Italian Journal of Animal Science

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Italian Journal of Animal Science

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- Animal derived food quality and safety
- Animal genetics and breeding
- Aquaculture, poultry, companion and wildlife
- Livestock systems, management and environment
- Non-ruminants nutrition and feeding
- Production physiology and biology
- Ruminants nutrition and feeding

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Perugia, June 13-16, 2017

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Perugia, June 13-16, 2017

## 22nd ASPA Congress Programme at a Glance

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<td>13.00</td>
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<tr>
<td>15.00</td>
<td><strong>Oral Presentations</strong>&lt;br&gt;AB&lt;br&gt;&quot;Horse genetics&quot;&lt;br&gt;(5)</td>
<td><strong>Oral Presentations</strong>&lt;br&gt;AB&lt;br&gt;&quot;Antimicrobial resistance&quot;&lt;br&gt;(5)</td>
<td><strong>Oral Presentations</strong>&lt;br&gt;FQ&lt;br&gt;&quot;Meat quality&quot;&lt;br&gt;(4)</td>
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<td>16.15</td>
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<tr>
<td>17.30</td>
<td><strong>Opening Ceremony</strong>&lt;br&gt;(Plenary Room - Dept. of Agriculture, Food and Environmental Sciences, University of Perugia)</td>
<td><strong>Invited Lecture</strong>&lt;br&gt;Livestock welfare issues in Europe or what is needed to maintain livestock production in the future?&lt;br&gt;Matthias Gaul, EAAP, Italy</td>
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<td>19.30</td>
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<td></td>
<td><strong>Concert of Perugia University Choir</strong> and Welcome Cocktail</td>
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**Perugia, June 13-16, 2017**

### 22nd ASPA Congress Programme at a Glance

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<td>&quot;Feed evaluation&quot;</td>
<td>&quot;Husbandry, health and welfare&quot;</td>
<td>&quot;Milk and cheese quality&quot;</td>
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<td>AB &quot;Genome-wide studies&quot;</td>
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<td>&quot;Insects in animal nutrition&quot;</td>
<td>&quot;Husbandry, health and welfare&quot;</td>
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<td>Martina Grek, Germany</td>
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<td>FQ &quot;Meat quality&quot;</td>
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<td>&quot;Husbandry, health and welfare&quot;</td>
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<td>NF+FPQ &quot;Dietary strategies and quality of foods&quot;</td>
<td>&quot;Small ruminant genetics&quot;</td>
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<td>15.45</td>
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<td>&quot;Pig health and behaviour&quot;</td>
<td>&quot;Dairy cattle genetics&quot;</td>
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<tr>
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<td>Franco Vajolli, Italy</td>
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#### Coffee Break and Poster Session

#### Lunch and Poster Session

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#### Coffee Break and Poster Session

#### Meeting of ASPA Members (Room AU)

#### Social Dinner - Palazzo Bernabei, University of Perugia (Assisi)
**ASPA 22nd Congress**

*Perugia, June 13-16, 2017*

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**Note:** The programme is subject to change.

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**ASPA 22nd Congress**

*Perugia, June 13-16, 2017*
Agenda Invited Speakers

June 13th

Plenary Room - Dept. of Agricultural, Food and Environmental Sciences, University of Perugia

17.30-19.30 Matthias Gauly
Livestock welfare issues in Europe or what is needed to maintain livestock production in the future? IS001

June 14th

Room AU - Animal Breeding and Genetics - Adaptation strategies

Chairmen: Paolo Ajmone-Marsan, Stefano Capomaccio
08.45-09.45 Olivier Hanotte
Genetic adaptation of livestock to the challenges of climatic changes IS002

Room T1 - Nutrition and Feeding

Chairmen: Antonella Baldi, Luigi Gallo
09.45-10.30 Luigi Calamari
Precision Feeding IS003

Room AU - PLENARY SESSION WORKSHOP

Foods of animal origin and consumers attitudes

Chairman: Luca Buttazzoni
11.15-13.00 Cristina Papa
Politics of risk: questioning the naturalization of danger in meat production and consumption IS004
Luigi P. Scordamaglia
Food fact versus food fiction - The never-ending struggle between unbiased information and preconceived ideologies IS005
Judith L. Capper
Foods of animal origin - how do we help the consumer understand sustainability implications of diet choice IS006

Room AU - Nutrition and Feeding

Chairmen: Paolo Bosi, Domenico P. Lo Fiego
14.00-15.00 Pietro Celi
Gastrointestinal tract functionality and its relationships with eubiotics IS007

Room T1 - Animal Welfare, Health and Behaviour - Cattle health and metabolism

Chairmen: Cinzia Marchitelli, Erminio Trevisi
16.00-16.45 Hugh Galbraith
Nutritional impact on lameness in dairy cattle IS008
June 15th

Room AU - Animal Breeding and Genetics

Chairmen: Nicolò P. P. Macciotta, Alfredo Pauciullo
08.30-09.15 Daniel Gianola
A brief history of statistical developments in animal breeding ........................................................ IS009

Room T2 - Aquaculture, Poultry and Rabbit Production

Chairmen: Federico Sirri, Alessandro Dal Bosco
09.30-10.30 Laura Gasco
Insects as sustainable feed ingredients ............................................................................................... IS010

Room AU - Animal Food Quality and Safety

Chairmen: Andrea Serra, Paolo Polidori
11.00-12.00 Joris Michiels
Feeding strategies to reduce the use of antibiotics in pig production................................................ IS011

Room H - Aquaculture, Poultry and Rabbit Production - Husbandry and welfare

Chairmen: Cecilia Mugnai, Massimiliano Petracci
12.15-13.00 Martina Gerken
Welfare in Poultry ............................................................................................................................... IS012

