

72ND ANNUAL MEETING OF THE EUROPEAN FEDERATION OF ANIMAL SCIENCE

SCIENTIFIC SOLUTIONS TO DIFFERENT DEMANDS ON THE LIVESTOCK SECTOR

DAVOS – SWITZERLAND

30 AUGUST – 3 SEPTEMBER 2021



EAAP 2021

PROGRAMME EAAP 2021

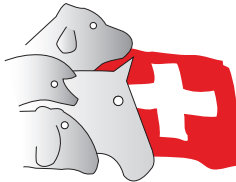
Photo: Marc Kirchhofer

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The European Federation of Animal Science (EAAP)

Every year, the EAAP (The European Federation of Animal Science) organizes an international meeting which attracts between 900 and 1500 people.



The main aims of the EAAP are to promote, by means of active co-operation between its members and other relevant international and national organizations, the advancement of scientific research, sustainable development and production systems; experimentation, application and extension; to improve the technical and economic conditions of the livestock sector; to promote the welfare of farm animals and the conservation of the rural environment; to control and optimise the use of natural resources in general and animal genetic resources in particular; to encourage the involvement of young scientists and technicians. More information on the organization and its activities can be found at www.eaap.org.

Address: Via G. Tomassetti 3 A/1
I-00161 Rome, Italy
Phone: +39 06 4420 2639
E-mail: eaap@eaap.org
Web: <http://www.eaap.org>

Former Presidents

1949-1961	A.M. Leroy (France)
1961-1967	R. Trehane (United Kingdom)
1967-1972	J.M. Rijssenbeek (The Netherlands)
1972-1978	J.H. Weniger (Germany)
1978-1984	E.P. Cunningham (Ireland)
1984-1990	A. Roos (Sweden)
1990-1996	A. Nardone (Italy)
1996-2000	P. Solms-Lich (Germany)
2000-2004	A. Aumaitre (France)
2004-2008	J. Flanagan (Ireland)
2008-2012	K. Sejrsen (Denmark)
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- Andreas Hofer (Switzerland)

Secretary General

- Andrea Rosati



European Federation of Animal Science has close established links with the sister organizations American Dairy Science Association, American Society of Animal Science, Canadian Society of Animal Science and Asociación Latinoamericana de Producción Animal.

Welcome to the EAAP 2021 in Davos



source: Davos-Tourismus

On behalf of the Swiss Organizing Committee, I'm very delighted to welcome you to the 72nd EAAP Congress in Davos from the 29th to the 3rd of September 2021. Davos is a world-famous place due to Thomas Mann's Magic Mountain, the World Economic Forum and numerous sporting events.

To say it in advance: Our choice of the location in 2016 for the 2021 congress could not have been better. Davos is an uncluttered, airy little place, but it is used to dealing with extraordinary situations. Therefore, we can guarantee our participants that your health is our top priority. We are conducting the congress onsite with the best conscience, because Davos is ideal for this.

The main theme of the 2021 meeting is «Scientific solutions to different demands on the livestock sector». The conference will cover all aspects of animal science. In addition, challenge sessions will offer the opportunity to debate societal demands on the animal sector.

The EAAP commissions have designed a very attractive program with 74 scientific sessions. As in the previous year, the poster-session will be held exclusively virtually and will cover numerous interesting topics. The Plenary Session is dedicated to the topic 'The multiple roles of livestock in sustainable development'. The scientific program will be presented in 11 parallel sessions.

Enjoy this EAAP platform for scientists, policy makers and industry representatives to acquire new knowledge and to exchange experiences about the latest research results from many areas of animal science.

This annual meeting is a unique opportunity to meet again on an international level face to face after a long break due to the pandemic, to exchange ideas, to feel comfortable among friends, to admire a unique mountain landscape, to exchange new ideas, and to develop professionally.

We are very happy that, despite the many uncertainties, our efforts in organizing EAAP 2021 were rewarded with enough registrations for on-site participation and additional 400 registrations for virtual participation.

We have planned a social program with a Swiss evening, a farewell dinner and technical tours. Due to possible restrictions because of the pandemic, we have to remain flexible until the congress starts. However, we will do our best to be able to offer you attractive social events as well.

Finally, we thank the numerous sponsors. They have remained loyal to us despite the pandemic. Without their solidarity and financial support, the event would not have been possible.

On behalf of the Swiss Organizing Committee, I wish you a good stay in Davos. We look forward to seeing you in Davos!

Lucas Casanova
Chairman of the Swiss Organizing Committee

National Organizers of the

The 72nd EAAP annual meeting is organized by the Swiss Association for Animal Sciences (SAAS) in partnership with the Federal Office for Agriculture (FOAG) and Global Agenda for Sustainable Livestock (GASL).

Swiss organizers

President

- **Lucas Casanova**, Braunvieh Schweiz, Zug

Secretariat

- **Beat Bapst**, Qualitas AG, Zug

Members

- **Andreas Hofer**, SUISAG, Sempach
- **Veronika Maurer**, Research Institute of Organic Agriculture FiBL, Frick
- **Stefan Probst**, Bern University of Applied Sciences, School of Agricultural, Forest and Food Sciences BFH-HAFL, Zollikofen
- **Léonie von Tavel**, Swissgenetics, Zollikofen

Associated member

- **Adrian Aebi**, FOAG, Bern



72nd EAAP Annual Meeting

Swiss Scientific Committee

The Swiss Scientific Committee was led by

- **Veronika Maurer,**
- **Andreas Hofer and**
- **Beat Bapst**

and supported by members of

- Agroscope, Avenches and Posieux
- Bern University of Applied Sciences, School of Agricultural, Forest and Food Sciences BFH-HAFL, Zollikofen
- Centre for Proper Housing of Ruminants and Pigs ZTHT, Tänikon
- ETH Zurich
- Faculty of Veterinary Medicine (Vetsuisse Faculty) at the University of Bern
- Faculty of Veterinary Medicine (Vetsuisse Faculty) at the University of Zurich
- Qualitas AG, Zug
- Research Institute of Organic Agriculture FiBL, Frick
- SUISAG, Sempach
- Swissgenetics, Zollikofen
- Swiss Goat Breeders Association SZZV, Zollikofen



Friends of EAAP

By creating the 'Friends of EAAP', EAAP offers the opportunity to industries to receive services from EAAP in change of a fixed sponsoring amount of support every year.

- The group of supporting industries are layered in three categories: 'silver', 'gold' and 'diamond' level.
- It is offered an important discount (one year free of charge) if the sponsoring industry will agree for a four years period.
- EAAP will offer the service to create a scientific network (with Research Institutes and Scientists) around Europe.
- Creation of a permanent Board of Industries within EAAP with the objective to inform, influence the scientific and organizational actions of EAAP, like proposing choices of the scientific sessions and invited speakers and to propose industry representatives for the Study Commissions.
- Organization of targeted workshops, proposed by industries.
- EAAP can represent and facilitate activities of the supporting industries toward international legislative and regulatory organizations.
- EAAP can facilitate the supporting industries to enter in consortia dealing with internationally supported research projects.

Furthermore EAAP offers, depending to the level of support (details on our website: www.eaap.org):

- Free entrances to the EAAP annual meeting and Gala dinner invitation.
- Free registration to journal *animal*.
- Inclusion of industry advertisement in the EAAP Newsletter, in the banner of the EAAP website, in the Book of Abstract and in the Programme Booklet of the EAAP annual meeting.
- Inclusion of industry leaflets in the annual meeting package.
- Presence of industry advertisements on the slides between presentations at selected standard sessions.
- Presence of industry logos and advertisements on the slides between presentations at the Plenary Sessions.
- Public Recognition by the EAAP President at the Plenary Opening Session of the annual meeting.
- Discounted stands at the EAAP annual meeting.
- Invitation to meetings (at every annual meeting) to discuss joint strategy EAAP/Industries with the EAAP President, Vice-President for Scientific affair, Secretary General and other selected members of the Council and of the Scientific Committee.

Contact and further information

If the industry you represent is interested to become 'Friend of EAAP' or want to have further information please contact jean-marc.perez0000@orange.fr or EAAP secretariat (eaap@eaap.org, phone : +39 06 44202639).

