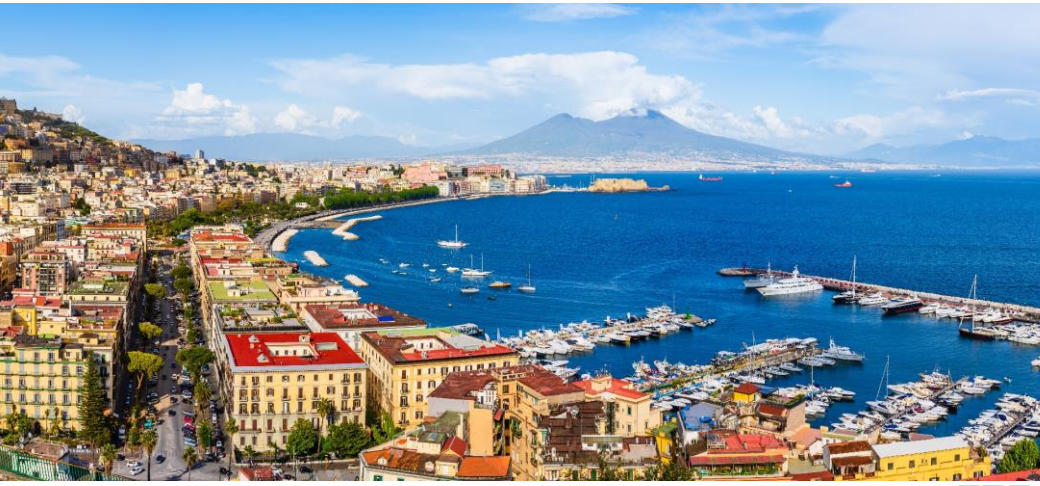
MINISTRY OF AGRICULTURE, FOOD SOVEREIGNTY AND FORESTS

REGIONE CAMPANIA

DIETI UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
DIPARTIMENTO DI INGEGNERIA ELETTRICA E DELLE TECNOLOGIE DELL'INFORMAZIONE

Dipartimento Medicina Veterinaria Produzioni Animali



2023 IEEE INTERNATIONAL WORKSHOP ON

Measurements and Applications in Veterinary and Animal Sciences

MeAVeAS

APRIL 26-28, 2023

NAPOLI, ITALY

PROGRAM

IEEE

ATHENA
BUSINESS AND TECHNOLOGY CONSULTING

TABLE OF CONTENTS

Metrology applied to medical and biological disciplines is an ancient and multidisciplinary science of which there is evidence already from ancient Egypt, when a measure called "cubit", which included the distance between the hand and elbow of individuals, was used to classify morphologically the people, referring to them the reference measure represented by the "cubit" of the pharaoh.

Metrology studies measurements of magnitude in order to have official references (units of measurement) to refer to, to identify measurement systems, means and methods for following measurements of various kinds.

The National Institute of Metrological Research defines biomedical metrology as a measurement activity applicable to biomedical, biological and, therefore also medical and veterinary sciences, aimed at identifying new diagnostic and therapeutic methodologies to which I would also add somatic and physical on samples and subjects of animal origin.

Metrology applied to veterinary sciences can offer a wide field of action that can include strictly macro-morphological studies of zootechnical and animal production, up to more sophisticated studies that can also include ultrastructural biological measurement techniques, such as those of metrology of nucleic acids also attributable to the chapter of the so-called traceable measures for medicine, which represent the application of metrological measurement principles to guarantee the comparability and accuracy of each measurement.

From this premise it can thus be deduced how measurement techniques and metrology itself can be widely used in veterinary medicine, including metrological detection systems that involve all animal species and numerous scientific disciplines: small and large animals, domestic and wild animals, exotic animals and entomology, animal husbandry, anatomy, microbiology and virology, pathology and parasitology, clinical sciences, ichthyology, forensic sciences, ecc.

The scope of veterinary medicine is wide, covering all animal species, both domesticated and wild, with a wide range of conditions that can affect different species. Veterinary science helps human health through the monitoring and control of zoonotic disease (infectious disease transmitted from nonhuman animals to humans), food safety, and indirectly through human applications from basic medical research.

In this scenario, the techniques of Precision Livestock Farming (PLF) can guarantee an automated and continuous real-monitoring of the animals, in terms of health and welfare, production, reproduction and environmental impact. The real-monitoring (24/24h) allows to improve animal derived food together with the health and welfare of livestock, minimizing the negative impacts of production on the environment and increasing the sustainability of supply chains.

All these deep changes are possible also thanks to the recent developments in the field of metrology. Actually, the monitoring and the control of remote physical phenomena require the development of new sensors, acquisition techniques, data analysis, new architecture of data acquisition systems, and so on.

The field is also covered by some National and International Organizations providing Guidelines, Standards and Certification for animal identification, animal recording and animal evaluation; e.g. the International Committee for Animal Recording (ICAR) establishes and maintains guidelines and standards for best practice in all aspects of animal identification and recording, certifyies equipment, and processes used in animal identification, recording and genetic evaluations.

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IEEE MeAVeAS 2023 Keynote Speakers

Plenary Session - Wednesday, April 26, 2023

Research supporting precision farming on a pasture grazing milk production system

Bernadette O'Brien
Teagasc, Agricultural and Food Development Authority, Ireland

ABSTRACT

The use of automation can reduce manual tasks on farms and allow farmers to shift their focus from operational tasks to more economically beneficial, management and strategic tasks. But information obtained through precision farming technologies is only useful if it can be interpreted and utilised effectively by individual farmers. Real-time data can be used to monitor pasture, soil, weather, animals and output (e.g. milk) and the environment, and create reports that will identify optimal farm-management decisions. Pasture-based systems are complex and the use of precision technologies can assist in optimising productivity. A recent Irish study has indicated that profit per hectare is increased by €173 per each additional tonne of grass utilised. But in order to achieve this, grassland measurements must be conducted and recorded. A web-based decision support tool (PastureBaseIreland, PBI) uses ICT technologies to provide an integrated framework that enables grassland farmers to operate at maximum efficiency. Animal health and welfare is considered an important component of sustainable farming. One of the main constraints in addressing a health/ welfare issue is the inability of the dairy farmer to identify the problem sufficiently early, and this can now be assisted by technological devices such as accelerometers or monitors to measure head movement, etc. Precision technologies are also important in the production of quality milk. Information from digital technologies on-farm can be integrated with data derived from routine analytical testing, (e.g. fat, protein and SCC) and this information may be used for subsequent decision making in the dairy supply chain. This can promote an approach of proactive maintenance and optimisation of production through improved predictability and control of manufacturing processes. Thus, the competitiveness and profitability of an agricultural industry can be increased through the use of precision farming technologies and a technology platform that integrates them into operational management.

SPEAKER BIO

Dr Bernadette O'Brien – Principal Research Scientist, Teagasc Animal and Grassland Research and Innovation Centre, Moorepark. In her current role at Teagasc, much of Bernadette's work includes innovative and sustainable systems combining automatic milking and precision grazing; investigation of precision grazing management; labour efficiency with respect to labour input and task profiles; as well as exploring new technology on dairy farms. Bernadette's work also includes a focus on residues in milk, which is key to meeting the demand for premium Irish dairy products in new and existing markets internationally; she is also a member of the IDF (International Dairy Federation) Working Group on residues and chemical contaminants in milk.

Bernadette has been successful in securing significant EU and National research funding, as lead and co-investigator for research initiatives examining the use of precision technologies. Bernadette has published widely (up to 100 peer reviewed papers), as well as book chapters and conference proceedings. Bernadette has also co-supervised the research of many PhD students and also fulfills a role in lecturing to National University of Ireland (Cork and Dublin) students as well as providing training and involvement on workshops to groups.

Plenary Session - Thursday, April 27, 2023

Can Precision Livestock Farming enhance the sustainability of our livestock production systems?