Room AU - Animal Welfare, Health and Behaviour

Chairmen: Silvana Mattiello, Massimo Trabalza-Marinucci
14.00-15.00 Cathy M. Dwyer
The role of mother-offspring behaviour in lamb survival ................................................................. IS013
15.00-15.45 Franco Valfré
Animal welfare and food security: role and tasks of the Italian farmers ........................................ IS014

Room AU - Animal Husbandry and Environmental Impact

Chairmen: Luca M. Battaglini, Maurizio Silvestrelli
15.00-15.45 Andrea Rosati
Constraints and solutions to reduce environmental impact for developed livestock farming .......... IS015

June 16th

Animal Husbandry and Environmental Impact

Chairmen: Bruno Stefanon, Mariano Pauselli
09.00-10.00 Simone Bastianoni
How to solve the (an)sustainability dilemma ................................................................................ IS016
10.00-10.45 Gian Matteo Crovetto
Environmental impact of animal production .................................................................................... IS017

Animal Food Quality and Safety - Food safety

Chairmen: Luisa A. Volpelli, Vincenzo Chiofalo
10.00-10.45 Lisa K. Williams
Foodborne pathogens: the case of Campylobacter in poultry ......................................................... IS018
Agenda for oral presentations

Tuesday June 13th - room AU

**Animal breeding and genetics - Horse genetics**

Chairmen: Donata Marletta, Roberto Mantovani

15.00-15.15 Andrea Giontella, Francesca M. Sarti, Giovanni P. Biggio, Andrea Taras, Raffaele Cherchi, Maurizio Silvestrelli, Camillo Pieramati

*Sardinian Anglo-Arab horses: genetic parameters of conformation and performances* ................................................................. O001

15.15-15.30 Stefano Capomaccio, Andrea Giontella, Ted Kalbfleisch, Scotty DePriest, Andrea Verini-Supplizi, Silvia Sorbolini, Raffaele Cherchi, Maurizio Silvestrelli, Katia Cappelli

*Transcriptome analysis of racehorses PBMCs: insights on transcribed introns and repeats* ........................................................... O002

15.30-15.45 Andrea Verini-Supplizi, Stefano Capomaccio, Luisa Pascucci, Cinzia Bazzucchi, Marco Pepe, Mauro Coletti, Rodolfo Gialletti, Stefano Petrini, Fabrizio Passamonti, Franco Moriconi, Maurizio Silvestrelli, Katia Cappelli

*RNA-cargo characterization of equine Ad-MSCs vesicles: first step towards cell-free therapeutic procedures* .................................................. O003

15.45-16.00 Katia Cappelli, Elisabetta Chiaradia, Andrea Viglino, Maurizio Silvestrelli, Francesca Beccati, Livia Moscati, Stefano Capomaccio

*Circulating miRNAs as biomarkers of stress and training in endurance horses* ................................................................. O004

16.00-16.15 Andrea Giontella, Hovirag Lancioni, Irene Cardinali, Marco R. Capodiferro, Stefano Capomaccio, Katia Cappelli, Camillo Pieramati, Alessandro Achilli, Maurizio Silvestrelli

*Mitochondrial DNA haplotypes unveil mistakes in Maremmano horse pedigree records* ................................................................. O005

Tuesday June 13th - room T1

**Nutrition and feeding - Ruminal metabolism**

Chairmen: Lucia Bailoni, Andrea Formigoni

15.00-15.15 Giuseppe Conte, Corrado Dimarco, Alice Cappucci, Eleonora Bulleri, Francesca Ciucci, Andrea Serra, Marcello Mele

*Relationship between ruminal biohydrogenation products and milk fat depression* ................................................................. O006

15.15-15.30 Alberto Palmonari, Giorgia Canestrari, Elena Bonfante, Ludovica Mammi, Andrea Formigoni

*Effect of replacing soybean meal with rapeseed meal on productive performance and ruminal conditions of lactating dairy cows* ................................................................. O007

15.30-15.45 Marica Simoni, Federico Righi, Francesca Martuzzi, Massimo Malacarne, Marco Renzi, Afro Quarantelli

*Study of the in vivo and in vitro variations of the enzymatic activity of bovine rumen fluid inocula* ................................................................. O008

15.45-16.00 Fabio Correddu, Alberto S. Atzori, Gianni Battacone, Giuseppe Pulina, Anna Nudda

*Effect of exhausted berries of myrtle on ruminal metabolism in dairy sheep* ................................................................. O009

16.00-16.15 Fiorentina Palazzo, Filippo Biscarini, Federica Castellani, Andrea Vitali, Giulia Masetti, Lisa Grotta, Giuseppe Martino

*Characterization of the rumen microbiota in dairy calves receiving copper or grape-pomace feed supplementation* ................................................................. O010

16.15-16.30 Federica Mennelli, Mariano Pauselli, Francesco Pini, Alice Cappucci, Andrea Serra, Giuseppe Conte, Marcello Mele, Sara Minieri, Stefano Rapaccini, Luciana Giovannetti, Carlo Viti, Arianna Buccioni

*Effect of olive pomace dietary supplementation on rumen microbial community profile: a metagenomics approach* ................................................................. O011
**Tuesday June 13th - Room T2**

*Animal food quality and safety - Meat quality*

Chairmen: Edi Piasentier, Luciano Morbidini

15.00-15.15 Francesco Sirtori, Riccardo Bozzi, Alessandro Crovetti, Chiara Aquilani, Antonio Pezzati, Antonio Bonelli, Carolina Pugliese  
*Effects of salting time on seasoned meat in two pigs genotypes* ................................................................. 0012

15.15-15.30 Michela Contò, Maria Miarelli, Sabrina Di Giovanni, Paolo La vermicocca, Francesca Valerio, Sebastiana Failla  
*Effect of the breaking down of cold chain on beef meat oxidation* .......................................................... 0013