The Association

EAAP (The European Federation of Animal Science) organizes every year an international meeting which attracts between 900 and 1,500 people. The main aims of EAAP are to promote, by means of active co-operation between its members and other relevant international and national organizations, the advancement of scientific research, sustainable development and systems of production; experimentation, application and extension; to improve the technical and economic conditions of the livestock sector; to promote the welfare of farm animals and the conservation of the rural environment; to control and optimise the use of natural resources in general and animal genetic resources in particular; to encourage the involvement of young scientists and technicians. More information on the organization and its activities can be found at www.eaap.org

YoungEAAP



What is the YoungEAAP?

YoungEAAP is a group of young scientists organized under the EAAP umbrella. It aims to create a platform where scientists during their early career get the opportunity to meet and share their experiences, expectations and aspirations. This is done through activities at the Annual EAAP Meetings and social media. The large constituency and diversity of the EAAP member countries, commissions and delegates create a very important platform to stay up-to-date, close the gap between our training and the future employer expectations, while fine-tuning our skills and providing young scientists applied and industry-relevant research ideas.

Committee Members at a glance

- Torun Wallgren (President)
- Ines Adriaens (Secretary)
- Marcin Pszczola (secretary)

YoungEAAP promotes Young and Early Career Scientists to:

- Stay up-to-date (i.e. EAAP activities, social media);
- Close the gap between our training and the future employer expectations;
- Fine-tune our skills through EAAP meetings, expand the special young scientists' sessions, and/or start online webinars/trainings with industry and academic leaders;
- Meet to network and share our graduate school or early employment experiences;
- Develop research ideas, projects and proposals.

Who can be a Member of YoungEAAP?

All individual members of EAAP can join the YoungEAAP if they meet one of the following criteria:
Researchers under 35 years of age OR within 10 years after PhD-graduation

Just request your membership form (torun.wallgren@slu.se) and become member of this network!!!

Country information

Facts about Switzerland (Confoederatio helvetica)

Population	8.6 millions citizens; residents of non-Swiss nationality account for nearly 25%
Surface area	41,000 km ²
Mountains	There are 208 mountains with an altitude of over 3,000 m above sea level
Capital	Berne
Languages	Switzerland has four national languages although English is increasingly popular – the four official languages are French, German, Italian and Rhaeto-Romansch
Currency	Switzerland uses the Swiss Franc (CHF)
Politics	Switzerland is a direct democracy in which citizens can challenge any law passed by Parliament

Welcome to Switzerland!

Switzerland in the heart of Europe

For a meeting in the heart of the continent of Europe, there's no better location than Switzerland. Sharing borders with Germany to the north, Italy to the south, France to the west and Austria and Liechtenstein to the east and links by air, rail and road with dozens more, Switzerland is open to the world. It is easy to reach, with straightforward land border crossings and international airports at Zurich, Geneva, Basel. Mountains and valleys, glaciers and forests, lakes and rivers – an amazing variety in such a small area. For an active vacation, or

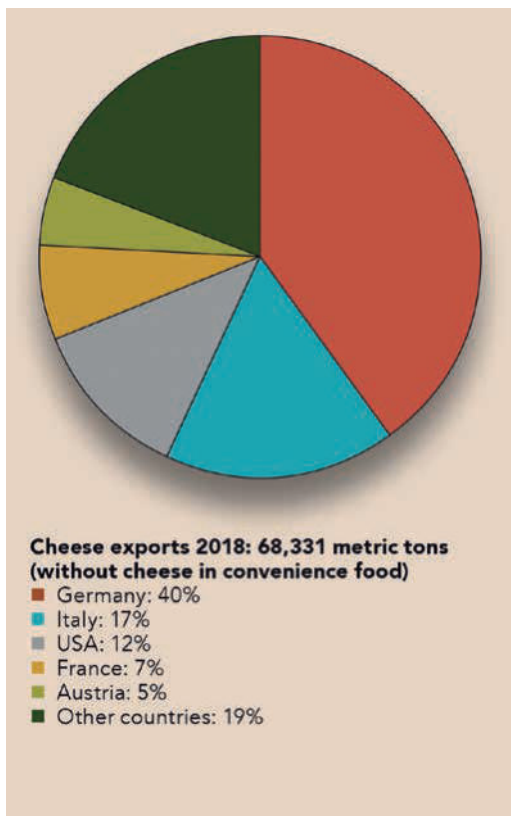
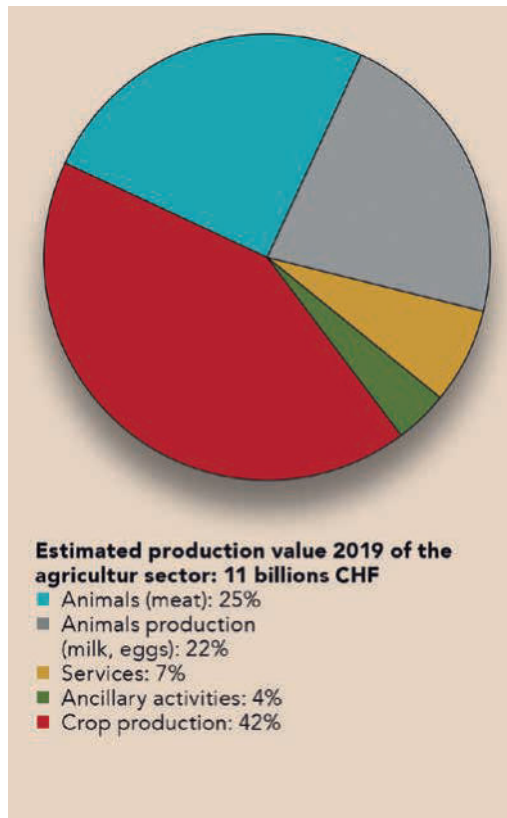
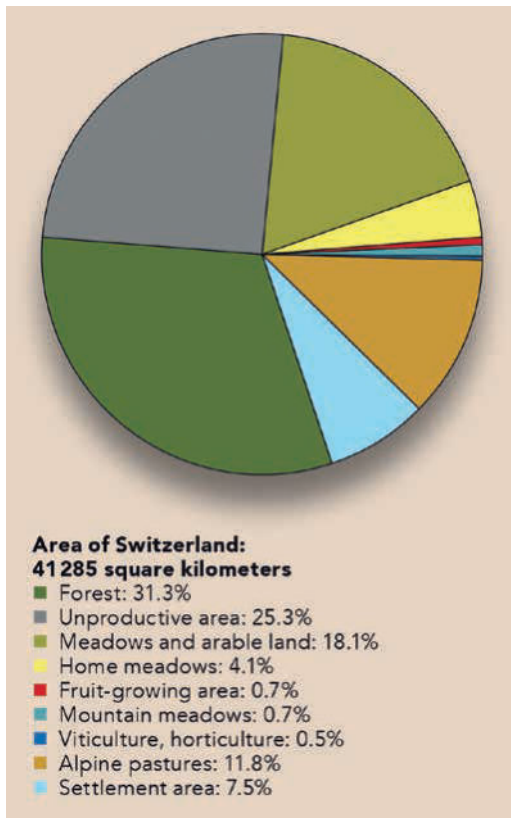
perfect relaxation, Switzerland has something for everyone. The climate and topography of Switzerland make it ideal for animal rearing and explain the rich variety of livestock breeds created in such a small area. No other country in the world has a public transport network offering such dense coverage. Trains run at regular intervals and always depart and arrive at the same minute past the hour/half hour.

- Timetable information: www.sbb.ch



source: Marcel Giger

Switzerland



Switzerland is famous for its cheese (Emmental and Gruyere), its chocolate (Toblerone), its watches and its financial institutions, but also for its innovative and competitive economy, particularly in the pharmaceutical and chemical industries.



Davos

Davos is the highest town in the Alps located at about 1,500 metres above sea level. An EAAP Congress in the mountains, in the midst of nature? What a good idea, because Davos has one of the most modern congress centres in the Alps which also hosts the annual World Economic Forum (WEF).

Davos Klosters is also one of the most famous vacation destinations in the world and offers the complete range of vacation, sports and meeting facilities in the middle of the mountains.

