casco; Carmen Caraballo; María Muñoz; Elena González. "Restricción proteica en la fase de crecimiento de cerdos ibéricos cruzados y su influencia en caracteres de calidad de la carne".

50 **Title of the work:** Stress-relaxation test como método para medir textura en lomo curado
Name of the conference: AIDA XVII Conference on Animal Production
Corresponding author: No
City of event: Zaragoza, Aragon, Spain
Date of event: 30/05/2017
End date: 31/05/2017
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Miguel Ángel Fernández Barroso; Adrián López; Carmen Caraballo; Juan María García Casco; María Muñoz. "Stress-relaxation test como método para medir textura en lomo curado".

51 **Title of the work:** Utilización de subproductos agrícolas en la dieta de cerdos ibéricos cruzados y su influencia en caracteres de calidad de la carne
Name of the conference: AIDA XVII Conference on Animal Production
Corresponding author: No
City of event: Zaragoza, Aragon, Spain
Date of event: 30/05/2017
End date: 31/05/2017
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Adrián López; Miguel Ángel Fernández Barroso; Juan María García Casco; Carmen Caraballo; María Muñoz; Elena González. "Utilización de subproductos agrícolas en la dieta de cerdos ibéricos cruzados y su influencia en caracteres de calidad de la carne".

52 **Title of the work:** Validación de regiones QTLs y genes candidatos en tres retrocruces experimentales con fondo genético ibérico
Name of the conference: AIDA XVII Conference on Animal Production
Corresponding author: Yes
City of event: Zaragoza, Aragon, Spain
Date of event: 30/05/2017
End date: 31/05/2017
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Angel M Martínez Montes; María Muñoz; Almudena Fernández; Josep María Folch; Ana Isabel Fernández. "Validación de regiones QTLs y genes candidatos en tres retrocruces experimentales con fondo genético ibérico".

53 **Title of the work:** Animal breeding scheme applied to the quality of Bellota 100% Iberian pig
Name of the conference: IX Simposio Internacional sobre el Cerdo Mediterráneo
City of event: Portalegre, Portugal
Date of event: 03/11/2016
End date: 05/06/2016
Organising entity: Instituto Politécnico de Portalegre
María Muñoz Muñoz; Fernando Sánchez Esquiliche; Carmen Caraballo González; Fernando Gómez; Jose María Pariente; Carmen Rodríguez Valdovinos; Luis Silió López; Juan María García Casco.

54 **Title of the work:** Racial verification of Iberian ham and shoulders commercialized in Spanish supermarkets
Name of the conference: IX Simposio Internacional sobre el Cerdo Mediterráneo
City of event: Portalegre, Portugal
Date of event: 03/11/2016
End date: 05/06/2016
Organising entity: Instituto Politécnico de Portalegre
Carmen Caraballo González; María Muñoz Muñoz; Carmen Rodríguez Valdovinos; Luis Silió López; Juan María García Casco.

55 **Title of the work:** Tracing genes and polymorphisms related to percentage of premium cuts and loin composition in a line of Iberian pigs
Name of the conference: IX Simposio Internacional sobre el Cerdo Mediterráneo
City of event: Portalegre, Portugal
Date of event: 03/11/2016
End date: 05/06/2016
Organising entity: Instituto Politécnico de Portalegre

Carmen Rodríguez Valdovinos; Juan María García Casco; Fernando Sánchez Esquiliche; Fernando Gómez; Jose María Pariente; Fabian García; Carmen Caraballo González; María Muñoz Muñoz; Carmen Barragán; Yolanda Nuñez; Luis Silió López.

56 **Title of the work:** Análisis de la mortalidad perinatal en cuatro estirpes de cerdo Ibérico y sus cruces
Name of the conference: XVIII Reunión de Mejora Genética Animal
Corresponding author: Yes
City of event: Valencia, Valencian Community, Spain
Date of event: 02/06/2016
End date: 03/06/2016
Organising entity: Universidad Politécnica de Valencia **Type of entity:** University
María Muñoz Muñoz; Juan María García Cascos; Carmen Caraballo González; María del Carmen Rodríguez Valdovinos; Luis Silió López.