Tomas Norton
KU Leuven, Belgium

ABSTRACT
Modern day livestock farming is facing the perfect storm. Environmental pollution, animal welfare and anti-microbial resistance present great challenges to animal farming across the world. Precision Livestock Farming promises to give livestock farmers the tools and procedures to enable more efficient production while at the same time providing information helping them take better care of animal health and welfare. However, while we have seen many recent technical innovations in the field of animal monitoring, the practial ICT tools now available are still limited across many of the livestock production sectors. In this talk I will discuss the gap between research and implementation and give possible solutions to closing this gap in the future.

SPEAKER BIO
Tomas Norton is leading a research group in Precision Livestock Farming (PLF) in the Division of Animal and Human and Health Engineering (group of M3-BIORES) at the KU Leuven. He holds a PhD in Biosystems Engineering from University College Dublin (Ireland) and is a Fellow of both the Institute of Agricultural Engineers (FIAgrE) and the International Academy of Agricultural and Biosystems Engineers (FiAABE). His current research focus is on PLF applications, focussing on modelling and monitoring of animal responses for improved welfare, health and productivity. He is PI and co-PI on collaborative National and International projects funded by the Belgium government, H2020 and USA. He is author of 80+ SCI publications, 50+ conference proceedings, 10 book chapters and co-editor of one book. He has given over 20 keynotes/invited presentations on his research. Currently he is co-coordinator of courses on Measuring, Modelling and Managing Bio-responses and Sustainable PLF at the KU Leuven. Since 2018 he is Chair of Section 2 of International Commission of Agricultural and Biosystems Engineering (CIGR). He also acts as Editor-in-Chief at the Elsevier journal Computers and Electronics in Agriculture. He is a series editor for the upcoming Springer Nature Book Series: Smart Animal Production and Springer Nature Encyclopedia of Smart Agricultural Technologies.

Plenary Session - Friday, April 28, 2023

Non invasive indicators of fish welfare

João L. Saraiva
Fish Ethology and Welfare Group, CCMAR, Portugal

ABSTRACT
The topic of fish welfare in aquaculture is gaining traction in policy, research and practice. Our current understanding and recent advances in fish biology demonstrate that fish are sentient beings, equipped with neural, cognitive and behavioural substrates to experience affective states in a similar way to other vertebrates. In addition, research also suggests that welfare is directly related to product quality in farmed fish. The acknowledgement of fish sentience carries a series of practical challenges: can we measure fish welfare? Can we assess stress, pain and other negative affective states in fish? Can we use this information to improve the welfare of fish? In this talk I will try to demonstrate that the answer to these questions is yes, and provide possible solutions to assess and improve the fish welfare in aquaculture.

SPEAKER BIO
João Saraiva is a fish ethologist with a special interest in welfare. He is currently leading the Fish Ethology and Welfare Group at the Centre of Marine Sciences in Faro, Portugal and is the president and founder of the FishEthoGroup Association. With a research background on behaviour and communication in teleosts, João now focuses on the application of fundamental science to improve the welfare of fishes, both in aquaculture and in fisheries. He is the author of over 50 scientific publications and co-editor of a book on the topic of fish welfare. The team lead by João has an extensive record of achievements in research, training, dissemination and consultancy. He is an invited assistant professor of Ethology at the University of Algarve, and also works as a consultant for the European Commission, certification bodies and other private stakeholders.

IEEE MeAVeAS 2023 Tutorials

Tutorial - Wednesday, April 26, 2023

In vivo evaluation of body condition in breeding rabbit does

Juan José Pascual
Universitat Politecnica de Valencia, Spain

ABSTRACT
Genetic selection, reproduction management and nutrition programs developed in recent decades have allowed us to considerably increase the productivity of animals. However, livestock is showing negative side effects associated with the use of only productive criteria, such as a greater sensitivity to diseases, increased stress and a greater dependence of animals on the use of antibiotics. Faced with this situation, society and the livestock sector itself are demanding new productive but also sustainable systems. One of the main traits for evaluating the sustainability of breeders is body condition. The study of the evolution of the body condition allows us to observe the effectiveness of our decisions about reproduction, health and welfare, since the body condition is the guarantor of the reproduction and survival of the breeders. Body condition can be assessed through the comparative slaughter technique but, although accurate, it does not allow for studying individual evolution and requires the sacrifice of the animals. Under the principle of the 3Rs of refinement, several methods have been developed for the in vivo evaluation of the body condition of the breeders. In this work, three techniques developed in breeding rabbits based on ultrasound, bioimpedance and electrical conductivity are shown and compared.

SPEAKER BIO
Juan José Pascual is leading a research group in Animal Nutrition in the Institute for Animal Science and Technology of the Universitat Politècnica de Valencia (Spain). He holds a PhD in Animal Feeding at the Universitat Politècnica de Valencia, and is the President of the Spanish National Association of Rabbit Farming (ASESCU) and the President of the World Rabbit Science Association (WRSA). His current research focus is on Precision Animal Feeding, focused on the use of smart tools and precision livestock farming (PLF) technologies for the adequate provision of nutrients and additives in animals housed in groups, aimed to a more environmentally sustainable livestock and less dependent on the use of antimicrobials. He is author of 70+ SCI publications, 160+ conference proceedings, 10+ book chapters. He has given 22 invited presentations on his research. He has participated in 48 projects of public competition and in 20 contracts with companies. Currently, he is coordinator of courses on Biotechnology in PLF, Feed Manufacturing Technology, Challenges and Projects in PLF and Scientific Communication, and has supervised 12 PhD students. He also acts as Editor-in-Chief at the World Rabbit Science (SCI journal) since 2005.

Tutorial - Friday, April 28, 2023

Innovative Technologies for a Buffalo Smart Farm

Mariateresa Verde
University of Naples Federico II, Italy

Francesco Bonavolontà
University of Naples Federico II, Italy

Flora Amato
University of Naples Federico II, Italy

Mattia Fonisto
University of Naples Federico II, Italy

Pierluigi Guerriero
University of Naples Federico II, Italy

IEEE MeAVeAS 2023 Venue

The workshop will be held at the **Conference Centre of the University of Naples Federico II**.
Plenary and Tutorial Sessions and Panels will be held in the historical *Aula Magna* of the *Conference Center*. Technical Sessions will held in Aula Magna and in the modern *Room A*.




Address
Conference Center of the University of Naples Federico II
Via Parthenope, 36
Napoli, Italy

IEEE MeAVeAS 2023 Social Events

WELCOME PARTY

Wednesday, April 26, 2023
H 18:30 - 20:00

The IEEE MeAVeAS 2023 Welcome Party will be held at the Conference Center of the University of Naples Federico II.

Address: ***Conference Center - University of Naples Federico II***
Via Parthenope, 36
Napoli

GALA DINNER

Thursday, April 27, 2023
H 20:30

The Gala Dinner will be held at Restaurant ***La Bersagliera***. The restaurant is about 5 minutes walking from the Conference Venue.