Just imagine, you are participating in the interesting EAAP Congress yet at the same time you feel you are on vacation. The fascinating mountain nature will inspire you and unwind you automatically from your daily routine.

A wide range of sophisticated restaurants, hotels and bars invite you to linger for a while in the evenings to enjoy their diverse culinary specialities and appreciate the same warm and easy-going atmosphere they all share.

Admittedly, Davos is not exactly 'round the corner', but it can be reached in just a few hours from Zürich, Basel, Geneva, Munich, Innsbruck and Milan. Transform your journey to Davos into a real experience and travel on the Rhaetian railway high up the Prättigau or from Chur across the Landwasser Viaduct (UNESCO World Heritage Site) through the unique landscape to Davos. Once you've arrived at the top you will really think you're on vacation, but at the EAAP Congress. And everything is so close together. You won't waste any more time in Davos with long travel times and this more than makes up for the longer journey to get there.



Did you know?

Famous Train

With its unique mountain sections, the UNESCO World Heritage Albula/Bernina Line and famous classics such as the Glacier and Bernina Express, the Rhaetian railway has delivered first class railway experiences for over 120 years through the very heart of trilingual Grisons. And regardless of which trip you choose to take, there is always one constant - the Rhaetian railway unites the beauty of the landscape, the power of technology and the pioneering spirit of the past century. www.rhb.ch

Schatzalp – Venue for the Farewell Dinner

On the Schatzalp, where readers of Thomas Mann's best-selling novel will find the magic mountain, the ambience, the attitude to life amidst pure art nouveau architecture, remains as it was almost 100 years ago. The architecture of the sanatorium remains unchanged. Today the terraces are used as sunbathing spots for the hotel guests. And as anyone who has been on the Schatzalp will know, here enthroned above Davos, the area is still truly magical just like it used to be.



Kirchner Museum

Most of Kirchner's artistic works are displayed in the Kirchner Museum in Davos, which was founded by the art dealer Roman Norbert Ketterer. The architecture of the Kirchner Museum in Davos aims to bring people and art together. The crystalline building constitutes the architectural counterpart to the art of Ernst Ludwig Kirchner. www.kirchnermuseum.ch

Eau-là-là in the Congress Building

On the ground floor of the wellness pools guests will find an expansive water world, whilst the two upper stories house a stunning spa world. The facilities include steam baths under the enchanting starry skies, two solariums, an additional shower and cold water area and even a club room with fireplace for relaxation. The blockhouse sauna and the open-air jacuzzi with a spacious relaxation terrace complete the wellness experience. www.eau-la-la.ch



Davos town plan

- | | |
|-------------------------------------|---|
| 1. Sports hall Färbi | 20. Library |
| 2. Hospital | 21. Resort park |
| 3. Bolgen Areal | 22. Indoor pool/wellness «eau-là-là» |
| 4. Valley station Jakobshorn | 23. Congress centre |
| 5. Railway station Davos Platz | 24. Bowling |
| 6. Reformed church 'St. Johann' | 25. Catholic church 'Herz-Jesu' |
| 7. Town hall | 26. Cross-country ski centre |
| 8. Winter sports museum | 27. Golf course/golf club |
| 9. Museum of medicine | 28. Sports ground Bünden |
| 10. Catholic church 'Marienkirche' | 29. Bünden areal |
| 11. Valley station Schatzalp/Strela | 30. Museum of local history |
| 12. Casino | 31. Lake Seehof |
| 13. Arcade Square | 32. Valley station Parsenn |
| 14. The Church of England | 33. Reformed church 'St. Theodul' |
| 15. Artificial ice rink | 34. Railway station Davos Dorf |
| 16. Sports centre | 35. WSL Institute for Snow and Avalanche Research SLF |
| 17. Tourist office | 36. Lido (water sports/pedalo) |
| 18. Ice stadium | 37. Rope and Bike park |
| 19. Kirchner museum | |

Conference venue

source: lvt Swissgenetics



Davos Congress
Talstrasse 49a
CH-7270 Davos Platz
Tel. +41 81 415 21 60
Fax +41 81 415 21 69
info@davoscongress.ch

The Congress Centre Davos is located in the middle of Davos, between Davos Dorf and Davos Platz. The Main Entrance and the parking lots can be reached from the Talstrasse. The bus stops at the top (Promenade) and at the bottom (Talstrasse) in front of the Congress building which can also be easily reached on foot from many hotels. Due to the Covid protection scheme only the entrance 'Talstrasse' can be used. There are exits to 'Park', 'Promenade' and 'Promenade Nord'.

Combine your arrival in Davos with a refreshing walk in the most magnificent environment, as Davos Congress is surrounded by a park near the River Landwasser. There is also a big chargeable carpark below at the Congress.

There is something to suit every taste in close proximity that can be reached on foot. Davos, a municipal infrastructure in the middle of the mountains and with Davos Congress at its heart.

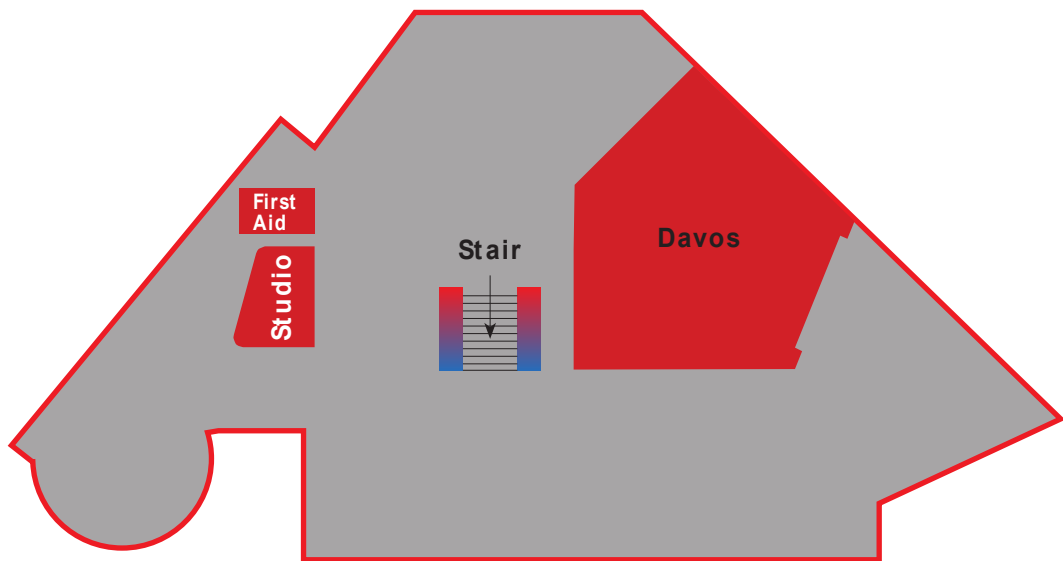
source: lvt Swissgenetics



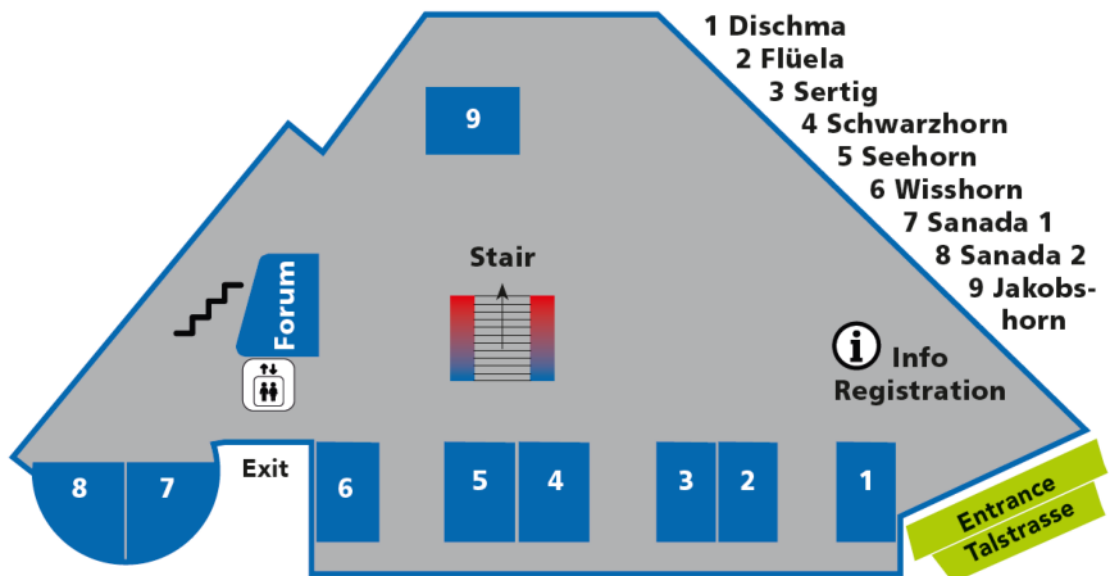
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Floor plans