57 **Title of the work:** De la granja al laboratorio de porcino
Name of the conference: XVIII Reunión de Mejora Genética Animal
City of event: Valencia, Valencian Community, Spain
Date of event: 02/06/2016
End date: 03/06/2016
Organising entity: Universidad Politécnica de Valencia **Type of entity:** University
Anixa Muiñoz Bühl; María Muñoz Muñoz; Óscar González Recio; Yolanda Núñez; Juan María García Casco; Ana Isabel Fernández Ávila.

58 **Title of the work:** Heritability of complex human diseases in the UK Biobank
Name of the conference: 10th World Congress on Genetics Applied to Livestock Production (WCGALP)
City of event: Vancouver, Canada
Date of event: 17/08/2014
End date: 22/08/2014
Organising entity: American Society of Animal Science
María Muñoz Muñoz; Ricardo Pong-Wong; Chris Haley; Albert Tenesa. "Heritability of complex human diseases in the UK Biobank".

59 **Title of the work:** Análisis genómico aplicado al estudio de la base genética de la composición de ácidos grasos en grasa intramuscular y subcutánea en cerdo
Name of the conference: XXXIX Congress of the Spanish Society of Genetic
City of event: Girona, Catalonia, Spain
Date of event: 18/09/2013
End date: 20/09/2013
Organising entity: Spanish Society of Genetics
María Muñoz; María del Carmen Rodriguez; Estefania Alves; Josep María Folch; Noelia Ibañez-Escriche; Luis Silió; Ana Isabel Fernández. "Análisis genómico aplicado al estudio de la base genética de la composición de ácidos grasos en grasa intramuscular y subcutánea en cerdo".

60 **Title of the work:** Authentication of the genetic origin of purebred and crossbred pigs using a selected set of 96 SNPs
Name of the conference: VII World Congress of Dry-Cured Ham
City of event: Ourique, Alentejo, Portugal
Date of event: 28/05/2013
End date: 31/05/2013
Organising entity: Associação de Criadores do Porco Alentejano

María Muñoz; Juan García Casco; Carmen Caraballo; María del Carmen Rodriguez; Carmen Barragán; Estefania Alves; Luis Silió. "Authentication of the genetic origin of purebred and crossbred pigs using a selected set of 96 SNPs".

61 **Title of the work:** Estudio de asociación para la composición de ácidos grasos en grasa dorsal en un cruce Ibérico x Landrace con un chip de 144 SNPs del SSC8
Name of the conference: AIDA XV Conference on Animal Production
City of event: Zaragoza, Aragon, Spain
Date of event: 14/05/2013
End date: 15/05/2013
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Manuel Revilla; Yuliaxis Ramayo-Caldas; Anna Castelló; Jordi Corominas; Anna Puig-Oliveras; Noelia Ibáñez-Escriche; María Muñoz; María Ballester; Josep María Folch. "Estudio de asociación para la composición de ácidos grasos en grasa dorsal en un cruce Ibérico x Landrace con un chip de 144 SNPs del SSC8".

62 **Title of the work:** Interacción genotipo x sistema de producción para calidad de canal y carne en cerdos ibericos de montanera y cebo de campo
Name of the conference: AIDA XV Conference on Animal Production
City of event: Zaragoza, Aragon, Spain
Date of event: 14/05/2013
End date: 15/05/2013
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Juan García Casco; María Muñoz; María del Carmen Rodriguez; Luis Silió. "Interacción genotipo x sistema de producción para calidad de canal y carne en cerdos ibericos de montanera y cebo de campo".

63 **Title of the work:** Search for biomarkers affecting porcine backfat fatty acid composition using GWAS technique
Name of the conference: ExcelMeat
City of event: Lleida, Catalonia, Spain
Date of event: 25/10/2012
End date: 25/10/2012
Organising entity: INSTITUT DE RECERCA I TECNOLOGIA AGROALIMENTARIES (IRTA)
María Muñoz; María del Carmen Rodriguez; Estefania Alves; Josep María Folch; Noelia Ibañez-Escriche; Luis Silió; Ana Isabel Fernández. "Search for biomarkers affecting porcine backfat fatty acid composition using GWAS technique".

