Convegno ASIC 2016

11th WRC: Inviati speciali in Cina

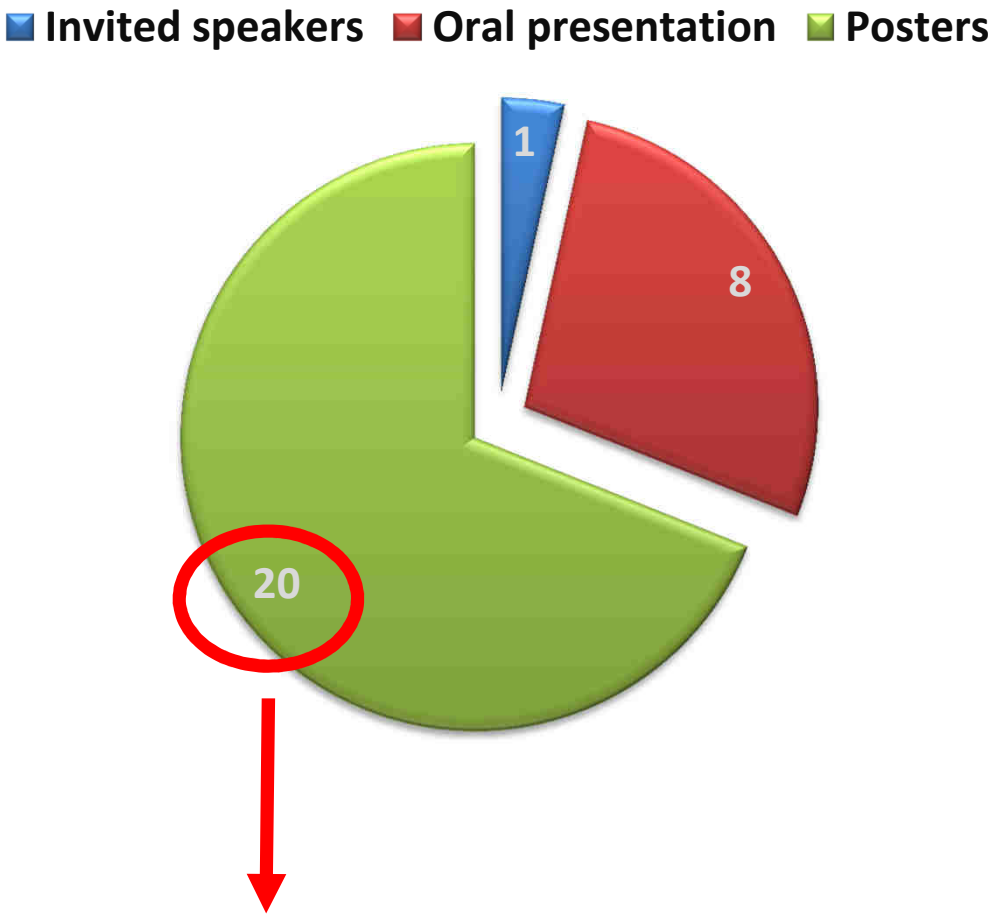
30 settembre 2016, Padova

11th WORLD RABBIT CONGRESS, 15-18 June 2016, Qingdao, China

7. BREEDING AND GENETIC

Michele Marino
Università degli Studi di Bari "Aldo Moro"

Scientific production



18 presented

Invited speakers (1)	Italy
Oral presentation (8 + 2)	France (3) Spain (1 + 1) Egypt (1 + 1) China (2) Benin City (1)
Posters (20)	China (8) France (4) Hungary (3) Spain (1) Slovakia (1) Ecuador (1) Cuba (1) Nigeria (1)

Main paper

THE RABBIT IN THE GENOMICS ERA: APPLICATIONS AND PERSPECTIVES IN RABBIT BIOLOGY AND BREEDING

Fontanesi L.[1]*

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*Corresponding author: luca.fontanesi@unibo.it