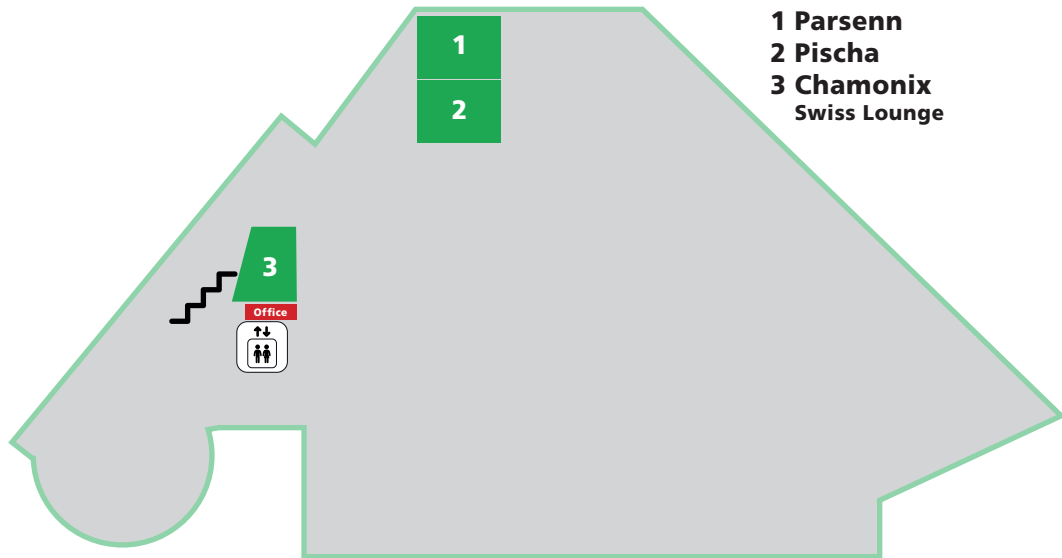
Level -1



Level 0

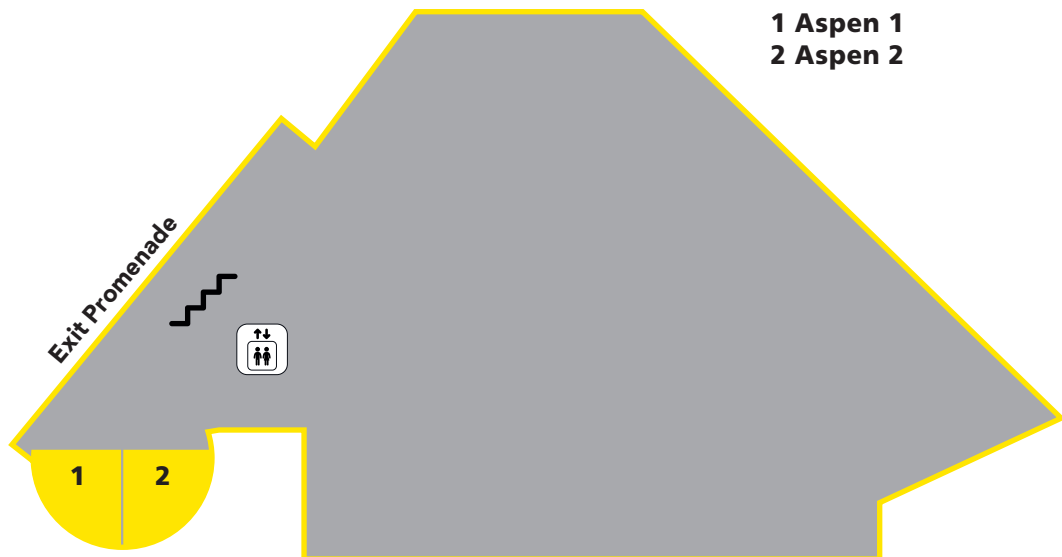


Level 1



- 1 Parsenn
- 2 Pischa
- 3 Chamonix
Swiss Lounge

Level 2



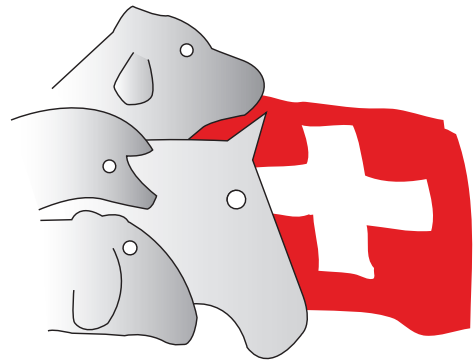
- 1 Aspen 1
- 2 Aspen 2

 Level 3: EAAP-Office Room 41, 43, 44

Information for participants

Conference website: www.eaap2021.org
Conference email: info@eaap2021.org

Local organizer:
Swiss Association for Animal Sciences
www.svt-assa.ch



Venue

Davos Congress
Talstrasse 49a
CH-7270 Davos Platz

Covid information

For events like the EAAP annual meeting with possibly more than 1000 participants on site, all of them must:

- be fully vaccinated
- or have recovered from a COVID-infection within 180 days
- or have recently been tested (PCR or antigen test not older than 72 or 48 hours, respectively)

The local organizer is looking into the possibility of offering testing on site in Davos.



Registration desk

The Registration Desk is open for participants in the main-entrance Talstrasse in Davos Congress on the following days and times:

- | | |
|-------------------------|---------------|
| • Sunday August 29 | 09:00 – 19:00 |
| • Monday August 30 | 07:30 – 18:00 |
| • Tuesday August 31 | 07:30 – 18:00 |
| • Wednesday September 1 | 07:30 – 18:00 |
| • Thursday September 2 | 07:30 – 18:00 |



source: Davos-Tourismus

Badges and identification

Upon registration, each participant will receive a name badge to be worn at all times during the conference and social events. Lost name badges can be replaced for a fee of 10 CHF.

Message board

A message board will be near the registration desk.

Swiss lounge

Meet Swiss Animal Scientists in the 'Swiss Lounge' in room Chamonix (Level 1)

Smoking area

Smoking is not permitted indoors at Davos Congress. There will be a special smoking area outside the conference centre.

Wi-Fi

Visitors to Davos Congress can use free WiFi. No login is necessary.

Car-Parking

There is a pay car park with 250 parking spaces alongside the Congress Center.

Time zone

The summer time zone in Switzerland is GMT + 2 hours.

Climate

The Alpine climate can be very variable. Temperatures between 0 °C and about 25 °C are possible in Davos in August/September. Normally the temperature will be about 20 °C during the day. An umbrella might be useful as the August has the highest average rainfall.

Currency and money exchange

The currency in Switzerland is the Swiss Franc. Most banks open at 09.00 and close around 17.00 Monday through Friday. They are generally closed for lunch between 12.00 and 14.00. Post offices are open between 09.00 and 17.00. Please, note that there will be no currency exchange facilities at the congress venue. All major credit cards are widely accepted. ATMs are available at walking distance.

Electrical supply

Electricity is supplied at 220/230 volts, 50 Hz. Some hotels provide 110 volt AC sockets for electric razors only. Switzerland has its own plug standard Type J (three 4 mm round pins). Therefore you will need an adapter, which might be provided in most of the hotels.