Address: ***Restaurant La Bersagliera***
Via Borgo Marinari, 10/11
Napoli

IEEE MeAVeAS 2023 Patronages

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Program Schedule - Wednesday, April 26

WEDNESDAY - APRIL 26		
09:00 - 09:40	OPENING CEREMONY	
09:40 - 10:30	PLENARY SESSION - Keynote Speaker #1 - Bernadette O'Brien Research supporting precision farming on a pasture grazing milk production system	
10:30 - 11:00	Coffee Break	
	Aula Magna	Room A
11:00 - 12.20	S1.1 - Measurements in veterinary surgery and gynaecology	S1.2 - General Session - PART 1
12:20 - 14:00	Lunch	
14:00 - 14:50	PLENARY SESSION - Tutorial #1 - Juan José Pascual In vivo evaluation of body condition in breeding rabbit does	
14:50 - 16:10	INDUSTRIAL SESSION	
16:10 - 16:30	Coffee Break	
	Aula Magna	Room A
16:30 - 18:30	S2.1 - Innovation and sustainability of PLF	S2.2 - New Advances in Animal Housing, Equipment and Manure Management Strategies for Minimizing Impacts - PART 1
18:30 - 20:00	WELCOME PARTY - Conference Centre of the University of Naples Federico II	

Program Schedule - Thursday, April 27

THURSDAY - APRIL 27		
09:00 - 09:50	PLENARY SESSION - Keynote Speaker #2 - Tomas Norton Can Precision Livestock Farming enhance the sustainability of our livestock production systems?	
	Aula Magna	Room A
09:50 - 11:10	S3.1 - Rapid and low-cost technologies for large scale phenotyping in livestock	S3.2 - Metrology in Food Control System - PART 1
11:10 - 11:30	Coffee Break	
11:30 - 13:10	S4.1 - New Advances in Animal Housing, Equipment and Manure Management Strategies for Minimizing Impacts - PART 2	S4.2 - Metrology in Food Control System - PART 2
13:10 - 14:10	Lunch	
	Aula Magna	Room A
14:10 - 15:30	S5.1 - Measurement of animal welfare in livestock - PART 1	Panel WiE
15:30 - 15:50	Coffee Break	
15:50 - 18:35	S6.1 - Sustainable productivity and mitigation of environmental impact in livestock systems (AGRITECH - Spoke 5)	S6.2 - General Session - PART 1
20:30 - 23:00	SOCIAL DINNER - "*La Bersagliera*" Restaurant - Via Borgo Marinari 10/11	

Program Schedule - Friday, April 28

FRIDAY - APRIL 28		
09:00 - 09:50	PLENARY SESSION - Keynote Speaker #3 - João L. Saraiva Non invasive indicators of fish welfare	
	Aula Magna	Room A
10:00 - 11:40	S7.1 - Non-invasive indices of welfare in farmed fish	S7.2 - From feed to food: assessment of quality, impact and welfare in animal production
11:40 - 12:00	Coffee Break	
12:00 - 13:20	S8.1 - Measurement of animal welfare in livestock - PART 2	S8.2 - IoT-Based innovative technologies for precision livestock farming
13:20 - 14:20	Lunch	
14:20 - 15:10	PLENARY SESSION - Tutorial #2 Innovative technologies for a buffalo smart farm	
	Aula Magna	Room A
15:10 - 16:30	S9.1 - Enhancing Precision Animal Science with Big data and Genomics	S9.2 - Precision minilivestock farming
16:30 - 16:40	Coffee Break	
16:40 - 17:00	CLOSING AND AWARD CEREMONY	

Technical Program - Wednesday, April 26

08:30 - 18:00
REGISTRATION
Room: Conference Center, University of Naples Federico II

09:00 - 09:40
OPENING SESSION - WELCOME ADDRESSES
Room: Aula Magna
Chair: Gianluca Neglia, *University of Naples Federico II, Italy*

Prof. Matteo Lorito, *Rector of the University of Naples Federico II*

Prof. Fabio Villone, *Director of the Department of Electrical Engineering and Information Technologies, University of Naples Federico II*

Prof. Aniello Anastasio, *Director of the Department of Veterinary Medicine and Animal Production, University of Naples Federico II*

Prof. Enrico Primo Tomasini, *Polytechnic University of Marche ,MeAVeAS 2023 Honorary Chair*

Prof. Giuseppe Campanile, *University of Naples Federico II, MeAVeAS 2023 General Chair*

Prof. Leopoldo Angrisani, *University of Naples Federico II, MeAVeAS 2023 General Chair*

09:40 - 10:30
PLENARY SESSION
Room: Aula Magna
Chair: Gianluca Neglia, *University of Naples Federico II, Italy*

Research supporting precision farming on a pasture grazing milk production system

Bernadette O'Brien
Teagasc, Agricultural and Food Development Authority, Ireland

10:30 - 11:00
COFFEE BREAK
Room: Coffee Break / Lunch Area - First Floor

11:00 - 12:00
Session 1.1 - Measurements in veterinary surgery and gynaecology
Room: Aula Magna
Chairs: Angela Palumbo Piccionello, *University of Camerino, Italy*
Adolfo Maria Tambella, *University of Camerino, Italy*

11:00 **Improvements in contactless wound area measurement using an app for mobile digital smart devices in veterinary medicine**
Adolfo Maria Tambella, University of Camerino, Italy
Margherita Galosi, University of Camerino, Italy
Alessio Angorini, University of Camerino, Italy
Angela Palumbo Piccionello, University of Camerino, Italy
Caterina Di Bella, University of Camerino, Italy
Federica Serino, University of Camerino, Italy
Fabrizio Dini, University of Camerino, Italy
Sara Sassaroli, University of Camerino, Italy
Alessandro Troisi, University of Camerino, Italy

11:20 **Ultrasound and Sonoelastographic Features of the Patellar Ligament in Dogs Affected by Cranial Cruciate Ligament Rupture**
Angela Palumbo Piccionello, University of Camerino, Italy
Luca Pennasilico, University of Camerino, Italy
Caterina Di Bella, University of Camerino, Italy
Adolfo Maria Tambella, University of Camerino, Italy
Sara Sassaroli, University of Camerino, Italy
Valentina Riccio, University of Camerino, Italy
Fabrizio Dini, University of Camerino, Italy
Nicola Pilati, University of Camerino, Italy
Antonella Volta, University of Parma, Italy

11:40 **Transverse Abdominal Plane (TAP) Block in Rabbit Cadavers: Anatomical Description and Measurements of Injectate Spread Using One- and Two-Point Approaches**
Caterina Di Bella, University of Camerino, Italy
Luca Pennasilico, University of Camerino, Italy
Federica Serino, University of Camerino, Italy
Margherita Galosi, University of Camerino, Italy
Adolfo Maria Tambella, University of Camerino, Italy
Angela Palumbo Piccionello, University of Camerino, Italy

11:00 - 12:20
Session 1.2 - General Session - PART 1
Room: Room A
Chairs: Oscar Tamburis, *National Research Council, Italy*
Ioan Tudosa, *University of Sannio, Italy*

11:00 **A wearable system for respiratory rate monitoring in veterinary medicine: preliminary results on dogs**
Alessandra Angelucci, Politecnico di Milano, Italy
Giacomo Martinetti, Politecnico di Milano, Italy
Francesco Birettoni, University of Perugia, Italy
Antonello Bufalari, University of Perugia, Italy
Andrea Aliverti, Politecnico di Milano, Italy

11:20 **Assessing wild boar presence and activity in a monitoring specific area of Campania region using camera traps**
Nadia Piscopo, University of Naples Federico II, Italy
Oscar Tamburis, National Research Council, Italy
Francesco Bonavolontà, University of Naples Federico II, Italy
Maria Teresa Verde, University of Naples Federico II, Italy
Maria Manno, University of Naples Federico II, Italy
Marianna Mancusi, University of Naples Federico II, Italy
Luigi Esposito, University of Naples Federico II, Italy

11:40 **Bioelectrical impedance analysis in monitoring dogs with myxomatous mitral valve disease: a preliminary study**
Noemi Nisini, University of Perugia, Italy
Andrea Corda, University of Sassari, Italy
Domenico Caivano, University of Perugia, Italy
Francesco Porciello, University of Perugia, Italy
Francesco Birettoni, University of Perugia, Italy

12:00 **An Innovative Approach for Analysing and Evaluating Enteric Diseases in Poultry Farm**
Federica Borgonovo, Università degli Studi di Milano, Italy
Valentina Ferrante, Università degli Studi di Milano, Italy
Guido Grilli, Università degli Studi di Milano, Italy
Marcella Guarino, Università degli Studi di Milano, Italy

12:20 - 14:00
LUNCH
Room: Coffee Break / Lunch Area - First Floor

14:00 - 14:50
TUTORIAL SESSION
Room: Aula Magna
Chair: Alessandra Roncarati, *University of Camerino, Italy*