The rabbit genome

21 autosomes plus the sexual chromosomes (2n = 44)

~ 2.6 Gbp

19,203 coding genes

Carneiro et al. (2014)

50 million SNPs
5.6 million insertion/deletion
(OryCun2.0)

Fontanesi et al. (2012b)

155 CNVRs

Candidate gene analyses for production traits

Gene symbol	Gene name	Polymorphisms	Populations	Associated traits	References
Growth and meat production traits (carcass and meat and fat quality traits)					
GH1	Growth hormone	SNP in a putative regulatory region	Commercial meat rabbit line	Finishing weight	Fontanesi et al. (2012a)
Reproduction traits in does					
TIMP1	TIMP metallopeptidase inhibitor 1	1 SNP in the promoter region	F2 cross of two lines divergently selected for uterine capacity	Embryo implantation	Estellé et al. (2006); Argente et al. (2010)
Disease/disorder resistance traits					
JAK3	Janus kinase 1	1 missense mutation (exon 9) and 1 synonymous SNP (exon 21)	New Zealand white (case and control study)	Nonspecific digestive disorder	Fu et al. (2014)

QTL analyses
(F2 population)

chromosome 7 (for different carcass weights)

chromosome 9 (for bone mass)

Genomic selection

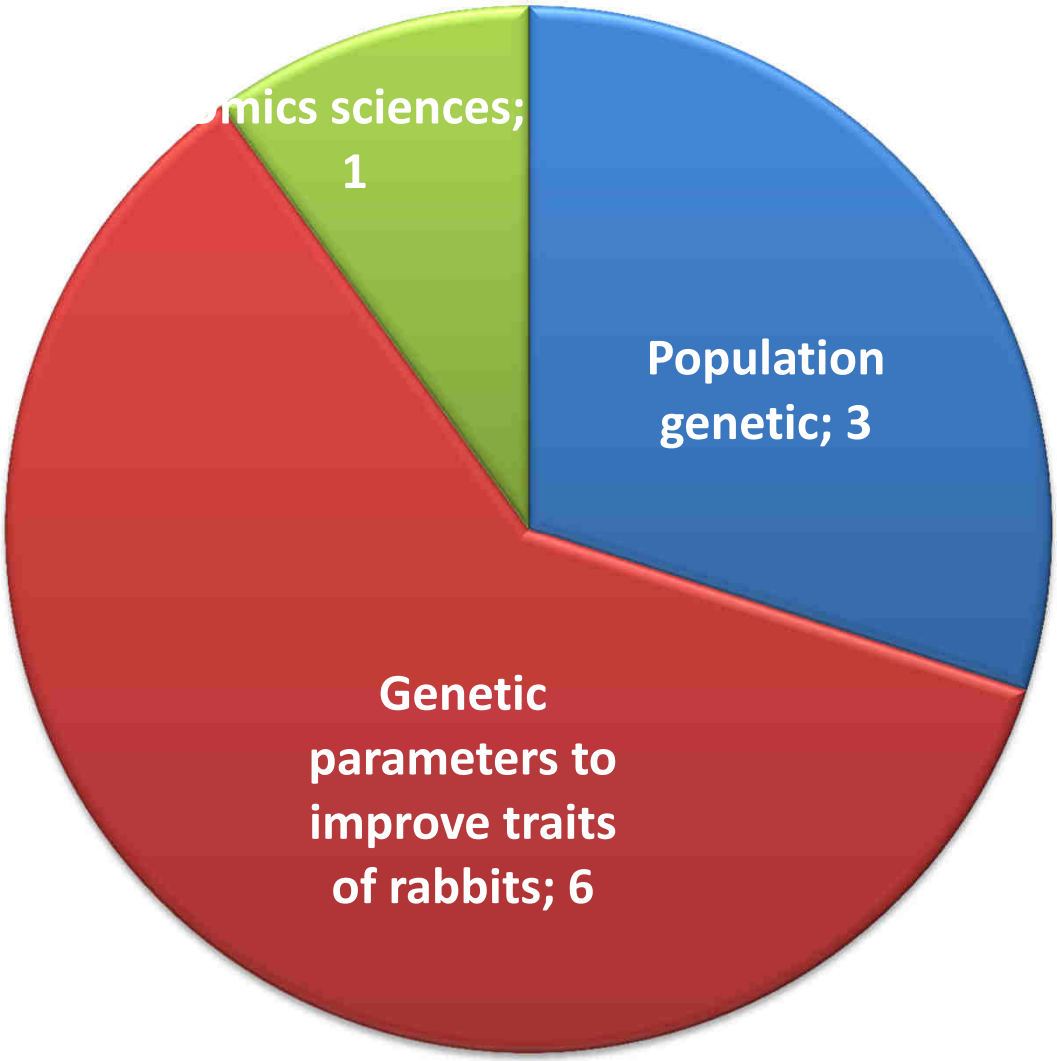
It is based on the genotype at thousands of single nucleotide polymorphisms (SNPs) covering the whole genome