15.30-15.45 Amalia Simonetti, Roberto Giudice, Annamaria Perna, Emilio Gambacorta  
*Comparison of oxidative status and antioxidative compounds of pig meat from Italian autochthonous pig Suino Nero Lucano and a modern crossbred pig before and after cooking* .................................................. 0014

15.45-16.00 Alessandro Crovetti, Francesco Sirtori, Doria Benvenuti, Antonio Bonelli, Andrea Lombardo, Giovanni Brajon, Riccardo Bozzi  
*Wet aging effect on beef meat physical traits* ............................................................................................. 0015

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**Wednesday June 14th - Room AU**

*Animal breeding and genetics - Adaptation strategies*

Chairmen: Paolo Ajmone-Marsan, Stefano Capomaccio

09.45-10.00 Miranda Bryan, Christian Maltecca, Kent Gray, Clint Schwab, Yijian Huang, Francesco Tiezzi  
*Genetic variance for sow tolerance to heat stress* ...................................................................................... 0016

10.00-10.15 Elia Vajana, Mario Barbato, Licia Colli, Marco Milanesi, Estelle Rochat, Enrico Fabrizi, Christopher Mukasa, Marcello Del Corvo, Charles Masembe, Vincent Muwanika, Fredrick Kabi, Riccardo Negrini, Stéphane Joost, Paolo Ajmone-Marsan, the NEXTGEN Consortium  
*Combining landscape genomics and ecological modeling to investigate local adaptation of indigenous Ugandan cattle to East Coast Fever* ............................................................... 0017

10.15-10.30 Tri Satya Mastuti Widi, Nuzul Widyas  
*Variation of Madura Cattle in Madura Island, Indonesia* ................................................................. 0018

10.30-10.45 Salvatore Mastrangelo, Paolo Ajmone-Marsan, Alessandro Bagnato, Luca M. Battaglini, Riccardo Bozzi, Antonello Carta, Gennaro Catillo, Martino Casaroli, Sara Casu, Roberta Ciampolini, Elena Ciani, Paola Crepaldi, Mariavittoria D’Andrea, Rosalia Di Gerlando, Luca Fontanesi, Maria Longeri, Nicolò P. P. Macciotta, Roberto Mantovani, Donata Marletta, Donato Matassino, Marcello Mele, Giulio Pugnauro, Camillo Pieramati, Baldassare Portolano, Francesca M. Sarti, Fabio Pilla  
*BOVITA: a first overview on genome-wide genetic diversity of Italian autochthonous cattle breeds* ................................................................. 0019

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**Wednesday June 14th - Room T2**

*Animal breeding and genetics - Beef cattle genetics*

Chairmen: Liliana Di Stasio, Camillo Pieramati

14.00-14.15 Francesca M. Sarti, Simone Ceccobelli, Andrea Giontella, Piera Di Lorenzo, Emiliano Lasagna, Andrea Quaglia, Fiorella Sbarra, Roberta Guarcini, Camillo Pieramati, Francesco Panella  
*Effects of Single Nucleotide Polimorphisms (SNPs) in candidate genes for growth traits in Italian beef cattle breeds* ................................................................. 0020

14.15-14.30 Fiorella Sbarra, Andrea Quaglia, Giovanni Bittante, Roberto Mantovani  
*Heritability of reproduction traits and type latent factors and their genetic correlations in Marchigiana, Chianina and Romagnola beef breeds* ................................................................. 0021

14.30-14.45 Domenico Aiello, Laura Salvadori, Sara Chiappalupi, Simone Ceccobelli, Emidio Albertini, Guglielmo Sorci, Emiliano Lasagna  
*Histological muscle characterization in hypertrophied Marchigiana cattle breed* ................................................................. 0022

14.45-15.00 Simone Savoia, Alberto Brugiapaglia, Liliana Di Stasio, Alessandro Ferragina, Alessio Cecchinato, Giovanni Bittante, Andrea Albera  
*“QualiPiem” - Innovative tools for selection of meat quality in Piemontese breed* ................................................................. 0023

15.00-15.15 Cinzia Marchitelli, Bianca Moioli, Roberto Steri, Gennaro Catillo  
*Twinning project: increasing of twin births in Maremmana breed* ................................................................. 0024

15.15-15.30 Mauro Fioretti, Stefano Biffani, Riccardo Negrini, Riccardo Bozzi  
*Genetic improvement and population structure of Italian Limousine* ................................................................. 0025

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Wednesday June 14th - Room T2
Aquaculture, poultry and rabbit production - Poultry and rabbit nutrition

Chairmen: Antonella Dalle Zotte, Cesare Castellini
08.45-09.00 Nieves Núñez-Sánchez, Gabriele Auci, Domenico Brusco, Simona Mattioli, Oliviero Olivieri, Massimo Trabalza-Marinucci
Prediction of nutrient digestibility and chemical composition of rabbit diets using faecal near infrared spectroscopy (FNIRS) ................................................................. 0029
09.00-09.15 Marco Birolo, Angela Trocino, Francesco Gratta, Gerolamo Xiccato
Performance and feeding behaviour of group-housed rabbits with free or time-limited access to feed .............................................................. 0030
Effect of chamomile (Matricaria chamomilla) on health in chickens ........................................................................................................... 0031
09.30-09.45 Paula A. Toalombo-Vargas, Nelson A. Duchi-Duchi, Luis R. Fiallos-Ortega, Antonio J. Morales-delaNuez, Luis E. Hidalgo-Almeida, Matiza L. Vaca-Cárdenas, Noé F. Rodríguez-G
Effect of chamomile (Matricaria chamomilla) on productive performance in chickens .......................................................................................... 0032
09.45-10.00 Angela Trocino, Francesco Gratta, Marco Birolo, Alessandra Piccirillo, Massimiliano Petracci, Luca Maertens, Gerolamo Xiccato
Effects of the feeding system on performance and myopathy occurrence in two broiler chicken genotypes .......................................................... 0033
10.00-10.15 Siria Tavaniello, Rossella Mucci, Acaye Ongwech, Marek Bednarczyk, Giuseppe Maiorano
Probiotic and prebiotic supplementation in broiler chickens: growth performance, carcass traits and meat quality ........................................... 0034