Submission of

Power Point Presentations

Oral presenters have to upload their Powerpoint presentation(s) in the signposted area close to the registration desk at main entrance Talstrasse half a day before their presentation(s). Technicians are available to upload presentation(s) from your memory stick to the presentation system in the reception area from 12:00 to 19:00 on Sunday August 29 and during normal reception hours on Monday August 30 to Thursday September 2.

All presentations scheduled for Monday morning have to be uploaded on Sunday.

Uploading of presentations on the presentation system is mandatory and only available in the reception area. Each conference room is equipped with a projector and a connected computer. The presentation software is Microsoft PowerPoint. The use of personal computers for presentations is not allowed.

Posters and poster sessions

Posters are online only and can be accessed via <https://www.eaap2021.org/>. All posters will be on display throughout the conference and participants can communicate with authors via chat function. Specific poster sessions are scheduled on Wednesday September 1 between 17:30 and 18:30 (Session A) and Thursday September 2 between 08:00 and 09:00 (Session B), when authors are expected to be online to discuss their posters with participants.

Uploading presentations on the EAAP website

The Book of Abstracts containing all abstracts presented at the conference will be available on the EAAP 2021 website (www.eaap2021.org).

PDF files of contributions will also be available following the conference for downloading from the EAAP website (www.eaap.org). This site will enable delegates to obtain more detailed information about work being presented at the meeting. A password, given only to registered participants, will be required.

To authors

If authors do not wish to give permission to have the pdf presentation or poster available on the EAAP website, they must inform EAAP before September 30th (after the conference) by sending an email to eleonora@eaap.org. After this date, EAAP will assume permission and include your presentation/poster on the EAAP website.

Posters:

Only the poster (pdf) or the MP4 video uploaded in the virtual poster area will be placed on the website.

Theatre:

Only the presentation uploaded in the Preview Room will be placed on the website.

Please do not send us any other presentation or poster by email.

EAAP will only accept presentations/posters that have been presented.

A password will be required, and this will only be communicated to registered participants and EAAP Individual Members.

Conference App

An EAAP 2021 App will be available from <http://www.eaap2021.org> to all registered delegates before the conference. It will contain comprehensive information about the conference, venue program and abstracts.

General programme

Day	Time	Subject
Sunday 29 August	10:00 – 17:30	Workshop 'Writing and presenting scientific papers'
	09:00 – 19:00	Registration of participants
Monday 30 August	08:00 – 12:00	Study commission sessions A*
	09:00 – 13:00	Study commission sessions B*
	12:00 – 14:00	Lunch for sessions A followed by B
	13:30 – 17:30	Study commission sessions A
	14:30 – 18:30	Study commission sessions B
	19:00 – 22:00	Opening & award ceremony, welcome reception
Tuesday 31 August	08:30 – 12:30	Plenary session and Leroy Lectures
	12:00 – 14:30	Lunch
	14:00 – 18:00	Study commission sessions A
	14:30 – 18:30	Study commission sessions B
	09:00 – 18:00	Accompanying persons: Vintage tour https://www.eaap2021.org/accompanyingtour
	19:00 – 22:30	Swiss evening https://www.eaap2021.org/swiss-evening
Wednesday 1 September	08:00 – 12:00	Study commission sessions A
	09:00 – 13:00	Study commission sessions B
	12:00 – 14:30	Lunch for sessions A followed by B
	13:30 – 17:30	Study commission sessions A
	14:30 – 18:30	Study commission sessions B
	17:30 – 18:30	Poster Session A
	09:00 – 18:00	Accompanying persons: Engadin valley https://www.eaap2021.org/accompanyingtour
	18:00 18:45 – 20:00	General assembly
Thursday 2 September	08:00 – 12:00	Study commission sessions A
	08:00 – 09:00	Poster Session B
	09:00 – 13:00	Study commission sessions B
	12:00 – 14:30	Lunch for sessions A followed by B
	13:30 – 17:30	Study commission sessions A
	14:30 – 18:30	Study commission sessions B
	19:00 – 23:00	Farewell dinner https://www.eaap2021.org/farewell-dinner
Friday 3 September	07:30 – 20:00	Technical tours https://www.eaap2021.org/technical-tours , option for drop off to airport

* Sessions A and B with shifted timings to avoid crowds during coffee and lunch breaks

Plenary Session (21)

Tuesday 31 August 08:30 – 12:30	
Discovery Plenary Session (8:30 – 11:30) The multiple roles of livestock in sustainable development <i>Chair: Isabel Casasús</i>	
08:30	Demands on the livestock sector – Engagement of the Swiss Government <i>Adrian Aebi</i> Federal Office for Agriculture (FOAG), Bern, Switzerland
9:00	The role of livestock production in global food security <i>Anne Mottet</i> Food and Agriculture Organization, Rome, Italy
9:30	Animal products in healthy diets <i>Frédéric Leroy</i> Vrije Universiteit Brussel, Brussels, Belgium
10:00 Coffee Break	
10:30	Sustainability in high producing animals <i>Jack Britt</i> North Carolina State University, Raleigh, USA
11:00	Discussion
Leroy Lectures (11:30 – 12:30)	
11:30	Environmental responsibility of animal production: some answers to questions from society <i>Giovanni Bittante</i> University of Padova, Legnaro, Italy
12:00	Linearity, circularity, control, and robustness in biology and livestock production systems <i>Jaap van Milgen</i> PEGASE, INRAE, Saint Gilles, France

Organization of scientific programme

In the 'Room Overview' section (pages 22-26) several abbreviations are shown which are to do with the organization of the various sessions. These are explained below.

EAAP Commissions

The Scientific Programme of the EAAP Annual Meeting is organized by the Scientific Committee of EAAP, chaired by the Vice-President for Scientific Affairs, Dr Johannes Sölkner. The Scientific Committee comprises the Presidents of the 11 Commissions (see pages 100-101) and is assisted by a Secretary, Dr Geoff Pollott.

The 11 Commissions are: Cattle (C), Genetics (G), Health and Welfare (H+W), Horse (H), Livestock Farming Systems (LFS), Nutrition (N), Physiology (Ph), Pig (P), Sheep and Goat (S+G), Insects (I) and Precision Livestock Farming (PLF).

Type of sessions

- **Theme sessions (T)** are on key topics in animal science suggested by a Commission at its Annual Commission Meeting and consist of invited and offered papers
- **Industry sessions (I)** are led and supported by industry organizations involved with a Commission and comprise invited and offered papers
- **Free Communications (bottom-up; BU)** are sessions created from submitted abstracts and titles are announced in early April after abstracts have been received
- **Discovery sessions (D)** are invited and submitted single/multiple presentations on hot/emerging topics suggested by a Commission
- **Challenge sessions (C)** are free format (workshop, open committee, round table) to debate important issues and have no theatre paper presentations, other than an introductory talk
- **Early-career Scientist's sessions (EC)** are either competitions to identify the best presentation or topics particularly orientated towards early-career scientists
- **Project sessions (P)** are sessions based around a project which wants to share its results with the wider scientific community, often combined with submitted abstracts.
- **Working Group sessions (WG)** are the results of an EAAP working group