64 **Title of the work:** Análisis de la expresión de los genes fatty acid-binding protein 4 and fatty acid-binding protein 5 porcina y su asociación con la composición de ácidos grasos en músculo
Name of the conference: XVI Animal Breeding Meeting
City of event: Menorca, Balearic Islands, Spain
Date of event: 31/05/2012
End date: 01/06/2012
Organising entity: Universitat de les Illes Balears
Anna Puig-Oliveras; Anna Castelló; Mariano Gago; Yuliaxis Ramayo-Caldas; María Muñoz; Josep María Folch. "Análisis de la expresión de los genes fatty acid-binding protein 4 and fatty acid-binding protein 5 porcina y su asociación con la composición de ácidos grasos en músculo".

65 **Title of the work:** Identificación de regiones QTL para la composición de ácidos grasos: análisis comparativo en grasas dorsal e intramuscular en cerdo
Name of the conference: XVI Animal Breeding Meeting
City of event: Menorca, Balearic Islands, Spain
Date of event: 31/05/2012

End date: 01/06/2012
Organising entity: Universitat de les Illes Balears
María Muñoz; María del Carmen Rodriguez; Estefania Alves; Josep María Folch; Noelia Ibañez-Escriche; Luis Silió; Ana Isabel Fernández. "Identificación de regiones QTL para la composición de ácidos grasos: análisis comparativo en grasas dorsal e intramuscular en cerdo".

66 **Title of the work:** Estima de las tasas de recombinación específicas de sexo en cerdo inferidas a partir de mapas de ligamiento de alta densidad
Name of the conference: XXXVIII Congress of the Spanish Society of Genetic
City of event: Murcia, Region of Murcia, Spain
Date of event: 21/09/2011
End date: 23/09/2011
Organising entity: Spanish Society of Genetics
María Muñoz; Estefania Alves; Yuliaxis Ramayo-Caldas; Joaquim Casellas; María del Carmen Rodriguez; Josep María Folch; Luis Silió; Ana Isabel Fernández. "Estima de las tasas de recombinación específicas de sexo en cerdo inferidas a partir de mapas de ligamiento de alta densidad".

67 **Title of the work:** Growth-related differential gene expression in the Longissimus thoracis muscle of Iberian×Landrace back-cross pigs
Name of the conference: ADSA-ASAS 2011
City of event: New Orleans, United States of America
Date of event: 09/07/2011
End date: 14/07/2014
Organising entity: ADSA-ASAS
Joaquim Casellas; Jose Luis Noguera; Ramona Pena; Josep María Folch; María Muñoz; Noelia Ibañez-Escriche. "Growth-related differential gene expression in the Longissimus thoracis muscle of Iberian×Landrace back-cross pigs".

68 **Title of the work:** Evaluación del gen candidato porcino Acyl-coa synthetase long-chain 4 para caracteres de calidad de la carne en cerdos
Name of the conference: AIDA XIV Conference on Animal Production
City of event: Zaragoza, Aragon, Spain
Date of event: 17/05/2011
End date: 18/05/2011
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
Jordi Corominas; Yuliaxis Ramayo; Anna Castelló; María Muñoz; Noelia Ibañez-Escriche; Josep María Folch; María Ballester. "Evaluación del gen candidato porcino Acyl-coa synthetase long-chain 4 para caracteres de calidad de la carne en cerdos".

69 **Title of the work:** Validación de los efectos del SNP ACACA: c.5634T>C sobre la composición de ácidos grasos en cerdos ibéricos puros y cruzados con Duroc
Name of the conference: AIDA XIV Conference on Animal Production
City of event: Zaragoza, Aragon, Spain
Date of event: 17/05/2011
End date: 18/05/2011
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
María Muñoz; María del Carmen Rodríguez; Almudena Fernández; Carmen Barragán; Estefania Alves; Luis Silió. "Validación de los efectos del SNP ACACA: c.5634T>C sobre la composición de ácidos grasos en cerdos ibéricos puros y cruzados con Duroc".