In vivo evaluation of body condition in breeding rabbit does

Juan José Pascual
Universitat Politecnica de Valencia, Spain

14:50 - 16:10
INDUSTRIAL SESSION
Room: Aula Magna
Chairs: Fabio Palmiro Abeni, *CREA, Italy*
Leopoldo Angrisani, *University of Naples Federico II, Italy*

16:10 - 16:30
COFFEE BREAK
Room: Coffee Break / Lunch Area - First Floor

16:30 - 18:30
Session 2.1 - Innovation and sustainability of PLF
Room: Aula Magna
Chairs: Angela Salzano, *University of Naples Federico II, Italy*
Roberto Chirone, *University of Naples Federico II, Italy*

16:30 **Reliable use of smart cameras for monitoring biometric parameters in Buffalo Precision Livestock Farming**
Leopoldo Angrisani, University of Naples Federico II, Italy
Angela Salzano, University of Naples Federico II, Italy
Roberta Matera, University of Naples Federico II, Italy
Francesco Bonavolontà, University of Naples Federico II, Italy
Maria Teresa Verde, University of Naples Federico II, Italy
Nadia Piscopo, University of Naples Federico II, Italy
Domenico Vistocco, University of Naples Federico II, Italy
Oscar Tamburis, National Research Council, Italy

16:50 **Performance evaluation of a prototype for the defense against wolf attacks on livestock animals**
Riccardo Primi, Università degli Studi della Tuscia, Italy
Paolo Viola, Università degli Studi della Tuscia, Italy
Pier Paolo Danieli, Università degli Studi della Tuscia, Italy

Bruno Ronchi, Università degli Studi della Tuscia, Italy
Raffaello Spina, Università degli Studi della Tuscia, Italy

17:10 **Patterns of milking data from a commercially available precision livestock farming (PLF) technology for on farm sensor-based health evaluation**
Francesca Petrera, Council for Agricultural Research and Economics, Italy
Stefania Barzaghi, Council for Agricultural Research and Economics, Italy
Rosanna Marino, Council for Agricultural Research and Economics, Italy
Alberto Zoggia, Council for Agricultural Research and Economics, Italy
Fabio Abeni, Council for Agricultural Research and Economics, Italy

17:30 **A sustainability assessment of three different feeding strategies for an Italian Mediterranean buffalo farm**
Roberto Chirone, University of Naples Federico II, eLoop srl, Italy
Piero Salatino, University of Naples Federico II, Italy
Giuseppe Campanile, University of Naples Federico II, Italy
Andrea Paulillo, University of Naples Federico II, eLoop srl, Italy
Angela Salzano, University of Naples Federico II, eLoop srl, Italy
Fabian Capitanio, University of Naples Federico II, Italy
Gianluca Neglia, University of Naples Federico II, Italy

17:50 **Short Review of Current Limits and Challenges of Application of Machine Learning Algorithms in the Dairy Sector**
Lucia Trapanese, University of Naples Federico II, Italy
Angela Salzano, University of Naples Federico II, Italy
Nicola Pasquino, University of Naples Federico II, Italy

18:10 **Application of Machine Learning Algorithms to Buffalo Routine Data: Preliminary Results**
Lucia Trapanese, University of Naples Federico II, Italy
Nicola Pasquino, University of Naples Federico II, Italy
Massimo De Marchi, University of Padova, Italy
Angela Salzano, University of Naples Federico II, Italy

16:30 - 18:10
Session 2.2 - New Advances in Animal Housing, Equipment and Manure Management Strategies for Minimizing Impacts - PART 1
Room: Room A
Chairs: Stefania Pindozzi, *University of Naples Federico II, Italy*
Marco Bovo, *Alma Mater Studiorum University of Bologna, Italy*

16:30 **Definition of a simplified ventilation performance indicator for livestock buildings**
Enrica Santolini, University of Bologna, Italy
Marco Bovo, University of Bologna, Italy
Alberto Barbaresi, University of Bologna, Italy
Daniele Torreggiani, University of Bologna, Italy
Patrizia Tassinari, University of Bologna, Italy

16:50 **Numerical detection of productive anomalies in dairy cows induced by environmental conditions**
Mattia Ceccarelli, University of Bologna, Italy
Miki Agrusti, University of Bologna, Italy
Marco Bovo, University of Bologna, Italy
Claudia Giannone, University of Bologna, Italy
Daniele Torreggiani, University of Bologna, Italy
Patrizia Tassinari, University of Bologna, Italy

17:10 **Adaptation of buffalo calves to a new automatic milk feeder**
Maura Sannino, University of Naples Federico II, Italy
Salvatore Faugno, University of Naples Federico II, Italy
Vincenzo Topa, University of Naples Federico II, Italy
Rossella Piscopo, University of Naples Federico II, Italy
Fausto Esposito, University of Naples Federico II, Italy

17:30 **Green roofs for passive protection of animals from heat stress: first results of a pilot facility**
Elisabetta Riva, University of Milan, Italy
Enrico Ferrari, University of Milan, Italy
Giorgio Provolo, University of Milan, Italy

17:50 **The Importance of Automation in in Vivo Research: An Applied Example of Phenotyping Mouse Circadian Activity**
Sara Fuochi, University of Bern, Switzerland
Mara Rigamonti, Tecniplast SpA, Italy
Marcello Raspa, National Research Council, Italy
Paolo de Girolamo, University of Naples Federico II, Italy
Livia D'Angelo, University of Naples Federico II, Italy

18:30 - 20:00
WELCOME PARTY
Room: Coffee Break / Lunch Area - First Floor

Technical Program - Thursday, April 27

08:30 - 18:00
REGISTRATION
Room: Conference Center, University of Naples Federico II

09:00 - 09:50
PLENARY SESSION
Room: Aula Magna
Chairs: Claudio Forte, *University of Torino, Italy*
Laura Ozella, *University of Torino, Italy*

Can Precision Livestock Farming enhance the sustainability of our livestock production systems?

Tomas Norton
KU Leuven, Belgium

09:50 - 11:10
Session 3.1 - Rapid and low-cost technologies for large scale phenotyping in livestock
Room: Aula Magna
Chairs: Angela Costa, *University of Bologna, Italy*
Massimo De Marchi, *University of Padova, Italy*

09:50 **Detection of common adulterants in bulk bovine milk Using fourier transformed mid-infrared spectroscopy**
Alberto Guerra, University of Padova, Italy
Marco Franzoi, University of Padova, Italy
Vania Vigolo, University of Padova, Italy
Enrico Tosetto, University of Padova, Italy
Massimo De Marchi, University of Padova, Italy

10:10 **Prediction of sheep bulk milk coagulation properties from mid-infrared spectral data**
Carlo Boselli, Experimental Zooprophylactic Institute Lazio and Toscana, Italy
Alberto Guerra, University of Padova, Italy
Angela Costa, University of Bologna, Italy
Massimo De Marchi, University of Padova, Italy

10:30 **Portable milkmeters for the rapid in-field collection of milkability phenotypes in dairy goats**
Silvia Magro, University of Padova, Italy
Carlo Boselli, Experimental Zooprophylactic Institute Lazio and Toscana, Italy
Angela Costa, University of Bologna, Italy
Massimo De Marchi, University of Padova, Italy

10:50 **The introduction of automatic milking system in an existing layout barn: effects on udder health and mastitis control**
Damiano Cavallini, University of Bologna, Italy
Ludovica Mammi, University of Bologna, Italy
Riccardo Colleluori, University of Bologna, Italy
Giovanni Buonaiuto, University of Bologna, Italy
Angela Costa, University of Bologna, Italy
Sara Speroni, University of Bologna, Italy
Andrea Formigoni, University of Bologna, Italy