The sequencing of genome

The development of high throughput genotyping technologies

Increase accuracy of genetic predictions and to predict new phenotypes

Oral presentation

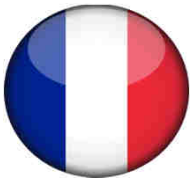


Population genetic

2

1

Genetic parameters to improve traits of rabbits



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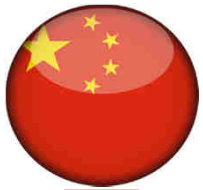
2



1

Omics sciences

1

Oral presentation

Population genetic

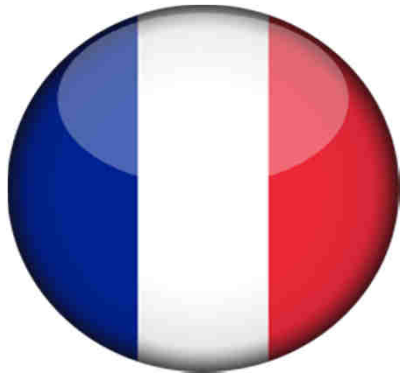
2 (+1) presentations

Microsatellite polymorphism in some Egyptian and Spanish common rabbit breeds. ***Emam A.M., Afonso S., Azoz A.A.A., González-Redondo P., Mehaisen G.M.K., Ahmed N.A. Ferrand N.***

Origin of Egyptian and Spanish common rabbits: evidence from mitochondrial DNA cytochrome b sequence analysis. ***Emam A.M., Afonso S., Azoz A.A.A., González-Redondo P., Mehaisen G.M.K., Ahmed N.A., Ferrand N.***

Assessing the genetic similarities and distance among rabbit populations using the random amplified polymorphic DNA (PAPD) technique. ***Orheruata A.M., Imasuen A.J., Ichekor C.***

Oral presentation



Genetic parameters to improve traits of rabbits

4 (+1) presentations

Genetic parameters for resistance to infectious diseases in two French paternal meat rabbit lines. ***Gunia M., David I., Hurtaud J., Maupin M., Gilbert H., Garreau H.***

Estimation of genetic parameters for carcass traits evaluated by in vivo real-time ultrasonography in meat rabbit breeding. ***Lenoir G., Morien F.***

Direct and correlated responses to selection in two lines of rabbits selected for feed efficiency under ad libitum and restricted feeding. ***Garreau H., Gilbert H., Molette C, Larzul C, Balmisse E., Ruesche J., Secula-Tircazes A., Gidenne T., Drouilhet L.***

Oral presentation

Effect of selection for intramuscular fat on instrumental texture and sensory traits in rabbits. ***Martínez-Álvaro M., Penalba V., Blasco A., Hernández P.***

Effect of selection for intramuscular fat on fatty acid composition of several muscles in rabbits. ***Martínez-Álvaro M., Blasco A., Hernández P.***