70 **Title of the work:** Evaluation of the porcine acyl-CoA synthetase long chain 4 (ACSL4) as candidate gene for meat quality traits in pigs
Name of the conference: XXXII Conference of the International Society for Animal Genetics

City of event: Edinburgh, United Kingdom
Date of event: 26/07/2010
End date: 30/07/2010
Organising entity: International Society for Animal Genetics
Jordi Corominas; Jordi Estellé; María Muñoz; Noelia Ibañez-Escriche; Josep María Folch; María Ballester. "Evaluation of the porcine acyl-CoA synthetase long chain 4 (ACSL4) as candidate gene for meat quality traits in pigs".

71 **Title of the work:** QTL scan in SSC12 for fatty acid composition of intramuscular fat using combined information of candidate genes, microsatellites and SNP chip
Name of the conference: XXXII Conference of the International Society for Animal Genetics
City of event: Edinburgh, United Kingdom
Date of event: 26/07/2010
End date: 30/07/2010
Organising entity: International Society for Animal Genetics
María Muñoz; Ana Isabel Fernández; Carmen Rodríguez; Carmen Barragán; Josep María Folch; Jose Luis Noguera; Luis Silió; Estefania Alves. "QTL scan in SSC12 for fatty acid composition of intramuscular fat using combined information of candidate genes, microsatellites and SNP chip".

72 **Title of the work:** c-kit and melanoma predisposition in pigs: Sequence variants, association analysis and gene expression
Name of the conference: XXXII Conference of the International Society for Animal Genetics
City of event: Edinburgh, United Kingdom
Date of event: 26/07/2010
End date: 30/07/2010
Organising entity: International Society for Animal Genetics
Amanda Fernández; Jordi Estellé; María Muñoz; Helene de Batz; Françoice Créchet; Gillaume Piton; Luca Fontanesi; Silvia Vincent-Naulleau; Emmanuelle Bourneuf. "c-kit and melanoma predisposition in pigs: Sequence variants, association analysis and gene expression".

73 **Title of the work:** QTL detection on SSC12 for fatty acid composition on intramuscular fat and evaluation of porcine ATP Citrate Lyase (ACLY) as candidate gene
Name of the conference: 60th Annual Meeting of the European Association for Animal Production
City of event: Barcelona, Catalonia, Spain
Date of event: 24/08/2009
End date: 27/08/2009
Organising entity: European Association for Animal Production
María Muñoz; Estefania Alves; Armand Sánchez; Luis Varona; Isabel Díaz; Carmen Barragán; Carmen Rodríguez; Luis Silió. "QTL detection on SSC12 for fatty acid composition on intramuscular fat and evaluation of porcine ATP Citrate Lyase (ACLY) as candidate gene".

74 **Title of the work:** Search of candidate genes for porcine prolificacy traits based on gene expression differences in ovary tissue
Name of the conference: 60th Annual Meeting of the European Association for Animal Production
City of event: Barcelona, Catalonia, Spain
Date of event: 24/08/2009
End date: 27/08/2009
Organising entity: European Association for Animal Production
Amanda Fernández Rodríguez; Carmen Rodríguez; Almudena Fernádez; María Muñoz; Ramona Pena; Ingrid Balcells; Cristina Óvilo; Ana Isabel Fernández. "Search of candidate genes for porcine prolificacy traits based on gene expression differences in ovary tissue".

75 **Title of the work:** Dos mejor que uno: interacción de polimorfismos RBP4-MspI y ESR1-PvuII sobre el tamaño de camada en una línea porcina Chino-Europea
Name of the conference: AIDA XIII Conference on Animal Production
City of event: Zaragoza, Aragon, Spain
Date of event: 12/05/2009
End date: 13/05/2009
Organising entity: ASOCIACION INTERPROFESIONAL PARA EL DESARROLLO AGRARIO
María Muñoz; Cristina Óvilo; Gloria Muñoz; Almudena Fernández; Estefania Alves; Luis Silió. "Dos mejor que uno: interacción de polimorfismos RBP4-MspI y ESR1-PvuII sobre el tamaño de camada en una línea porcina Chino-Europea".