Wednesday June 14th - Room H
Animal welfare, health and behaviour - Husbandry, welfare and behaviour

Chairmen: Flaviana Gottardo, Andrea Verini-Supplizi
08.45-09.00 Giulio Cozzi, Luisa Magrin, Isabella Lora, Thomas Beorchia, Barbara Contiero
Milk yield, culling rate and reasons of pure Holsteins and second generation crossbred cows from Montbéliard × (Swedish Red × Holstein) ........................................................................................................ 0035
09.00-09.15 Riccardo Moretti, Stefano Biffani, Stefania Chessa, Riccardo Bozzi
Predictive models for locomotion issues in Italian Holstein dairy cows.................................................................................................. 0036
09.15-09.30 Vincenzo Lopreiato, Andrea Minuti, Elisabetta Pratto, Marcello Marotta, Giovanni Loprete, Domenico Britti, Erminio Trevisi, Valeria M. Morittu
Use of an electronic rumination-monitoring system in pre-weaned calves ............................................................................................ 0037
09.30-09.45 Giorgio Marchesini, Davide Mottaran, Matteo Gazziero, Massimo Mirisola, Severino Segato, Igino Andrighetto
Effect of different ventilation systems on beef cattle during the early fattening period .............................................................................. 0038
09.45-10.00 Veronica Redaelli, Marta De Santis, Silvia Gozzo, Laura Contalbrigo, Annalisa Stefani, Marta Toson, Luca Farina, Marta Borgi, Francesca Cirulli, Emanuela Valle, Fabio Luigi
Use of Infrared Thermography (IRT) in equine assisted interventions: physiological aspects ........................................................................ 0039
10.00-10.15 Aristide Maggio, Alessandra Tateo, Pasquale De Palo, Giovanna Calcaretti, Pasquale Centoducati
Evaluation of different habituation protocols for training dairy donkey jennies to the milking parlor: effect on milk yield, behavior and heart rate .................................................................................. 0040
10.15-10.30 Monica Battini, Sara Barbieri, Elisabetta Canali, Francesca Dai, Emanuela Dalla Costa, Valentina Ferrante, Lorenzo Ferrari, Silvana Mattiello, Michela Minero
Outcomes of a web-survey for collecting stakeholders’ opinion on welfare requirements for sheep, goats, turkeys, donkeys, and horses ................................................................. 0041
Wednesday June 14th - Room T1

Animal welfare, health and behaviour - Cattle health and metabolism

Chairmen: Cinzia Marchitelli, Erminio Trevisi

08.45-14.15 Andrea Minuti, Nusrat Jahan, Matteo Mezzetti, Fiorenzo Piccoli-Cappelli, Stefano Capomaccio, Juan J. Loor, Paolo Ajmone-Marsan, Erminio Trevisi

Relationship between blood energetic markers and circulating leukocytes transcriptome in transition dairy cows ............................. O042

14.15-14.30 Erminio Trevisi, Andrea Minuti, Matteo Mezzetti, Annarita Ferrari, Fiorenzo Piccoli-Cappelli

Supplements of Aloe arborescens improve health and inflammo-metabolic status of transition dairy cows ................................. O043

14.30-14.45 Paolo Cremonesi, Federica Riva, Maria F. Addis, Camilla Ceccarani, Marco Severgnini, Erminio Trevisi, Massimo Amadori, Claudia Pollera, Joel Filipe, Giulio Curone, Lauretta Turin, Vittorio Tedde, Alessandra Pagnoni, Daniele Vigo, Paolo Moroni, Andrea Minuti, Valerio Bronzo, Bianca Castiglioni

A multidisciplinary study investigating the bovine milk microbiome and its association with mastitis resistance traits in Holstein Friesian and Rendena dairy cows ................................................................. O044

14.45-15.00 Daniele Dipasquale, Loredana Basiricò, Patrizia Morera, Umberto Bernabucci

Anti-inflammatory effects of conjugated linoleic acid isomers and essential fatty acids in bovine mammary epithelial cells ............................................................................................................. O045

15.00-15.15 Sandy Sgorlon, Danilo Licastro, Bruno Stefanon, Monica Colitti

Cows relocation affects exosomes and their cargos in bovine milk ............................................................................................ O046

15.15-15.30 Luisa Magrin, Marta Brescic, Leonardo Armato, Giulio Cozzi, Flaviana Gottardo

Lameness in finishing beef cattle: distribution of claw disorders in 2716 hind feet ........................................................................ O047

15.30-15.45 Edyta Bauer, Justyna Żychlińska-Buczek

Using mineral-vitamin boluses to improve somatic cell count prevention value in Polish dairy farms ............................................... O048

15.45-16.00 Juan J. García Bustos

Treatment of bovine diseases with agroforestry resources in farms of the Colombian Amazon piedmont ........................................ O049

Wednesday June 14th - Room AU

Nutrition and feeding - Monogastric nutrition

Chairmen: Paolo Bosi, Domenico P. Lo Fiego

08.45-09.00 Elena Mariani, Nicoletta Rizzi, Guido Invernizzi, Alessandro Agazzi, Adriana Maggi, Giovanni Savoini

Spatio-temporal analysis of the Nrf 2 activation in transgenic reporter mouse fed with high dosage of saturated or unsaturated fatty acids using in vivo bioluminescent imaging ................................................................................ O050