Polymorphisms of PIK3CA and AKT3 genes and their association with growth traits of rabbits. ***Wang L., Jia X., Chen S., Wang J., Lai S.***

Omics sciences

1 presentation

Profiling of intestinal microbiome in rabbit. ***Deng F., Jia X., Chen S.Y., Wang J., Lai S.J.***

Profiling of intestinal microbiome in rabbit

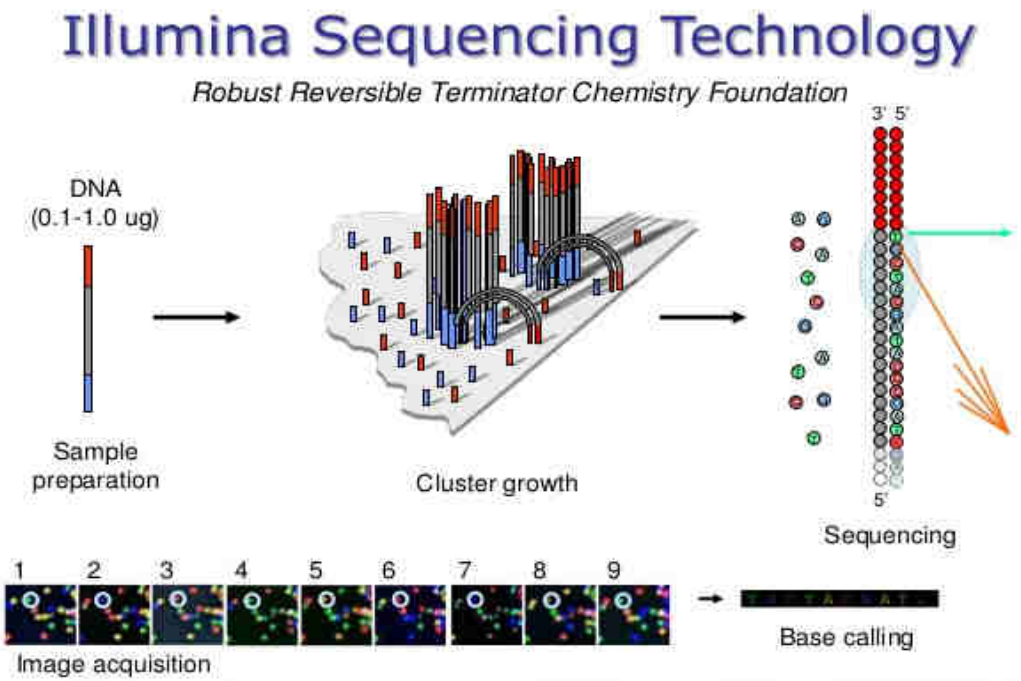
Deng et al., 2016

The intestinal digestive disorder is one of the most important diseases in rabbit