All sessions are open to all delegates to the Annual Meeting

Room overview

Schedule A Room	Monday 30 August 8:00 – 12:00	Monday 30 August 13:30 – 17:30
Davos	Session 1 Phenotypes and strategies for breeding for climate friendly and efficient animals (G; T)	Session 11 Low carbon animal nutrition: methane emission and climate (N; T)
Aspen	Session 2 Environmental impact on cattle genetics and breeding strategies (C; T)	Session 12 Single-step genomic evaluation (G; B)
Schwarzhorn	Session 3 Use of genomic data for conservation activities (G; WG)	Session 13 A: Joining forces in the use and conservation of genetic resources (GenResBridge/G; P) B: Use of functional genome annotation in farmed animal breeding (FAANG/G; P)
Jakobshorn	Session 4 Effects of heat stress and other environmental challenges on the physiology of livestock (Ph; T)	Session 14 The Sm@RT and TechCare projects (PLF; P)
Forum	Session 5 Insects as feed and bioremediation tool (I; T)	Session 15 Methods and practices to assess and improve animal welfare (H+W; T)
Schedule B Room	Monday 30 August 9:00 – 13:00	Monday 30 August 14:30 – 18:30
Sanada	Session 6 Sensing dynamics in livestock physiology disruption through images and other non-invasive alternatives (C/PLF/Ph ; T)	Session 16 Recent advances in omics technologies applied to small ruminants (S+G; T)
Pischa + Parsenn	Session 7 Mixed crop/livestock systems – do they deliver more resilient food systems (LFS/ATF; C)	Session 17 Going beyond the Feed vs Food competition: crops and animals together to address food and nutrition security (ATF/LFS; C)
Seehorn		Session 18 Alpine, organic and grassland based cattle production (C; T)
Wisshorn	Session 8 Development of genetic and genomic systems in equid breeding (H; T)	Session 19 Young train – Innovative research and extension (C; EC)
Studio	Session 9 Feeding the gut: from microbiome to models (N; T)	
Sertig	Session 10 Early career competition: stressing innovation in pig and poultry industry (P; EC)	Session 20 Management of the sow and her litter (P/H+W; T)
<p>Schedule A – Coffee break: 9:45 – 10:15 and 15:15 – 15:45 / Lunch break: 12:00 – 13:30 Schedule B – Coffee break 10:45 – 11:15 and 16:15 – 16:45 / Lunch break: 13:00 – 14:30 Opening & award ceremony, welcome reception: 19:00 – 22:00</p>		

Schedule A Room	Tuesday 31 August 8:30 – 12:30	Tuesday 31 August 14:00 – 18:00
Davos	Session 21 Plenary session and Leroy Lectures	Session 22 Breeding for improved animal health, welfare and longevity I (G/H+W; T)
Aspen		Session 23 The tortoise and the hare: finding the best balance between resilience and efficiency (GENTORE/G; P)
Schwarzhorn		Session 24 From PLF sensor development to application in the field (PLF; P)
Jakobshorn		Session 25 Sustainable livestock farming in mountain areas and harsh environments - challenge or opportunity? (LFS; T)
Forum		Session 26 Regulatory framework and advances in genetics and genomics of farmed insects (I; T)
Schedule B Room	Tuesday 31 August 14:30 – 18:30	
Sanada		Session 27 Sustainability and human health aspects of dairy and meat products and substitutes (C; ADSA)
Pischa + Parsenn		Session 28 Evolutions and latest developments in equine production and management (H; T)
Seehorn		Session 29 So you think your science is so great (C; T)
Wisshorn		Session 30 Young EAAP – opportunities for early career scientists (YEAAP; EC)
Studio		Session 31 ANIMAL NUTRITION 4.0 (N; I)
Sertig		Session 32 Meat and fat quality in broilers and finishing pigs (P; WG)
<p>Schedule A – Coffee break: 10:00 – 10:30 and 15:45 – 16:15 / Lunch break: 12:30 – 14:00 Schedule B – Coffee break 10:00 – 10:30 and 16:15 – 16:45 / Lunch break: 12:30 – 14:30 Swiss evening: 19:00 – 22:30</p>		

Schedule A Room	Wednesday 1 September 8:00 – 12:00	Wednesday 1 September 13:30 – 17:30
Davos	Session 33 Breeding for improved animal health, welfare and longevity: cattle II (G/H+W; T)	Session 44 PLF methods for measuring health, welfare and caring for individual animals (PLF; T)
Aspen	Session 34 Breeding for the future: technology finds application in new phenotypes (FABRE-TP/G; C)	Session 45 Free communications in animal genetics (G; B)
Schwarzhorn	Session 35 Good health of pigs and poultry: increasing robustness through feeding and management - part 1 (P/H+W; T)	Session 46 Use of genomic information (G; B)
Jakobshorn	Session 36 Advancing sustainable livestock systems for resilient sustainable food systems (LFS; T)	Session 47 What levers can be activated by stakeholders to promote the livestock transition? (LFS; T)
Forum	Session 37 Sustainability assessments of insects as food and feed in a circular economy (I; T) 11:00 Insect Commission Meeting	Session 48 Insects: standardisation and terminology (I; WG)
Schedule B Room	Wednesday 1 September 9:00 – 13:00	Wednesday 1 September 14:30 – 18:30
Sanada	Session 38 Computing in PLF: cloud and edge computing and smart algorithms (PLF; T)	Session 49 Transgenerational effect of nutrition (feeding of mother, effect on offspring) (N; T)
Pischa + Parsenn	Session 39 Nutrient competition between production and animal health – interactions of nutrition, immunity and microbiota (Ph; T)	Session 50 Novel developments of milk removal in conventional, automated and cow-calf contact systems (Ph; T)
Seehorn	Session 40 Heifer growth strategies for increased productivity, longevity and reduced environmental impact (C; T)	Session 51 Organic production of milk and meat (C; P)
Wisshorn	JOINT EAAP/ADSA SESSION 'FUTURE OF HOUSING FOR CATTLE'	
	Session 41 part 1 (C/ADSA; P/Freewalk)	Session 52 part 2 (C/ADSA; P/Freewalk)
Studio	Session 42 Inclusive livestock nutrition: where we have a trade-off between performance, environmental sustainability and animal welfare (N; T)	Session 53 Good health of pigs and poultry: increasing robustness through feeding and management - part 2 (P/H+W; T)
Sertig	Session 43 Optimisation of sheep and goats production systems: strategies for sustainable and resilient agroecosystems (S+G; T)	Session 54 Sheep and goats management and reproduction (S+G; T)
Schedule A – Coffee break: 9:45 – 10:15 and 15:15 – 15:45 / Lunch break: 12:00 – 13:30 Schedule B – Coffee break 10:45 – 11:15 and 16:15 – 16:45 / Lunch break: 13:00 – 14:30 Poster session A: 17:30 – 18:30 General assembly: 18:45 – 20:00		

Schedule A Room	Thursday 2 September 8:00 – 12:00	Thursday 2 September 13:30 – 17:30
Davos	Session 55 Sustainable Insect Chain (H2020 SUSINCHAIN) (I; P)	Session 64 Sustainable Insect Chain (H2020 SUSINCHAIN) (I; P)
Aspen	Session 56 Free communications: Crossbreeding - Conservation of local breeds (G; B/WG) 11:00 Genetics Commission Meeting	Session 65 Contribution of animal breeding to solving societal challenges (G; C)
Schwarzhorn	Session 57 Exploiting sequence data (G; T) 11:00 LFS Commission Meeting	Session 66 Interaction between host genetics and gastro-intestinal tract microbiota genetics (G; T)
Jakobshorn	Session 58 Animal behaviour: from horses to hens (H+W/H; T) 11:00 H+W Commission Meeting	Session 67 Challenges and novel metrics of multi objective tools at farm/regional level (LFS; C)
Forum	Session 59 CYBELE project on high performance computing for precision livestock farming (PLF; P) 11:00 PLF Commission Meeting	Session 68 PLF MIR tools to monitor cows' welfare in particular the freedom from disease, hunger and stress (in collaboration with HappyMoo project) (PLF/C; P)
Schedule B Room	Thursday 2 September 9:00 – 13:00	Thursday 2 September 14:30 – 18:30
Sanada	Session 60 European collaboration in research towards sustainable pig production (P; D) 12:00 Pig Commission Meeting	Session 69 Improving animal welfare: do we need more regulations, or should the society decide? (H+W; C)
Pischa + Parsenn	Session 61 Workshop: Meta-analysis applied to animal science (S+G; EC) 12:00 Sheep Commission Meeting	Session 70 Improving sustainability of pig production by participatory research (P; C)
Seehorn	12:00 Horse Commission Meeting	Session 71 Good practices and strategies in dairy farming (C; T)
Wisshorn	JOINT EAAP/ADSA SESSION 'FUTURE OF HOUSING ...'	Session 72 Methods and technologies for research and smart nutrition management in dairy and beef cattle (C; P/SMARTCOW)
	Session 62 part 3 (C/ADSA; P/Freewalk) 12:00 Cattle Commission Meeting	
Studio	12:00 Nutrition Commission Meeting	Session 73 Next generation in animal nutritional science (Young Scientists Session) (N; EC)
Sertig	Session 63 Metabolism, oxidative stress and immune function (Ph; P) 12:00 Physiology Commission Meeting	Session 74 Omics in animal nutrition and physiology (the European joint doctorate program Molecular Animal Nutrition 'MANNA') (Ph; P)
<p>Schedule A – Coffee break: 9:45 – 10:15 and 15:15 – 15:45 / Lunch break: 12:00 – 13:30 Schedule B – Coffee break 10:45 – 11:15 and 16:15 – 16:45 / Lunch break: 13:00 – 14:30 Poster session B: 8:00 – 9:00 Farewell Dinner: 19:00 – 23:00</p>		