09.00-09.15 Maria G. Cappai, Maurizio Picciau, Maria G. A. Lunesu, Corrado Dimaro, Raaffaele Cherchi, Walter Pinna

Circulating levels of nutrient-related metabolites in healthy Anglo-Arabian foals from weaning to 18 months of age ............................. O051

09.15-09.30 Mirco Dalla Bona, Giuseppe Carco, Enrico Fiore, Stefano Schiavon, Luca Carraro, Massimo Morgante, Luigi Gallo

Effects of dietary protein and lysine content on growth performances, carcass traits and estimated nitrogen input-output flow of growing pigs ................................................................................ O052

09.30-09.45 Micol Bertocchi, Paolo Trevisi, Diana Luise, Vincenzo Motta, Chiara Salvareni, Anisa Ribani, Aude Simongiovanni, Etienne Corrent, Luca Fontanesi, Paolo Bosi

Dose-response for different levels of leucine to lysine ratio on the growth performance of weaning pigs with different genotypes at the α-aminoadipate d-semialdehyde synthase gene ........................................................................ O053

Wednesday June 14th - Room AU

Nutrition and feeding - Monogastric nutrition

Chairmen: Paolo Bosi, Domenico P. Lo Fiego

15.00-15.15 Vincenzo Motta, Michele Pesciaroli, Paolo Trevisi, Diana Luise, Ludovica Curcio, Lucilla Cucco, Francesca R. Massacci, Chiara F. Magistrati

Dietary calcium-butyrate promotes a shift of gut microbiota of weaned pigs .................................................................................. O054

15.15-15.30 Chiara Aquilani, Francesco Sirtori, Oreste Franci, Alessandro Crovetti, Carolina Pugliese

Effects of protein restricted diet on in vivo performances and slaughtering traits of Cinta Senese pigs ................................................. O055
15.30-15.45 Matteo Ottoboni, Carlotta Giromini, Marco Tretola, Davide Gottardo, Daniela Marchis, Valentina Caprarulo, Federica Cheli, Antonella Baldi, Luciano Pinotti
Nutrients content and in vitro digestibility of ex-food as feed ingredient for pig diets .............................................. O056

15.45-16.00 Eleonora Seoni, Gianni Battacone, Paolo Silacci, Frigga Dohme-Meier, Giuseppe Bee
Impact of increasing levels of condensed tannins from sainfoin in grower-finisher diets of entire male pigs on growth performance and carcass characteristics .............................................. O057

Thursday June 15th - Room AU
Animal breeding and genetics - Genome-wide studies

Chairmen: Nicolò P. P. Macciotta, Alfredo Pauciullo
09.15-09.30 Mariasilvia D’Andrea, Valentino Palombo, Marco Milanesi, Sandy Sgorlon, Stefano Capomaccio, Giuseppe Conte, Paolo Ajmone-Marsan
Genome-wide association study of milk fatty acid composition in Italian Simmental and Italian Holstein cows .................... O058

09.30-09.45 Alessio Cecchinato, Sara Pegolo, Christos Dadouisis, Núria Mach, Yuliaxis Ramayo-Caldas, Marcello Mele, Stefano Schiavon, Giovanni Bittante
Genome-wide association and pathway-based analysis for milk fatty acids profile in dairy cattle ........................................ O059

09.45-10.00 Alberto Cesarani, Antonio Puledda, Maria G. Manca, Fabio Correddu, Jessica Serdino, Silvia Sorbolini, Nicolò P. P. Macciotta
Genome-wide association study of cheese-making properties in sheep milk ................................................................. O060

10.00-10.15 Anna M. Sutera, Salvatore Mastrangelo, Maria T. Sardina, Rosalia Di Gerlando, Marco Tolone, Baldassare Portolano
Genome-wide association study for milk production traits in Valle del Belice sheep ......................................................... O061

10.15-10.30 Salvatore Mastrangelo, Marco Tolone, Maria T. Sardina, Anna M. Sutera, Rosalia Di Gerlando, Baldassare Portolano
Genome-wide scan for runs of homozygosity in Valle del Belice sheep ................................................................. O062

Thursday June 15th - Room T2
Animal breeding and genetics - Dairy cattle genetics

Chairmen: Giulio Pagnacco, Mauro Penasa
11.00-11.15 Marco R. Capodiferro, Shaoqiang Wang, Ningbo Chen, Tao Zhang, Hovirag Lancioni, Irene Cardinali, Hucai Zhang, Yongwang Miao, Vongasith Chanthakhoun, Metha Wanapat, Marnoeh Yindee, Yi Zhang, Hongzhao Lu, Ruihua Dang, Yongzhen Huang, Xianyong Lan, Martin Plath, Hong Chen, Johannes A. Lenstra, Chuzhao Lei, Alessandro Achilli
Looking into the Swamp Buffalo genetic history through the whole mitogenome analysis ............................................. O063

11.15-11.30 Chiara Roveglia, Giulio Visentin, Mauro Penasa, Raffaella Finocchiari, Maurizio Marusi, Martino Cassandro
Genetics of alternative somatic cell count traits in Italian Holsteins ................................................................. O064

11.30-11.45 Hugo Toledo-Alvarado, Gustavo de los Campos, Ana Vazquez, Rob Tempelman, Giovanni Bittante, Alessio Cecchinato
Predictive ability of Fourier transform infrared spectroscopy and milk components to assess the pregnancy status of dairy cows ................................................................. O065

11.45-12.00 Cristina Sartori, Francesco Tiezzi, Nadia Guzzo, Roberto Mantovani
Causal relationships between milk yield, somatic cells, fertility, longevity and fighting ability in Aosta Chestnut-Black Pied Cattle ................................................................. O066