Sensitivity of digestive system

Dietary composition and type

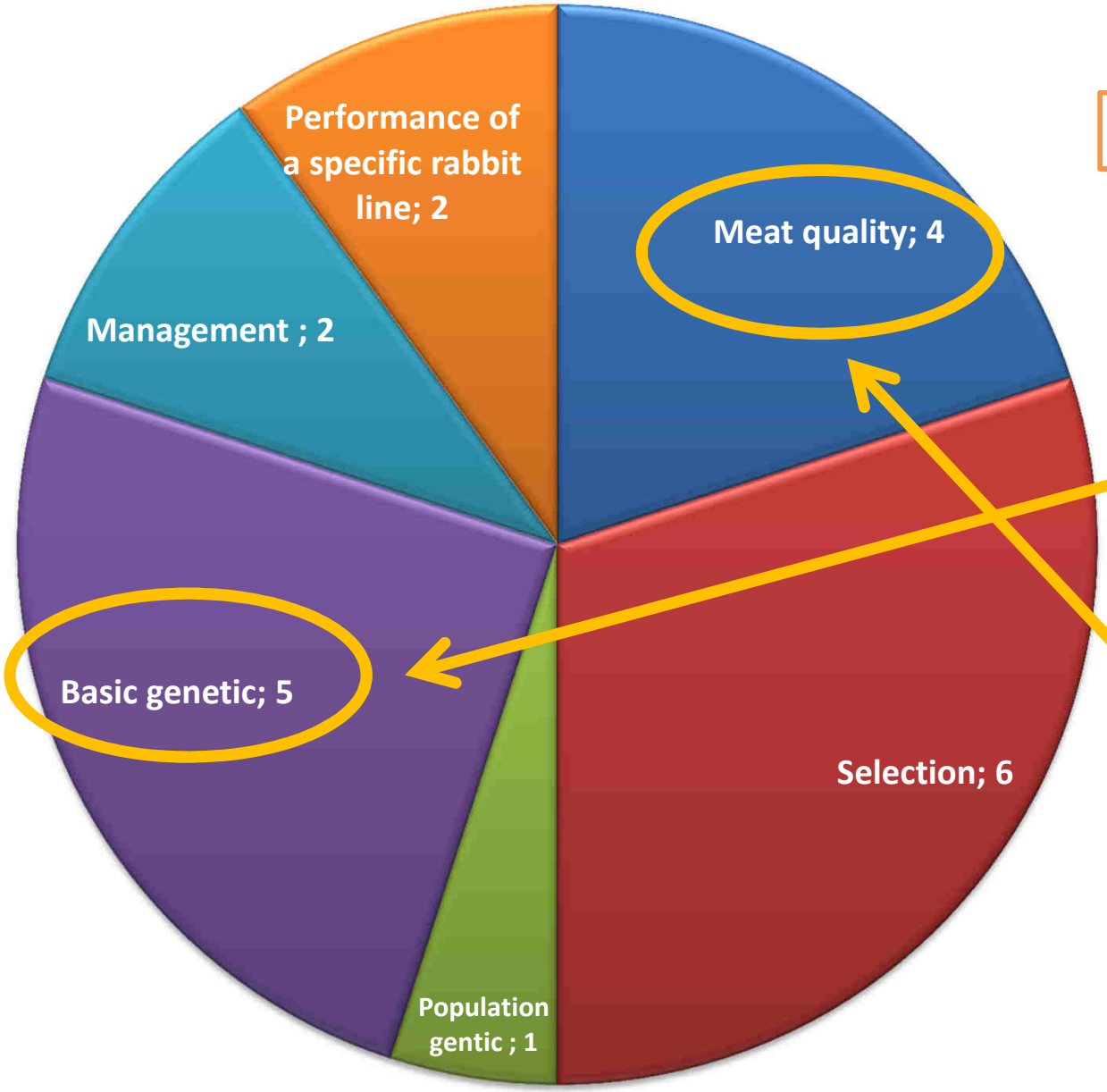
Molecular marker of 16s rRNA genes



For all samples	Number of OTUs
Mean	3, 898

The results revealed that all samples had the relatively high diversity according to both richness and diversity indexes

Posters



China 8 posters

Basic genetic: 4 posters

Meat quality: 3 posters

Performance: 1 poster

Posters

CALPASTATIN GENE POLYMORPHISM IS ASSOCIATED WITH RABBIT MEAT QUALITY TRAITS

Wang J.[1], Elzo M.A.[2], Jia X.[1], Chen S.[1], Lai S.J.[1]*

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[2] Department of Animal Science, University of Florida, PO Box 110910, 32611, Florida, USA
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calpastatin (*CAST*) gene