Scientific programme

Monday 30 August

Session 01. Phenotypes and strategies for breeding for climate friendly and efficient animals

Room: Davos

Chair: Pszczola

Session type: Theme session

Theatre Session 01		Book of Abstracts page
8:00	Phenotypes and strategies to reduce methane emissions of dairy cattle	111
invited	<i>Y. De Haas, A.E. Van Breukelen, R.F. Veerkamp, G. De Jong and M.N. Aldridge</i>	
8:30	The usefulness of methane production predicted from cows' heat production	111
	<i>M. Pszczola</i>	
8:45	Methane output versus production traits: estimates of genetic associations in Nordic Red cattle	112
	<i>E. Negussie, P. Mäntysaari, L. Maanaviija, J. Nousianen, I. Strandén, A.R. Bayat, T. Mehtiö and M.H. Lidauer</i>	
9:00	Genetic parameters for long term recording of enteric methane emissions of dairy cows	112
	<i>A.E. Van Breukelen, M.N. Aldridge, R.F. Veerkamp, C. Schrooten and Y. De Haas</i>	
9:15	Enteric methane emissions are positively associated to residual feed intake in growing bulls	113
	<i>A. Bes, P. Nozière, Y. Rochette, P. Faure, G. Cantalapiedra-Hijar, P. Guarnido-Lopez, Y. Gaudron, G. Renand and C. Martin</i>	
9:30	Re-thinking modelling of residual feed intake for genomic evaluation in dairy cattle	113
	<i>M.H. Lidauer, E. Negussie, E.A. Mäntysaari, P. Mäntysaari, S. Kajava, T. Kokkonen and T. Mehtiö</i>	
9:45	Coffee break	
10:15	A new genomic evaluation for feed efficiency in Holsteins	114
	<i>J. Jamrozik, G. Kistemaker, P. Sullivan, B. Van Doormaal, T.S. Chud, C.F. Baes, P. Stothard, F.S. Schenkel and F. Miglior</i>	
10:30	Residual feed intake of genomic tested young Holstein bulls	114
	<i>S. Callegaro, G. Niero, M. Penasa, R. Finocchiaro, G. Invernizzi and M. Cassandro</i>	
10:45	Evaluation of different models to define a more suitable residual feed intake estimation in sheep	115
	<i>C.B. Marques, G. Ciappesoni, J.I. Velazco, E.A. Navajas, G.F. Ferreira, Z. Ramos, F. Rovira and I. De Barbieri</i>	
11:00	Multitrait analysis of RFI: heterogeneity of residual variances and modelling of body weight change	115
	<i>E. Negussie, E.A. Mäntysaari, P. Mäntysaari, S. Kajava, T. Kokkonen, T. Mehtiö and M.H. Lidauer</i>	
11:15	Longitudinal residual feed intake criterion for selection	116
	<i>I. David, V.H. Huynh Tran and H. Gilbert</i>	
Poster Session 01		Book of Abstracts page
01.12	Infrared thermography as indicator trait for feed efficiency in dairy cattle	116
	<i>G.C.B. Schopen, M. Heida, E. Mullaart and E.D. Ellen</i>	
01.13	A hologenomic approach for genomic selection on methane emissions and feed efficiency	117
	<i>O. González-Recio, J. López-Paredes, A. Saborio-Montero, A. López-García, M. Gutiérrez-Rivas, N. Charfeddine, I. Goiri, R. Atxaerandio, E. Ugarte, J.A. Jiménez-Montero and A. García-Rodríguez</i>	

Session 02.

Environmental impact on cattle genetics and breeding strategies

Room: Aspen 1&2

Chair: König

Session type: Theme session

Theatre Session 02	Book of Abstracts page
8:00 Strategies for deriving auxiliary traits for lameness prediction and breeding value estimation <i>K. Schodl, B. Fuerst-Waltl, C. Egger-Danner and D4dairy-Consortium</i>	117
8:15 Estimation of genetic parameters for dairy cattle behaviour traits generated by AMS <i>R. Schafberg, F. Rosner and H.H. Swalve</i>	118
8:30 Genotype by environment interaction for persistency of production in multiparous SA Holsteins <i>M. Van Niekerk, F.W.C. Nesper, J.B. Van Wyk and V. Ducrocq</i>	118
8:45 Preliminary evidence of genes associated with milk fatty acid profile in different cow breeds <i>M. Milanese, C. Marchitelli, M. Contò, D. Pietrucci, G. Chillemi and A. Crisà</i>	119
9:00 Influence of pedigree on effective population size in European Red Dairy Cattle <i>M. Jakimowicz, T. Suchocki, S. Nyman, D.-J. De Koning and J. Szyda</i>	119
9:15 Benefits and perils of import in small cattle populations <i>J. Obsteter, J. Jenko and G. Gorjanc</i>	120
9:30 Spatial modelling improves genetic evaluation in smallholder breeding programs <i>M.L. Selle, I. Steinsland, O. Powell, J.M. Hickey and G. Gorjanc</i>	120
9:45 Coffee break	
10:15 Heat waves effect on Brown Swiss milk yield and quality <i>A. Maggiolino, V. Landi, N. Bartolomeo, U. Bernabucci, A. Rossoni and P. De Palo</i>	121
10:30 Predicting lifetime production and longevity of organic dairy cows from 1 st or 2 nd lactation data <i>A. Bieber, D. Hinrichs, F.N. Moser, A. Maeschli, I. Prosepe, I. Lora, G. Cozzi and F. Leiber</i>	121
10:45 Transgenerational heat stress effect on genetic parameters for weight traits in dual-purpose cattle <i>K. Halli, K. Brügemann, M. Bohlouli, T. Yin and S. König</i>	122
11:00 Physiological determinants underlying differences in feed efficiency between crossbreed beef cattle <i>I. Morel, G. Cantalapiedra-Hijar, F. Dohme-Meier, R. Siegenthaler and S. Lerch</i>	122
11:15 Genetic evaluation of carcass traits considering different fattening systems in Switzerland <i>S. Kunz, S. Strasser, U. Schnyder, M. Spengeler, F.R. Seefried and P. Von Rohr</i>	123
11:30 Methane emission from dairy cows measured using laser methane detectors and respiration chambers <i>J. Kecman, J. Heinicke, L. Grütter, B. Kuhla and H.H. Swalve</i>	123
11:45 Time-lagged genotype by heat stress interaction analyses <i>C. Kipp, K. Brügemann, T. Yin and S. König</i>	124