12.00-12.15 Corrado Dimaro, Elisabetta Manca, Alberto S. Atzori, Massimo Cellesi, Giustino Gaspa, Nicolò P. P. Macciotta
Use of discriminant analysis to early detect lactation persistency in dairy cows ......................................................... O067

12.15-12.30 Marco Milanesi, Mario Di Guardo, Stefano Capomaccio, Katia Cappelli, Valentino Palombo, Mariasilvia D’Andrea, Marcello Del Corvo, Sandy Sgorlon, Andrea Minuti, Yuri Tani Utsunomiya, José Fernando Garcia, Erminio Trevisi, Riccardo Negriini, Bruno Stefanon, Paolo Ajmone-Marsan
Identification of genomic variants associated with metabolic stress in Italian Simmental and Holstein cows .................. O069

12.30-12.45 Elisabetta Viale, Francesco Tiezzi, Fabio Maretto, Massimo De Marchi, Mauro Penasa, Martino Cassandro
Candidate gene association analysis for milk yield and composition traits, coagulation properties and somatic cell count in Italian Holstein Friesian bulls ......................................................... O078
Thursday June 15th - Room T2
Animal breeding and genetics - Small ruminants genetics

Chairmen: Paola Crepaldi, Giovanni Bittante
15.45-16.00 Nadia Guzzo, Cristina Sartori, Alessandro Ferragina, Giovanni Bittante, Roberto Mantovani
Unique parameters of new FTIR milk phenotypes in Rendena breed ................................................................. O076

16.00-16.15 Valentina Palombo, Marco Milanesi, Stefano Capomaccini, Sandy Sgorlon, Mariasidhia D'Andrea
Pathway analysis interaction analysis for identification of novel candidate genes .................................................... O077

16.30-16.45 Marco Iannaccone, Marine Papaiani, Floria Ianniello, Andrea Fulgione, Daniela Gallo, Gianfranco Cosenza, Rosanna Capparelli
Identification of a novel polymorphism in the untranslated region of the interferon gamma gene as potential marker associated with bovine tuberculosis in water buffalo (Bubalus bubalis). .......................................................... O078

16.45-17.00 Sara Pegolo, Christos Dadousis, Núria Mach, Yuliaxis Ramayo-Caldas, Marcello Mele, Stefano Schiavon, Giovanni Bittante, Alessio Cecchinato
SNP co-association and network analyses for bovine milk fatty acid profile ......................................................... O080

Thursday June 15th - Room T2
Aquaculture, poultry and rabbit production - Husbandry, health and welfare

Chairmen: Federico Sirri, Alessandro Dal Bosco
08.30-08.45 Cristina Zomeño, Marco Birolo, Francesco Gratta, Andrea Zuffellato, Gerolamo Xiccato, Angela Trocino
Influence of group housing, lactation system and floor type on performance and injuries in rabbit does ........................... O081

08.45-09.00 Marta Brscic, Michele Gazzo, Barbara Contiero, Flaviana Gottardo
Main welfare problems in intensive broiler chicken production systems: is there any way to differentiate farms? ............. O082

09.00-09.15 Kunlayaphat Wuthijaree, Christian Lambertz, Matthias Gauly
Prevalence and burden of helminths in free-range laying hens in Northern Italy ....................................................... O083

09.15-09.30 Sabine Mueller, Lorena Teddie, Ruth E. Messikommer, Michael Kreuzer, Isabelle D. M. Gangnat
Growth and slaughter performance of two dual-purpose poultry types compared with extensive broiler and layer types fattened for 67 and 84 days ................................................................. O084
Thursday June 15th - Room H

Aquaculture, poultry and rabbit production - Husbandry and welfare

Chairmen: Cecilia Mugnai, Massimiliano Petracci

11.00-11.15 Massimiliano Petracci, Giulia Baldi, Francesca Soglia, Maurizio Mazzoni, Federico Sirri, Luca Canonico, Elena Babini, Claudio Cavani
Effect of spaghetti-meat abnormality on quality and histological traits of broiler breast fillets ............................................................ O085

11.15-11.30 Francesca Soglia, Massimiliano Petracci, Claudio Cavani, Per Erthbjerg
Changes in structural properties and desmin degradation of broiler wooden breast fillets during refrigerated storage .................... O086

11.30-11.45 Achille Schiavone, Alberto Brugiapaglia, Michele De Marco, Stefano Sartore, Dominga Soglia, Sandra Maione, Roberto Rasero, Paola Sacchi, Alessandra Dalmasso, Maria T. Bottero, Daniele Pattono, Martina Tarantola, Mario Giacobini, Luigi Bertolotti, Ivo Zoccarato, Laura Gasco, Cecilia Mugnai
Market chain of “Consortium for safeguard of Bianca e Bionda breeds” in Piedmont: 1. demography, housing and slaughtering conditions ............................................................................................................................................ O087

11.45-12.00 Cecilia Mugnai, Achille Schiavone, Michele De Marco, Stefano Sartore, Dominga Soglia, Sandra Maione, Roberto Rasero, Paola Sacchi, Alessandra Dalmasso, Maria T. Bottero, Daniele Pattono, Martina Tarantola, Mario Giacobini, Luigi Bertolotti, Ivo Zoccarato, Laura Gasco, Alberto Brugiapaglia

12.00-12.15 Andrea Amici, Riccardo Primi, Pier Paolo Danieli, Paolo Viola
Captive morphological changes and growth parameters in Apennine rock partridges (Alectoris graeca graeca) ........................................ O089

Thursday June 15th - Room H

Aquaculture, poultry and rabbit production - Genetics

Chairmen: Silvia Cerolini, Claudio Cavani

15.45-16.00 Marco Zampiga, Micol Bertocchi, Paolo Bosi, Paolo Trevisi, Adele Meluzzi, Federico Sirri
Comparison of productive performance and intestinal transcriptomic profile of two fast-growing chicken hybrids ......................... O090