09:50 - 11:10
Session 3.2 - Metrology in Food Control System - PART 1
Room: Room A
Chairs: Raffaella Branciari, *University of Perugia, Italy*
Sergio Ghidini, *University of Parma, Italy*
Raffaele Marrone, *University of Naples Federico II, Italy*

09:50 **Freshness inspection during the shelf life of Sepia officinalis using the Vis-NIR spectroscopy**
Sarah Currò, University of Padova, Italy
Luca Fasolato, University of Padova, Italy
Stefania Balzan, University of Padova, Italy
Enrico Novelli, University of Padova, Italy

10:10 **Measuring the antimicrobial activity of natural extracts against food spoilage bacteria to enhance food hygiene: preliminary in vitro results**
Rossana Roila, University of Perugia, Italy
Sara Primavilla, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
David Ranucci, University of Perugia, Italy
Roberta Galarini, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Michela Codini, University of Perugia, Italy
Danilo Giusepponi, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Caterina Altissimi, University of Perugia, Italy
Andrea Valiani, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Patrizia Casagrande-Proietti, University of Perugia, Italy
Raffaella Branciari, University of Perugia, Italy

10:30 **Measurement of Rheological Properties in raw and cooked Meat aged with a Controlled Dry-Aging System**
Marika Di Paolo, University of Naples Federico II, Italy
Giulia Polizzi, University of Naples Federico II, Italy

Lucia Vollano, University of Naples Federico II, Italy
Aniello Anastasio, University of Naples Federico II, Italy
Giovanna Bifulco, University of Naples Federico II, Italy
Claudia Lambiase, University of Naples Federico II, Italy
Alessandro Cuomo, Arredo Inox Srl, Italy
Raffaele Marrone, University of Naples Federico II, Italy

10:50 **Antibiotic Residues in Freshwater Fish Farmed in Umbria and Marche Regions**
Irene Diamanti, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Roberta Galarini, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Raffaella Branciari, University of Perugia, Italy
Rossana Roila, University of Perugia, Italy
Giuseppe Palma, Assoittica, Italy
Giorgio Saluti, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Italy
Cristiano Carloni, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Laura Fioroni, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy

11:10 - 11:30
COFFEE BREAK
Room: Coffee Break / Lunch Area - First Floor

11:30 - 13:10
Session 4.1 - New Advances in Animal Housing, Equipment and Manure Management Strategies for Minimizing Impacts - PART 2
Room: Aula Magna
Chairs: Stefania Pindozzi, *University of Naples Federico II, Italy*
Andrea Pezzuolo, *University of Padova, Italy*

11:30 **Biofuels, Bioenergy and Bioproducts From Livestock Sector: a Research and Development Perspective**
Giovanni Ferrari, University of Padova, Italy
Francesco Marinello, University of Padova, Italy
Andrea Pezzuolo, University of Padova, Italy

11:50 **Evaluation of frequent slurry removal as an option to mitigate ammonia and greenhouse gases emissions from dairy barns**
Flavia Dela Pierre, Università di Torino, Italy
Martina Friuli, Università di Torino, Italy
Luca Rollé, Università di Torino, Italy
Telma Eleonora Scarpeci, Università di Torino, Italy
Elio Dinuccio, Università di Torino, Italy

12:10 **Evaluation of ammonia and GHG emissions from frass in agricultural biogas systems**
Telma Eleonora Scarpeci, Università di Torino, Italy

Luca Rollé, Università di Torino, Italy
Flavia Dela Pierre, Università di Torino, Italy
Martina Friuli, Università di Torino, Italy
Elio Dinuccio, Università di Torino, Italy

12:30 **GIS-based analysis to assess biogas energy potential as support for manure management in Southern Italy**
Ester Scotto di Perta, University of Naples Federico II, Italy
Elena Cervelli, University of Naples Federico II, Italy
Raffaele Grieco, University of Bologna, Italy
Antonio Mautone, University of Naples Federico II, Italy
Stefania Pindozzi, University of Naples Federico II, Italy

12:50 **Statistical Analyses of Vertical Distribution of Ammonia, Methane and Carbon Dioxide Concentrations in an Open-Sided Dairy Barn, University of Catania, Italy**
Provvidenza Rita D'Urso, University of Catania, Italy
Claudia Arcidiacono, University of Catania, Italy
Giovanni Cascone, University of Catania, Italy

11:30 - 13:10
Session 4.2 - Metrology in Food Control System - PART 2
Room: Room A
Chairs: Raffaella Branciari, *University of Perugia, Italy*
Sergio Ghidini, *University of Parma, Italy*
Raffaele Marrone, *University of Naples Federico II, Italy*

11:30 **Determination of sulfonamides in muscle: a metrological tool for food safety**
Irene Diamanti, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Roberta Galarini, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Raffaella Branciari, University of Perugia, Italy
Rossana Roila, University of Perugia, Italy
Giorgio Saluti, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Italy
Cinzia Fanini, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Domenico Boccia, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy
Laura Fioroni, Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Italy

11:50 **Potential apoptotic impact of dairy by-product, a preliminary work**
Carlotta Ceniti, University Magna Grecia, Italy
Emanuela Chiarella, University Magna Grecia, Italy
Jessica Bria, University Magna Grecia, Italy
Domenico Britti, University Magna Grecia, Italy
Rosa Luisa Ambrosio, University of Naples "Federico II", Italy
Aniello Anastasio, University of Naples "Federico II", Italy

12:10 **Remote post-mortem veterinary meat inspections in bovine and analysis of post mortem inspection outcomes: preliminary results**
Maria Francesca Peruzy, University of Naples Federico II, Italy

Valeria Vuoso, University of Naples Federico II, Italy
Claudio Felicani, Local Health Unit, Modena, Italy
Giuseppe Cotturone, Local Health Unit, Modena, Italy
Kurt Houf, Ghent University, Belgium
Nicoletta Murru, University of Naples Federico II, Italy

12:30 **Impedance method application for number detection Escherichia coli in molluscs testing by official laboratory**
Marica Egidio, University of Naples Federico II, Italy
Raffaele Marrone, University of Naples Federico II, Italy
Marika Di Paolo, University of Naples Federico II, Italy
Salvatore Capo, Istituto Zooprofilattico Sperimentale del Mezzogiorno, Italy
Emanuele Esposito, Istituto Zooprofilattico Sperimentale del Mezzogiorno, Italy
Maurizio Della Rotonda, Executive Task Force Prevention and Veterinary Public Health, Italy
Federico Capuano, Istituto Zooprofilattico Sperimentale del Mezzogiorno, Italy
Yolande Thérèse Rose Proroga, Istituto Zooprofilattico Sperimentale del Mezzogiorno, Italy
Aniello Anastasio, University of Naples Federico II, Italy
Andrea Mancusi, Istituto Zooprofilattico Sperimentale del Mezzogiorno, Italy

12:50 **Two lung scoring systems compared in an Italian pig abbatoir**
Sergio Ghidini, University of Parma, Italy
Emanuela Zanardi, University of Parma, Italy
Maria Olga Varrà, University of Parma, Italy
Adriana Ianieri, University of Parma, Italy
Mauro Conter, University of Parma, Italy
Silvio de Luca, University of Parma, Italy
Giovanni Alborali, Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia-Romagna, Italy

13:10 - 14:10
LUNCH
Room: Coffee Break / Lunch Area - First Floor

14:10 - 15:30
Session 5.1 - Measurement of animal welfare in livestock - PART 1
Room: Aula Magna
Chairs: Claudio Forte, *University of Torino, Italy*
Laura Ozella, *University of Torino, Italy*

14:10 **Application of the ClassyFarm checklist as measurement tool to evaluate the welfare of cattle kept in tie-stalls in Aosta Valley**
Martina Moriconi, Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta, Italy
Valentina Lorenzi, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, Italy
Clara Montagnin, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, Italy
Claudio Forte, University of Torino, Italy
Alessandro Dondo, Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta, Italy