76 **Title of the work:** ACOX1: A candidate gene for fatty acid composition in pigs
Name of the conference: XXXI Conference of the International Society for Animal Genetics
City of event: Amsterdam, Holland
Date of event: 20/07/2008
End date: 24/07/2008
Organising entity: International Society for Animal Genetics
María Muñoz; Estefania Alves; Luis Varona; Jordi Estellé; Luis Silió. "ACOX1: A candidate gene for fatty acid composition in pigs".

77 **Title of the work:** Efectos del gen RBP4 en el tamaño de camada en cerdas de una línea sintética chino-europea
Name of the conference: XXXVI Congress of the Spanish Society of Genetic
City of event: León, Castile and León, Spain
Date of event: 18/09/2007
End date: 21/09/2007
Organising entity: Spanish Society of Genetics
María Muñoz; Estefania Alves; Almudena Fernández; Luis Silió. "Efectos del gen RBP4 en el tamaño de camada en cerdas de una línea sintética chino-europea".

R&D management and participation in scientific committees

Scientific, technical and/or assessment committees

Committee title: PhD dissertation of Judit Salces Ortiz. "Estudio de la función y regulación del gen ovino HSP90AA1"
Affiliation entity: Universidad Complutense de Madrid **Type of entity:** University
City affiliation entity: Madrid, Community of Madrid, Spain
Start-End date: 29/01/2015 - 29/01/2015

Organization of R&D activities

Title of the activity: EU_Ciencia_Para_Nuestros_Mayores
Type of activity: Facebook page. Divulgate projects funded by the European Union to elderly people
Start date: 28/09/2017

Evaluation and revision of R&D projects and articles

1 **Name of the activity:** Referee
Performed tasks: Referee
Entity where activity was carried out: Genetic Selection and Evolution
Start date: 18/12/2018

2 **Name of the activity:** Referee
Performed tasks: Referee
Entity where activity was carried out: Journal of Animal Breeding and Genetics
Start date: 21/11/2018

3 **Name of the activity:** Referee
Performed tasks: Referee
Entity where activity was carried out: Plos One
Start date: 25/05/2018

4 **Name of the activity:** Reviewer
Performed tasks: Referee
Entity where activity was carried out: Livestock Science
City of entity: Foulum, Denmark
Type of activity: Review of articles in scientific or technological journals
Frequency of the activity: 1
Access system: Contacted by the journal
Geographical area: European Union
Start date: 07/11/2016

5 **Name of the activity:** Reviewer
Performed tasks: Referee
Entity where activity was carried out: Asian-Australasian Journal of Animal Sciences
City of entity: Seoul,
Type of activity: Review of articles in scientific or technological journals
Frequency of the activity: 1
Access system: Contacted by the journal
Geographical area: European Union
Start date: 15/06/2016

6 **Name of the activity:** Reviewer
Performed tasks: Referee
Entity where activity was carried out: Czech Journal of Animal Science
City of entity: Praha, Czech Republic
Type of activity: Review of articles in scientific or technological journals
Frequency of the activity: 1
Access system: Contacted by the journal
Geographical area: European Union
Start date: 27/11/2015

7 **Name of the activity:** Reviewer
Performed tasks: Referee
Entity where activity was carried out: Animal Genetics
City of entity: Malden, United States of America
Frequency of the activity: 1

Type of activity: Review of articles in scientific or technological journals
Access system: Contacted by the journal
Geographical area: Non EU International
Start date: 25/06/2015

8 **Name of the activity:** Reviewer
Performed tasks: Referee
Entity where activity was carried out: Annals of Animal Science
City of entity: Kraków-Balice, Poland
Type of activity: Review of articles in scientific or technological journals
Frequency of the activity: 2
Access system: Contacted by the journal
Geographical area: European Union
Start date: 10/10/2014

9 **Name of the activity:** Reviewer
Performed tasks: Referee
Entity where activity was carried out: Journal of Integrative Agriculture
Type of entity: Journal
City of entity: Beijing, China
Type of activity: Review of articles in scientific or technological journals
Frequency of the activity: 4
Access system: Contacted by the journal
Geographical area: Non EU International
Start date: 18/02/2014

10 **Name of the activity:** Reviewer
Performed tasks: Referee
Entity where activity was carried out: Spanish Journal of Agricultural Research
Type of entity: Journal
City of entity: Madrid, Community of Madrid, Spain
Type of activity: Review of articles in scientific or technological journals
Frequency of the activity: 1
Access system: Contacted by the journal
Geographical area: European Union
Start date: 20/01/2014