16.00-16.15 Raffaella Rebucci, Carlotta Giromini, Davide Gottardo, Marcello Comi, Xian-Ren Jiang, Federica Cheli, Antonella Baldi, Valentino Bontempo
Influence of a synthetic emulsifier supplementation on lipid metabolism and apolipoprotein gene expression in liver of broiler chicks ........................................................................................................................................... O091

16.15-16.30 Katia Parati, Silvia Cenadelli, Grazia Bongioni, Andrea Galli, Hervé Chavanne
Parentage assignment for genetic improvement of farmed sea bream by next generation sequencing in rainbow trout (Oncorhynchus mykiss) fed animal by-product meals as an alternative to fishmeal protein sources ....................................................................................................................................... O092

16.30-16.45 Genciana Terova, Simona Rimoldi, Chiara Ascione, Emi Glozheni, Fabio Brambilla
Intestinal microbiota characterization by next generation sequencing in rainbow trout (Oncorhynchus mykiss) fed animal by-product meals as an alternative to fishmeal protein sources ................................................................................................................................................ O093

Thursday June 15th - Room H

Animal husbandry and environmental impact - Husbandry systems and socio-economic analysis

Chairmen: Maurizio Ramanzin, Giuseppe Pulina

14.00-14.15 Christian Lambertz, Matthias Gauly
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Study on the behaviour of Cinta Senese and Large White x Cinta Senese pigs reared at pasture

16.00-16.15 Giuseppe Carcò, Mirco Dalla Bona, Luca Carraro, Luigi Gallo, Maria A. Latorre, Manuel Fondevila, Stefano Schiavon

The daily feeding behaviour of growing pigs subjected to a feed restriction and to a reduction of dietary indispensable amino acid contents

16.15-16.30 Eleonora Nannoni, Luca Sardi, Marika Vitali, Giovanna Martelli

Growth traits, carcass and meat quality of heavy pigs receiving different enrichment tools

16.30-16.45 Luciana Rossi, Serena Reggi, Giovanni L. Alborali, Paolo Trevisi, Diana Luise, Angela Lombardi, Eugenio De Martini, Antonella Baldi

Seed-based vaccine immunogens administered in feed for the control of verocytotoxic E.coli infection in pig livestock

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Nutrition and feeding - Feed evaluation

Chairmen: Paolo Bani, Pier Paolo Danieli

08.30-08.45 Afro Quarantelli, Marco Renzi, Marica Simoni, Alessandro M. Rosato, Federico Righi

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08.45-09.00 Martina Novacco, Matteo Ottoboni, Eleonora Fusi, Silvia Gastaldello, Valentina Furlan, Claudio Maran, Vittorio Dell’Orto, Federica Cheli

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Evaluation of heavy metals in intensive animal production systems

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09.30-09.45 Marco Isidori, Fabrizio Rueca, Gabriele Mannucci, Massimo Trabalza-Marinucci

Palatability of extruded dog diets supplemented with Ascophyllum nodosum

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10.15-10.30 Andriyani Astuti, Cuk Tri Noviandi, Ali Agus, Subur Priyono Sasmito Budhi, Ristianto Utomo, Evi Septiani

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08.45-09.00 Massimo Todaro, Raimondo Gaglio, Maria L. Scatassa, Giovanna Sala, Francesca Mazza, Isabella Mancuso, Luca Settanni

Effect of the wooden vats on traditional cheese characteristics

09.00-09.15 Federica Salari, Iolanda Altomonte, Rosario Licitra, Mina Martini

Vitamin D content in donkey milk: preliminary results

09.15-09.30 Giorgia Stocco, Andrea Summer, Massimo Malacarne, Alessio Cecchinato, Giovanni Bittante

Factors affecting the detailed mineral profile of bovine milk from multi-breed herds
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Foreword

The 22nd Congress of the Animal Science and Production Association (ASPA) is hosted in Perugia, a wonderful university city with a long tradition in agriculture, veterinary and animal sciences. The Congress is the result of the precious collaboration among the Department of Agricultural, Food and Environmental Sciences and the Department of the Veterinary Medicine of the University of Perugia as well as other Italian scientific Institutions such as the Università Politecnica delle Marche (Ancona), University of Camerino, Università degli Studi della Tuscia (Viterbo) and the Council for Agricultural Research and Economics – CREA ZA (Monterotondo, Roma).

This edition of the ASPA Congress has received a total of 333 scientific contributions: 180 oral presentations and 153 posters have been selected. The Congress sessions with their relative number of papers are listed as follows: Animal breeding and genetics (97), Nutrition and feeding (70), Animal food quality and safety (53), Animal welfare, health and behaviour (43), Aquaculture, Poultry and Rabbit production (40), and Animal husbandry and environmental effect (30).

I would like to point out that 18 main lectures will be presented across all the scientific sessions.

I wish to thank first of all the Organizing Committee, Dr Emiliano Lasagna (Chairperson), Dr Gabriele Acuti (Secretary), Dr Stefano Capomaccio, Professor Alessandro Dal Bosco, Dr Miriam Iacurto (Secretary), Professor Paolo Polidori, Professor Maria Federica Trombetta. I also wish to thank all the members of the Scientific Committee, Professor Cesare Castellini (Chairperson), Professor Umberto Bernabucci, Dr Luca Buttazzoni, Dr Katia Cappelli, Dr Simone Ceccobelli, Dr Andrea Giontella, Professor Nicola Lacetera, Professor Massimo Trabalza-Marinucci (Secretary), Professor Luciano Morbidini, Professor Marina Pasquini, Professor Mariano Pauselli, Professor Alessandra Roncarati, Professor Francesca Maria Sarti, Professor Maurizio Silvestrelli, Dr Carmela Tripaldi.