Mario Vevey, Associazione Nazionale Allevatori Bovini Razza di Valdostana Gressan, Italy
Sandra Ganio, AUSL Valle d'Aosta, Italy
Francesca Fusi, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, University of Parma, Italy
Stefania Bergagna, Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta, Italy

14:30 **Bio-logging reveals heritable patterns of natural behaviours in sheep**
Joss Langford, University of Exeter, UK
Tim Fawcett, University of Exeter, UK
Emily Price, University of Exeter, UK
Destiny Bradley, University of Exeter, UK
Alastair Wilson, University of Exeter, UK
Darren Croft, University of Exeter, UK

14:50 **Preliminary study on the extention of the IT system ClassyFarm to the apiary**
Clara Montagnin, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, Italy
Matteo Frasnelli, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, Italy
Francesca Fusi, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, Italy
Paolo Bonilauri, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, Italy
Luigi Bertocchi, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, Italy
Valentina Lorenzi, Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, Italy

15:10 **On-pasture and On-farm Welfare Measurement Protocol for Horses**
Federica Raspa, University of Turin, Italy
Emanuela Valle, University of Turin, Italy
Alessandro Necci, IZS dell'Umbria e delle Marche, Italy
Laura Ozella, University of Turin, Italy
Lorenzo Bertocchi, IZS dell'Umbria e delle Marche, Italy
Nicoletta D'Avino, IZS dell'Umbria e delle Marche, Italy
Marta Paniccià, IZS dell'Umbria e delle Marche, Italy
Pasquale De Palo, University of Bari, Italy
Domenico Bergero, University of Turin, Italy
Martina Tarantola, University of Turin, Italy
Clara Bordin, University of Turin, Italy
Claudio Forte, University of Turin, Italy

14:10 - 15:30
Session 5.2 - PANEL IEEE Women in Engineering Italy Section - AG
Room: Room A
Panilists: Stefania Pindozzi, *University of Naples Federico II, Italy*
Claudia Conte, *University of Naples Federico II, Italy*
Roberta Di Pace, *University of Salerno, Italy*

Speakers: Marcella Guarino, *University of Milano, Italy*
Giuliana Parisi, *University of Florence, Italy*

15:30 - 15:50
COFFEE BREAK
Room: Coffee Break / Lunch Area - First Floor

15:50 - 18:35
Session 6.1 - Sustainable productivity and mitigation of environmental impact in livestock systems (AGRITECH - Spoke 5)
Room: Aula Magna
Chairs: Nicola Lacetera, *University of Tuscia, Italy*
Danilo Ercolini, *University of Napoli Federico II, Italy*
Gianluca Neglia, *University of Napoli Federico II, Italy*

15:50 **Financial sustainability of adopting digital technologies in dairy cattle farms: evidence from a specific case study and a more general assessment**
Davide Dell'Unto, University of Tuscia, Italy
Samantha Testa, University of Tuscia, Italy
Raffaele Cortignani, University of Tuscia, Italy

16:05 **New Visual Image Analysis devices for automatic classification of bovine carcasses (SEUROP)**
Paolo Negretti, Orisha s.r.l., Italy
Giovanna Bianconi, CRF - Cooperativa Ricerca Finalizzata, Italy
Nicola Cugola, CUVIS s.r.l., Italy
Alessandro Pacenti, West Systems s.r.l, Italy
Marco Pellegrini, Masaf, Italy
Gianfranco Cavallaro, Masaf, Italy

16:20 **Beneficial Fungal Microbes as Novel Ecosustainable Tools for Forage Crops**
Daria Lotito, University of Naples Federico II, Italy
Gabriella Orazzo, University of Naples Federico II, Italy
Roberta Matera, University of Naples Federico II, Italy
Nadia Musco, University of Naples Federico II, Italy
Alessia Staropoli, National Research Council, , University of Naples Federico II, Italy
Francesco Vinale, University of Naples Federico II, Italy

16:35 **Integrating barn environmental data and cow behaviour to improve farm management and animal welfare**
Giorgio Provolo, University of Milan, Italy
Lisette M.C. Leliveld, University of Milan, Italy
Daniela Lovarelli, University of Milan, Italy
Elisabetta Riva, University of Milan, Italy

16:50 **Drilling Task with a Quadruped Robot for Silage Face Measurements**
Viviana Morlando, University of Naples Federico II, Italy
Gianluca Neglia, University of Naples Federico II, Italy
Fabio Ruggiero, University of Naples Federico II, Italy

17:05 **Developing a thermal balance model to account heat load in dairy cows**
Andrea Vitali, University of Tuscia, Italy
Giampiero Grossi, University of Tuscia, Italy
Umberto Bernabucci, University of Tuscia, Italy
Nicola Lacetera, University of Tuscia, Italy

17:20 **Assessing thresholds for cow behaviour detection in free stall barns: a statistical analysis**
Simona M.C. Porto, University of Catania, Italy
Marco Bonfanti, University of Catania, Italy
Dominga Mancuso, University of Catania, Italy
Giulia Castagnolo, University of Catania, Italy
Giovanni Cascone, University of Catania, Italy

17:35 **Experimental validation of Smart Glasses for Augmented Reality in Livestock Farming: Potentials and Perspectives**
Gabriele Sara, University of Sassari, Italy
Daniele Pinna, University of Sassari, Italy
Giuseppe Todde, University of Sassari, Italy
Maria Caria, University of Sassari, Italy

17:50 **Mixed hays produced in Southern of Italy: nutritive value and environmental impact**
Alessandro Vastolo, Univeristy of Napoli Federico II, Italy
Dieudonné Kiatti, Univeristy of Napoli Federico II, Italy
Monica Isabella Cutrignelli, Univeristy of Napoli Federico II, Italy
Serena Calabrò, University of Napoli Federico II, Italy

18:05 **Machine Learning NIR wavelength selection: application for a low-cost portable instrument for livestock feed management**
Marco Milanesi, University of Tuscia, Italy
Daniele Pietrucci, University of Tuscia, Italy
Lorenzo Serva, University of Padova, Italy
Francesco Renzi, University of Tuscia, Italy
Giovanni Vignali, University of Tuscia, Italy
Chiara Evangelista, University of Tuscia, Italy
Giorgio Marchesini, University of Padova, Italy
Igino Andrighetto, University of Padova, Italy
Umberto Bernabucci, University of Tuscia, Italy
Riccardo Valentini, University of Tuscia, Italy
Giovanni Chillemi, University of Tuscia, Italy

18:20 **Design of a flexible, expandable, and customizable sensor network for monitoring livestock behaviour and welfare**
Francesco Renzi, University of Tuscia, Italy
Marco Milanesi, University of Tuscia, Italy
Daniele Pietrucci, University of Tuscia, Italy
Giovanni Vignali, University of Tuscia, Italy
Antonello Carta, Agenzia Regionale per la Ricerca in Agricoltura, Italy

Paolo Ajmone-Marsan, Università Cattolica del Sacro Cuore, Italy
Giovanni Chillemi, University of Tuscia, Italy
Riccardo Valentini, University of Tuscia, Italy

15:50 - 17:10
Session 6.2 - General Session - PART 2
Room: Room A
Chairs: Pasquale Daponte, *University of Sannio, Italy*
Laura Ozella, *University of Torino, Italy*

15:50 **Preliminary findings on the microbiome of a traditional brined ripened cheese**
Arianna Ferrero, University of Turin, Italy
Francesco Ferrero, University of Turin, Italy
Manuela Casale, University of Turin, Italy
Fabio Bruno, Beppino e Giusi Occelli S.r.l., Italy
Daniele Michele Nucera, University of Turin, Italy

16:10 **Microbiome studies in veterinary field: communities' diversity measurements pitfalls**
Ugo Ala, University of Torino, Italy
Angela del Carro, University of Torino, Italy
Mario Giacobini, University of Torino, Italy
Barbara Colitti, University of Torino, Italy
Ada Rota, University of Torino, Italy
Luigi Bertolotti, University of Torino, Italy