11 **Name of the activity:** Reviewer
Performed tasks: Referee
Entity where activity was carried out: Animal
Type of entity: Journal
City of entity: Cambridge, United Kingdom
Type of activity: Review of articles in scientific or technological journals
Frequency of the activity: 1
Access system: Contacted by the journal
Geographical area: European Union
Start date: 18/10/2013

12 **Name of the activity:** Reviewer
Performed tasks: Referee
Entity where activity was carried out: Molecular Biology Reports (MOLE)
Type of entity: Journal
City of entity: Farmington, United States of America
Type of activity: Review of articles in scientific or technological journals
Frequency of the activity: 2
Access system: Contacted by the journal
Geographical area: Non EU International
Start date: 03/04/2012

Other achievements

Stays in public or private R&D centres

1 **Entity:** CONSORCI CSIC-IRTA-UAB CENTRE DE RECERCA EN AGRIGENOMICA (CRAG)
Faculty, institute or centre: CRAG
City of entity: Bellaterra, Catalonia, Spain
Start-End date: 19/09/2016 - 23/12/2016 **Duration:** 7 days
Goals of the stay: Post-doctoral
Provable tasks: Learning of DNA extraction from foecal samples

2 **Entity:** Institut National de la Recherche Agronomique (INRA) **Type of entity:** R&D Centre
Faculty, institute or centre: UMR de Génétique Animale et Biologie Intégrative, Equipe Génétique Inmunité Santé
City of entity: Jouy en Josas, Île de France, France
Start-End date: 06/04/2010 - 11/05/2010 **Duration:** 2 months - 5 days
Goals of the stay: Doctorate
Provable tasks: Visiting PhD student. I´ve been studitying the geenetic factors related with development and recesión of familiar melanoma a in porcine population Melim (Melanoblastoma-bearing Libechov Minipig). To acomplish this purpose I carried out the sequencing of several candidate genes and a search of polimorphisms potentially related with these traits. Moreover, I've carried out the genotyping of a duplication using pyrosequencing technique.

3 **Entity:** Aarhus University **Type of entity:** University Department
Faculty, institute or centre: Genetics and Biotechnology Department
City of entity: Tjele, Danmark, Denmark
Start-End date: 01/04/2009 - 26/06/2009 **Duration:** 2 months - 26 days
Goals of the stay: Doctorate
Provable tasks: Visiting PhD student. During the stay, I've studied the expression profiles of microRNA and protein coding genes during proliferation and differentiation of muscle cells grown in culture. The analysis has led to a functional characterization of a selection of muscle-specific microRNAs-mRNA pairs, which provides new insight into genes that control muscle biology. During this period I´ve used RT-qPCR to characterize the expression of the microRNAs and target genes.

4 **Entity:** Università degli Studi di Bologna **Type of entity:** University Department
Faculty, institute or centre: Dipartamento di Protezione e Valorizzacione Agroalimentari (DIPROVAL)
City of entity: Reggio Emilia, Emilia-Romagna, Italy
Start-End date: 03/03/2008 - 30/05/2008 **Duration:** 2 months - 28 days
Goals of the stay: Doctorate
Provable tasks: Visiting student. Gene expression analyses using RT-qPCR, gene characterization and search of polymorphims of candidate genes affecting meat quality in pigs.

Obtained grants and scholarships

1 **Name of the grant:** Beca INIA
Aims: Pre-doctoral
Awarding entity: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)
Conferral date: 12/12/2006 **Duration:** 4 years
End date: 07/01/2007
Entity where activity was carried out: INSTITUTO NACIONAL DE INVESTIGACIÓN Y TECNOLOGÍA AGRARIA Y ALIMENTARIA (INIA)

2 **Name of the grant:** Beca de Colaboración
Aims: Student fellowship
Awarding entity: MINISTERIO DE EDUCACION Y CIENCIA
Conferral date: 22/11/2004 **Duration:** 6 months
End date: 06/2005
Entity where activity was carried out: Universidad Complutense de Madrid