Special thanks to Professor Oliviero Olivieri, President of the Congress, for the contribution of the University of Perugia in the organisation of the Congress. Additional thanks to the Technical organizing Secretariat, MV Congressi SpA, in particular to Mrs Roberta Pasquini. Indeed, I would like to congratulate and to thank all those persons who have organised the meeting and have collaborated in reviewing the summaries and thank them for what they have done for ASPA and for the Italian Animal Science. A special thank goes to Professor Rosanna Scipioni, Editor-in-Chief of the Italian Journal of Animal Science, for having contributed to the edition of these proceedings.

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ORCID

Bruno Ronchi http://orcid.org/0000-0002-9405-2949

Bruno Ronchi President of the Animal Science and Production Association ronchi@unitus.it
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**Sensory properties of goat cheese from Friuli Venezia Giulia farms**

Monica Borgogno\(^1\), Saida Favotto\(^2\), Dario Furlan\(^3\), Edi Piasentier\(^*\)
\(^1\)Mérieux NutriScience Italia, Prato, Italy
\(^2\)Dipartimento di Scienze AgroAlimentari, Ambientali e Animali, University of Udine, Italy
\(^3\)Agenzia Regionale per lo Sviluppo Rurale del Friuli Venezia Giulia, Pozzuolo del Friuli, Italy
Contact: edipiasentier@uniud.it

The aim of the study was to evaluate the sensory characteristics of goat cheeses produced with autochthonous or commercial starters in different farms of Friuli Venezia Giulia region. Autochthonous starters, obtained by milk from different goat farms and breeds, were lyophilized after selection based on their acidic and proteolytic activity. Twelve types of goat cheeses were obtained in three different farms (X, Y and Z) using two different starters (A, autochthonous; C, commercial). Cheeses were analysed after 14 and 28 days of ripening. Quantitative descriptive analysis (DA) and temporal dominance analysis (TDS) were performed by a trained panel. Then, the likings of 76 consumers who habitually eat this type of cheese were assessed, using a labelled affective magnitude (LAM) scale. Consumers were also asked to group the cheeses according with their similarities and dissimilarities (mapping test, MT).

PCA was performed on DA and TDS data to highlight the intrinsic sensory similarities and differences between cheeses; those from Y farm were characterized by an animal like flavour, bitter and acid taste and astrignency, while X and Z farms produced cheeses having sweet taste and milky flavour. Autochthonous starter enhanced milk and sweet taste. The biggest comprising who appreciated the sweet and milky notes, the smallest including those that preferred the bitter, astrigent and animal flavour. As showed by MT, consumer clearly recognised the differences among farms, while those between A and C starters were less clearly detectable. In conclusion, even if the autochthonous starter is a good approach for strengthening the territorial linkage of goat cheeses, their perceived sensory attributes appear more associated to farm influence, involving the confounded effects of goat breed, animal feeding and management, milk quality and cheese making process.

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**Total substitution of soybean meal with *Hermetia illucens* meal in laying hens: effect on lipid composition of yolk**

Giulia Secci\(^1\), Noemi Baronti\(^1\), Antonio Bonelli\(^1\), Rosa Loponte\(^2\), Giuliana Parisi\(^1\), Fulvia Bovera\(^3\)
\(^1\)Dipartimento di Scienze delle Produzioni Agroalimentari e dell’Ambiente, University of Firenze, Italy
\(^2\)Dipartimento di Medicina Veterinaria e Produzioni Animali, University of Napoli “Federico II”, Italy
Contact: giulia.secci@unifi.it

Eggs are a cheap source of high quality nutrients and FAO projects a production of 89 million tones of eggs in 2030. At present, ingredients for poultry feed include soybeans and several other grains but the continuous increase of prices has been enhancing the need for alternative feed. In this context, insects are considered a viable and attractive solution for animal feeding, including chickens. Insects indeed are natural food sources for poultry although the information about the effect of the substitution of soybean with insect meal on the quality of eggs in terms of lipid composition of yolk are scarce. The present study aims to fit this gap by testing a 100% replacing diet with *Hermetia illucens* defatted meal. One-hundred and eight Lohman Brown Classic laying hens were farmed for 21 weeks and divided into 2 groups fed two isoproteic and isenergetic diets, differing in the main protein source: corn-soybean meal based diet (SB group) or *Hermetia illucens* larve defatted meal (HI group). Results on lipid composition of feeds showed that insects meal contained 29% and 18.9% of C18:2n6 (linoleic acid, LA), and C18:1n9 (oleic acid), therefore lower than the values obtained for soybean (36.5 and 20.5%). C12 was the fatty acid which mostly characterized insect meal being around the 8% against the 1.3% of soybean. Globally, insect meal was higher in saturated (32 vs 24.7%), and n-3 fatty acids (5.9 vs 5.7%) and lower in n-6 (32 vs 39%) than soybean. Nevertheless, feeds did not affect yolk fatty acids composition. Indeed, despite the lower percentage of n-6 in insect feed than in soybean, HI yolks contained significantly higher n-6 (17 vs 14%). Furthermore, yolks of both groups were extremely rich in oleic, C16, LA, C18:1n7, and C16:1n7, accounted for around 65% of total fatty acids. Probably, desaturase enzymes involved in the conversion of LA showed a reduced activity in HI group than in SB, as revealed by the significant higher content of LA (11.72 vs 9.45%) and lower C22:5n6 (0.49 vs 0.76%). Nevertheless, docosahexanoic acid (C22:6n3, DHA), the final product of desaturase chain, was not affected amounting to 1.2% in both groups. In conclusion, despite the high presence of saturated fatty acid in *Hermetia illucens* meal, fatty acid composition of yolk did not show to be significantly damaged especially concerning polyunsaturated n-3 and n-6 fractions.