16:30 **A computer vision approach for the automatic detection of social interactions of dairy cows in automatic milking systems**
Laura Ozella, University of Turin, Italy
Alessandro Magliola, ALTEN Italia, Italy
Simone Vernengo, ALTEN Italia, Italy
Marco Ghigo, ALTEN Italia, Italy
Francesco Bartoli, ALTEN Italia, Italy
Marco Grangetto, University of Turin, Italy
Claudio Forte, University of Turin, Italy
Gianluca Montrucchio, ALTEN Italia, Italy
Karina Brotto Rebuli, University of Turin, Italy
Mario Giacobini, University of Turin, Italy

16:50 **Reference Intervals (RIs) in Veterinary Medicine**
Martina Quagliardi, University of Camerino, Italy
Livio Galosi, University of Camerino, Italy
Giacomo Rossi, University of Camerino, Italy
Alessandra Roncarati, University of Camerino, Italy
Alessandra Gavazza, University of Camerino, Italy

20:30
SOCIAL DINNER
"La Bersagliera" Restaurant - Via Borgo Marinari 10/11 - Napoli

Technical Program - Friday, April 28

08:30 - 14:00
REGISTRATION
Room: Conference Center, University of Naples Federico II

09:00 - 09:50
PLENARY SESSION
Room: Aula Magna
Chair: Alessandra Roncarati, *University of Camerino, Italy*

Non invasive indicators of fish welfare

João L. Saraiva
Fish Ethology and Welfare Group, CCMAR, Portugal

10:00 - 11:40
Session 7.1 - Non-invasive indices of welfare in farmed fish
Room: Aula Magna
Chairs: Giuliana Parisi, *University of Florence, Italy*
João L. Saraiva, *Centre of Marine Sciences, Portugal*

10:00 **The PerformFISH Welfare Scoring Tool for Farmed Sea Bass and Sea Bream**
Tommaso Petochi, National Italian Institute for Environmental Protection and Research (ISPRA), Italy
Francesco Cardia, National Italian Institute for Environmental Protection and Research (ISPRA), Italy
Carlo Massaccesi, National Italian Institute for Environmental Protection and Research (ISPRA), Italy
Giovanna Marino, National Italian Institute for Environmental Protection and Research (ISPRA), Italy

10:20 **An app as a tool for detecting migrant females of Anguilla anguilla to support the wild population**
Antonio Casalini, University of Bologna, Italy
Laura Gentile, University of Bologna, Italy
Pietro Emmanuele, University of Bologna, Italy
Riccardo Brusa, University of Bologna, Italy
Chiara Fusaroli, ITT Blaise Pascal, Italy
Matteo Lucchi, ITT Blaise Pascal, Italy
Tiberio Tonetti, ITT Blaise Pascal, Italy
Oliviero Mordenti, University of Bologna, Italy

10:40 **Assessing fish physiological responses to dietary inclusion levels of black soldier fly (Hermetia illucens) prepupae meal: a focus on traditional and innovative laboratory approaches and a look towards future approaches**
Matteo Zarantoniello, Marche Polytechnic University, Italy
Giulia Secci, University of Florence, Italy
Giuliana Parisi, University of Florence, Italy
Ike Olivotto, Marche Polytechnic University, Italy

11:00 **Possible application of non-invasive tools to characterize European sea bass (Dicentrarchus labrax) and gilthead sea bream (Sparus aurata) from two different farming systems**
Giulia Secci, University of Florence, Italy
Domitilla Pulcini, Council for Agricultural Research and Economics, Italy
Lina Fernanda Pulido-Rodríguez, University of Florence, Italy
Adja Cristina de Medeiros, University of Florence, Italy
Leonardo Bruni, University of Florence, Italy
Giuliana Parisi, University of Florence, Italy

11:20 **Application of non-invasive advanced diagnostic techniques to monitor mud worm (Polydora spp.) infestation in cupped and flat oyster (Crassostrea gigas, Ostrea edulis) broodstocks**
Alessandra Roncarati, University of Camerino, Italy
Livio Galosi, University of Camerino, Italy
Fabrizio Dini, University of Camerino, Italy
Marina C.T. Meligrana, University of Camerino, Italy

10:00 - 11:40
Session 7.2 - From feed to food: assessment of quality, impact and welfare in animal production
Room: Room A
Chairs: Aristide Maggiolino, *University of Bari "A. Moro", Italy*
Pasquale De Palo, *University of Bari "A. Moro", Italy*

10:00 **New challenges for antimicrobial use in livestock farming: a discourse analysis**
Margherita Masi, Alma Mater Studiorum University of Bologna, Italy
Yari Vecchio, Alma Mater Studiorum University of Bologna, Italy
Gizem Yener

10:20 **Heat Stress Measuring Methods in Dairy Cows**
Alessandra Aloia, University of Bari A. Moro, Italy
Aristide Maggiolino, University of Bari A. Moro, Italy
Lucrezia Forte, University of Bari A. Moro, Italy
Pasquale De Palo, University of Bari A. Moro, Italy

10:40 **Wool quality assessment as a tool for Gentile di Puglia promotion**
Vincenzo Landi, University of Bari Aldo, Italy
Gabriela Molina, Universidad nacional de Cordoba, Argentina
Pasquale De Palo, University of Bari Aldo, Italy
Rossana Topputi, University of Bari Aldo, Italy
Silverio Grande, Associazione Nazionale della Pastorizia, Italy

Giuseppe Mangini, Associazione Regionale Allevatori - Puglia, Italy
Antonietta D'Onghia, Associazione Regionale Allevatori - Puglia, Italy
Francesca Maria Sarti, University of Perugia, Italy
Letizia Temerario, University of Bari Aldo, Italy
Fabio Pilla, University of Molise, Italy
Elena Ciani, University of Bari Aldo, Italy

11:00 **Rapid detection of microplastics in feeds using NIR Spectroscopy**
Giorgio Masoero, Accademia di Agricoltura di Torino, Italy
Salvatore Barbera, University of Torino, Italy
Sabah Mabrouki, University of Torino, Italy
Sara Glorio Patrucco, University of Torino, Italy
Sonia Tassone, University of Torino, Italy

11:20 **Could Color and Volatile Compounds Be Measurements of Oxidation in Horse Meat?**
Lucrezia Forte, University of Bari A. Moro, Italy
Pasquale De Palo, University of Bari A. Moro, Italy
Alessandra Aloia, University of Bari A. Moro, Italy
Aristide Maggiolino, University of Bari A. Moro, Italy

11:40 - 12:00
COFFEE BREAK
Room: Coffee Break / Lunch Area - First Floor

12:00 - 13:20
Session 8.1 - Measurement of animal welfare in livestock - PART 2
Room: Aula Magna
Chairs: Claudio Forte, *University of Torino, Italy*
Laura Ozella, *University of Torino, Italy*

12:00 **CortiCow project: development of a rapid and non-invasive Lateral Flow Immunoassay for the evaluation of cortisol levels in bovine saliva**
Elena Diaz Vicuna, University of Turin, Italy
Laura Anfossi, University of Turin, Italy
Fabio Di Nardo, University of Turin, Italy
Claudio Forte, University of Turin, Italy
Laura Ozella, University of Turin, Italy

12:20 **Behavioral observations of two local chicken breeds, their crossbreeds and one commercial hybrid in different rearing systems**
Edoardo Fiorilla, University of Turin, Italy
Laura Ozella, University of Turin, Italy
Federico Sirri, University of Bologna, Italy
Marco Zampiga, University of Bologna, Italy
Raffaela Piscitelli, University of Bologna, Italy

Martina Tarantola, University of Turin, Italy
Patrizia Ponzio, University of Turin, Italy
Cecilia Mugnai, University of Turin, Italy