CAST-intron3-T67C SNP

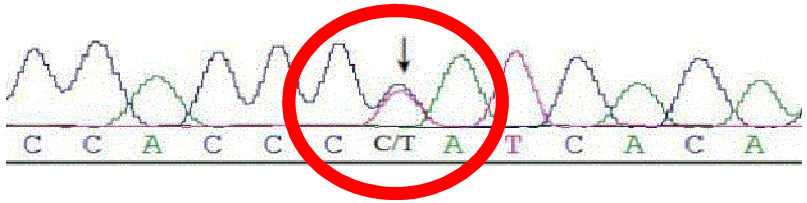

Table 2: Least square means for CAST genotype effects on meat pH, color and IMF traits in rabbit *longissimus dorsi* muscle

	CAST Genotype[a]			
Trait[b]	CC	TT	CT	*P*-value
pH_{0h}	6.47±0.08	6.72±0.08	6.32±0.05	0.176
pH_{24h}	5.71±0.03	5.71±0.03	5.74±0.02	0.132
L^*_{0h}	47.70±1.04	49.38±1.03	48.63±0.68	0.304
L^*_{24h}	56.87±0.75	60.23±1.10	58.32±0.71	0.264
a^*_{0h}	4.77±0.41	5.14±0.32	5.67±0.27	0.144
a^*_{24h}	4.02±0.23	4.77±0.44	4.40±0.47	0.137
b^*_{0h}	1.39±0.19^{c}	3.09±0.11^{a}	2.81±0.13^{ab}	0.037
b^*_{24h}	4.62±0.20^{c}	5.40±0.22^{a}	5.20±0.23^{ab}	0.048
IMF (%)	2.52+0.11a	1.49+0.09b	1.73+0.21ab	0.029

Values with different superscripts within the same row differ significantly at $P<0.05$ (a, b) and $P<0.01$ (A, B, C).

Posters

THE CRP PROMOTER POLYMORPHISM OF DOMESTIC RABBITS. PRELIMINARY STUDY

Ondruska L.*, Parkanyi V., Vasicek D.

National Agricultural and Food Centre - Research Institute for Animal Production Nitra, Hlohovecka 2, 951 41 Luzianky, Slovakia

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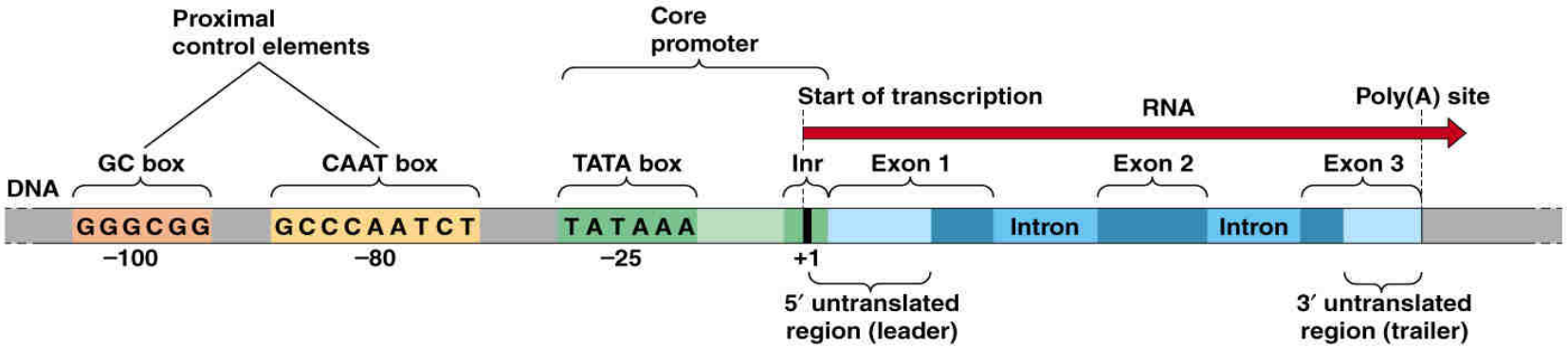
The identified SNPs of rabbit *CRP* gene promoter may be relevant in the divergent selection of appropriate parental genotypes



Grazie per l’attenzione