12:40 **Free Usable Space Estimation in Broiler Farms using an Image Segmentation Algorithm**
Xavier Cortés, AGCO Center of Excellence for Smart Livestock Products, Spain
Heiner Lehr, AGCO Center of Excellence for Smart Livestock Products, Spain
Yudong Yan, University of Barcelona, AGCO Center of Excellence for Smart Livestock Products, Spain

13:00 **Innovative sensors for the assessment of exercise stress in athlete horse**
Elisabetta Porzio, University of Perugia, Italy
Marco Milanesi, University of Tuscia, Italy
Elisabetta Chiaradia, University of Perugia, Italy
Samanta Mecocci, University of Perugia, Italy
Giovanni Vignali, University of Tuscia, Italy
Massimo Trabalza-Marinucci, University of Perugia, Italy
Francesco Renzi, University of Tuscia, Italy
Riccardo Valentini, University of Tuscia, Italy
Katia Cappelli, University of Perugia, Italy
Giovanni Chillemi, University of Tuscia, Italy
Francesca Beccati, University of Perugia, Italy
Marco Pepe, University of Perugia, Italy

12:00 - 13:20
Session 8.2 - IoT-Based innovative technologies for precision livestock farming
Room: Room A
Chairs: Flora Amato, *University of Naples Federico II, Italy*
Francesco Bonavolontà, *University of Naples Federico II, Italy*
Maria Teresa Verde, *University of Naples Federico II, Italy*

12:00 **Real-time monitoring of behaviour and physiology of European sea bass and environmental parameters in netpen using connected wireless sensors and link with mortality and growth performance**
Sébastien Alfonso, Fondazione COISPA ETS, Italy
Eva Troianou, Kefalonia Fisheries, Greece
Dimitris Troianos, Kefalonia Fisheries, Greece
Walter Zupa, Fondazione COISPA ETS, Italy
Maria Teresa Spedicato, Fondazione COISPA ETS, Italy
Giuseppe Lembo, Fondazione COISPA ETS, Italy
Pierluigi Carbonara, Fondazione COISPA ETS, Italy

12:20 **IoT Infrared Imaging Device for Assessing Lameness in Race Horses**
Stefan Rizanov, Technical University of Sofia, Bulgaria
Peter Yakimov, Technical University of Sofia, Bulgaria

12:40 **On the Use of 3D Camera to Accurately Measure Volume and Weight of Dairy Cow Feed**
Alessio Cotticelli, University of Naples “Federico II”, Italy

Francesco Bonavolontà, University of Naples "Federico II", Italy
Giorgio de Alteriis, University of Naples "Federico II", Italy
Roberta Matera, University of Naples "Federico II", Italy
Gianluca Neglia, University of Naples "Federico II", Italy
Rosario Schiano Lo Moriello, University of Naples "Federico II", Italy
Antonio Monaco, GAV Projects srls, Italy
Tanja Peric, University of Udine, Italy
Alberto Prandi, University of Udine, Italy
Maria Teresa Verde, University of Naples "Federico II", Italy

13:00 **Selection for feed efficiency of male candidates in performance test in Italian Simmental breed**
Lorenzo Degano, A.N.A.P.R.I., Italy
Daniele Vicario, A.N.A.P.R.I., Italy
Alberto Romanzin, University of Udine,Italy
Alberto Cesarani, University of Sassari, Italy
Nicolò Pietro Paola Macciotta, University of Sassari, Italy

13:20 - 14:20
LUNCH
Room: Coffee Break / Lunch Area - First Floor

14:20 - 15:10
TUTORIAL SESSION
Room: Aula Magna
Chair: Gianluca Neglia, *University of Naples Federico II, Italy*

Innovative technologies for a buffalo smart farm

Mariateresa Verde, Francesco Bonavolontà, Flora Amato
Mattia Fonisto, Pierluigi Guerriero
University of Naples Federico II, Italy

15:10 - 16:10
Session 9.1 - Enhancing Precision Animal Science with Big data and Genomics
Room: Aula Magna
Chairs: Stefano Biffani, *Ibba-CNR, Italy*
Roberta Cimmino, *Anasb, Italy*

15:10 **Telomere Length in Farmed Gilthead Sea Bream (Sparus aurata)**
Ramona Pistucci, National Research Council, Italy
Alessandra Iannuzzi, National Research Council, Italy
Sara Albarella, University of Naples Federico II, Italy

Emanuele D'Anza, University of Naples Federico II, Italy
Pietro Parma, University of Milan, Italy
Maria Carmela Ferrante, University of Naples Federico II, Italy
Giovanni Piccolo, University of Naples Federico II, Italy
Francesca Ciotola, University of Naples Federico II, Italy
Vincenzo Peretti, University of Naples Federico II, Italy

15:30 **Machine Learning Methods For Breed Assignment In Honeybees Based On Whole Genome Data**
Giulietta Minozzi, University of Milan, Italy
Maria Grazia de Iorio, University of Milan, Italy
Barbara Lazzari, National Research Council, Italy
Giulio Pagnacco, National Research Council, Italy
Alessandra Stella, National Research Council, Italy
Stefano Biffani, National Research Council, Italy

15:50 **The Present of Buffalo Breeding: Precision Breeding Based on Multi-Omics Information**
Mayra Gómez Carpio, Italian National Association of Buffalo Breeders, Italy
Roberta Cimmino, Italian National Association of Buffalo Breeders, Italy
Dario Rossi, Italian National Association of Buffalo Breeders, Italy
Gianluigi Zullo, Italian National Association of Buffalo Breeders, Italy
Giuseppe Campanile, University of Naples Federico II, Italy
Gianluca Neglia, University of Naples Federico II, Italy
Stefano Biffani, National Research Council, Italy

15:10 - 16:30
Session 9.2 - Precision minilivestock farming
Room: Room A
Chairs: Fulvia Bovera, *University of Napoli Federico II, Italy*
Pier Paolo Danieli, *University of Tuscia, Italy*
Juan Josè Pascual, *Universitat Politècnica de València, Spain*

15:10 **Comparison of the Proteins Amino Acid Profile of Substrates and Larvae of Hermetia illucens Reared on Different Combinations of Butchery and Vegetable Wastes**
Nicola Francesco Addeo, University of Napoli Federico II, Italy
Alessandra Roncarati, University of Camerino, Italy
Simone Vozzo, University of Napoli Federico II, Italy
Livio Galosi, University of Camerino, Italy
Giovanni Piccolo, University of Napoli Federico II, Italy
Fulvia Bovera, University of Napoli Federico II, Italy

15:30 **Precision Beekeeping in Practice. An Evaluation of Two Commercial Systems**
Pier Paolo Danieli, University of Tuscia, Italy
Filippo Lazzari, University of Tuscia, Italy
Riccardo Terriaca, CoNaProA Soc. Coop. Agricola, Italy

15:50 **Influence of larval density on Black soldier fly larvae bioconversion performances**
Antonio Franco, University of Basilicata, Italy

Micaela Triunfo, University of Basilicata, Italy
Carmen Scieuzo, University of Basilicata, Italy
Rosanna Salvia, University of Basilicata, Italy
Dolores Ianniciello, University of Basilicata, Italy
Andrea Boschi, University of Basilicata, Italy
Anna Guarnieri, University of Basilicata, Italy
Patrizia Falabella, University of Basilicata, Italy

16:10 **Acquisitions and evaluation of beehive parameters through an electronic system**
Evelina Serri, University of Camerino, Italy
Giacomo Rossi, University of Camerino, Italy
Alessio Angorini, University of Camerino, Italy
Lucia Biagini, University of Camerino, Italy
Alessandro Di Cerbo, University of Camerino, Italy
Livio Galosi, University of Camerino, Italy
Alessandra Roncarati, University of Camerino, Italy

16:30 - 16:40
COFFEE BREAK
Room: Coffee Break / Lunch Area - First Floor

16:40 - 17:00
CLOSING AND AWARD CEREMONY
Room: Aula Magna