Room: Schwarzhorn

Chair: Oldenbroek

Session type: Working group session

Theatre Session 03		Book of Abstracts page
8:00	Genomic tools to support decisions on conservation of animal genetic diversity <i>J.K. Oldenbroek and J. Fernández</i>	124
8:15	Combining whole-population genotyping and stochastic simulation to improve conservation management <i>C. Reimer, T. Pook, E. Peripolli and H. Simianer</i>	125
8:30	Runs of homozygosity islands reveal highly inbred genomic regions across 124 chicken populations <i>W. Gorssen, R. Meyermans, S. Janssens and N. Buys</i>	125
8:45	Effects of recent and ancient inbreeding on growth in American Angus cattle <i>E.A. Lozada-Soto, C. Maltecca, D. Lu, S. Miller, J.B. Cole and F. Tiezzi</i>	126
9:00	Body and reproduction traits are negatively affected by inbreeding depression in Belgian Milkshopeep <i>R. Meyermans, W. Gorssen, N. Buys and S. Janssens</i>	126
9:15	Genomic and pedigree estimates of effective population size in the Old Kladruber and Noriker horse <i>L. Vostry, H. Vostra-Vydrova, B. Hofmanova, V. Cubric-Curik, G. Gorjanc and I. Curik</i>	127
9:30	Do standardised genotypes in Hardy-Weinberg equilibrium enhance local breeds assignment accuracy? <i>H. Wilmot and N. Gengler</i>	127
9:45 Coffee break		
10:15	Genomic diversity and population structure of Holstein Friesian: Czech population perspective <i>L. Vostry, H. Vostra-Vydrova, N. Moravcikova, R. Kasarda, V. Cubric-Curik and I. Curik</i>	128
10:30	Analysis of Y-chromosome sequences in twelve cattle breeds reveals low within-breed diversity <i>C. Escoufflaire and A. Capitan</i>	128
10:45	Selection signatures in candidate genes affecting exterior traits in several rabbit breeds <i>M. Ballan, S. Bovo, G. Schiavo, M. Schiavitto, R. Negrini and L. Fontanesi</i>	129
11:00	Deciphering the genomic architecture and patterns of selection in Swiss cattle breeds <i>M. Bhati, N.K. Kadri, D. Crysanto and H. Pausch</i>	129
11:15	Effect of SNP related to reproduction traits on the genetic composition of local cattle <i>R. Kasarda, N. Moravčíková, L. Vostrý, H. Vydrová-Vostrá, R. Židek, A. Trakovická, J. Candrák and P. Polák</i>	130
11:30	Study of the variability of Csd alleles based on NGS data in Italian honeybees <i>G. Paolillo, M.G. De Iorio, A. Stella, B. Lazzari and G. Minozzi</i>	130
Poster Session 03		Book of Abstracts page
03.14	Genomic assessment of the Romanov sheep using high density DNA chips <i>T. Deniskova, A. Dotsev, M. Selionova, G. Brem and N. Zinovieva</i>	131
03.15	Genome scans for several morphological traits and defects in the autochthonous Reggiana cattle breed <i>S. Bovo, G. Schiavo, H. Kazemi, G. Moscatelli, A. Ribani, M. Ballan, S. Dall'Olio and L. Fontanesi</i>	131
03.16	The inbreeding landscape of two Italian autochthonous cattle breeds from Parmigiano-Reggiano region <i>G. Schiavo, S. Bovo, A. Ribani, V.J. Utzeri, E. Mancin, R. Mantovani, S. Dall'Olio and L. Fontanesi</i>	132

Room: Jakobshorn

Chair: Kenez / Montanholi

Session type: Theme session

Theatre Session 04		Book of Abstracts page
8:00	Faecal metabolites as biomarkers of diet and heat stress in dairy cows <i>invited</i> A. Ruiz-Gonzalez, J.E. Rico and D.E. Rico	132
8:30	Effects of heat stress on performance and gastrointestinal tract microbiome of weaned calves A.B.P. Fontoura, M.X. Rodrigues, E. Grilli, M.E. Van Amburgh, R.C. Bicalho and J.W. McFadden	133
8:45	Milk fatty acids as markers of heat stress in cows fed diets with varying protein composition A. Ruiz-Gonzalez, A. Celemin, Y.H. Leung, A. Kenez, P.Y. Chouinard, H. Lapierre, D.R. Ouellet, R. Gervais and D.E. Rico	133
9:00	Early detection of heat stress in grazing dairy cows by use of behavioural and physiological traits A. Pontiggia, A. Münger, L. Eggerschwiler, D. Stucki, S. Ammer, R. Bruckmaier, F. Dohme-Meier and N. Keil	134
9:15	Individual differences in the physiological response to heat stress of dairy goats M. Ramon, S. González-Luna, S. Serhan, A.A.K. Salama, A. Molina, M. Sánchez, C. Díaz, X. Such, G. Caja and M.J. Carabaño	134
9:30	Faecal microbiota and their association with heat stress in Chinese Holstein cows B. Czech, K. Wang, S. Chen, Y. Wang and J. Szyda	135
9:45 Coffee break		
10:15	Identification of heat stress responsive transcripts in Sprague-Dawley rats using mixed linear model K. Kotlarz, M. Mielczarek, T. Suchocki, J. Dou, Y. Wang and J. Szyda	135
10:30	Impact of heat stress on physiological characteristics and nitrogen utilisation in growing pigs P. Bikker, E. Parand, V. Van Der Nat, H.R. Kim and A. Jansman	136
10:45	Betaine and zinc effect on growth and plasma variables of Iberian pigs under long term heat stress Z. Pardo, I. Seiquer, M. Lachica, R. Nieto, L. Lara and I. Fernandez-Figares	136
11:00	Relationships of stress during fall corral weaning with future productive performance in beef cattle L. Braga, R. Palme, S. Miller, M. Sargolzaei and Y. Montanholi	137
11:15	Energy balance and feed restriction effects on milk fatty acids and metabolic profile of beef cows K. Orquera, M. Blanco, J.R. Bertolín, J. Ferrer and I. Casasús	137
11:30	Effect of feeding and shelter management on age at first ejaculation in Murrah buffalo bulls P. Singh, C.K. Prasad, S.V. Singh, M. Mukesh and S.S. Lathwal	138
Poster Session 04		Book of Abstracts page
04.13	Effect of feed restriction on lactating Charolais cows P.M. Martin, A. Vinet, F. Launay, D. Dozias, D. Maupetit, J. Sapa and G. Renand	138
04.14	Heat tolerance indices for local sheep breeds in the Mediterranean-Karagouniko & Barki case studies M.A. Karatzia, A.M. Abounaga, M. El Shafie, D. Tsiokos, T. Abdelsabour, C. Ligda, T. Abdelkhalik and E.N. Sossidou	139
04.15	Challenges of 16S rRNA analysis in Chinese Holstein cows under heat stress condition B. Czech, K. Wang, S. Chen, Y. Wang and J. Szyda	139
04.16	Development of a gut barrier failure model in broiler using a rye-wheat based diet and heat stress C. Emsenhuber, B. Doupovec, B. Grenier, V. Nagl and N. Reisinger	140

04.17	In silico prophylactic supplement for acute heat stress from expressed sequence tags of chicken <i>I.W.S. Mahardhika, F.N.L. Hida and B.S. Daryono</i>	140
04.18	The effects of HeatAntistress on dairy cattle performance during increased heat stress periods <i>A. Plomaritou, D. Tsolakis, T. Michou, E. Sourla, K. Naselos, C. Papatzikou and A. Foskolos</i>	141
04.19	Prediction of the effects of heat stress on the farrowing rate in sows <i>D. Renaudeau, B. Déneché, P. Corre, B. Badouard and J.Y. Dourmad</i>	141

Session 05.

Insects as feed and bioremediation tool

Room: Forum

Chair: Gasco / Ottoboni / Murta

Session type: Theme session

Theatre Session 05		Book of Abstracts page
8:00	Insect-fed poultry value chains: trade-offs between opportunities and risks <i>H.W. Saatkamp, Y. Aartsma, H. Hogeveen and M. Dicke</i>	142
8:15	Is the use of live insect larvae as environmental enrichments able to improve broiler welfare? <i>I. Biasato, S. Bellezza Oddon, E. MacChi, G. Chemello, L. Gasco and A. Schiavone</i>	142
8:30	Impact of dietary black soldier fly larvae on laying hen performance, egg quality and lipid profile <i>P.H. Patterson, N. Acar and E.A. Koutsos</i>	143
8:45	Selenium biofortification of <i>Hermetia illucens</i> prepupae <i>L. Ferrari, M. Ottoboni, S. Mazzoleni, F. Defilippo, P. Bonilauri, R. Ørnsrud and L. Pinotti</i>	143
9:00	Inclusion of <i>Tenebrio molitor</i> in broiler feeds as a partial substitution for hipro soybean meal <i>K.J. Hawkey, Z.C.T.R. Daniel, G. Bone, T. Parr, J.M. Brameld and A. Salter</i>	144
9:15	Practical, semi-purified diets for protein requirement determination in <i>Hermetia illucens</i> larvae <i>S. Bellezza Oddon, I. Biasato and L. Gasco</i>	144
9:30	Production and optimization of <i>Hermetia illucens</i> (L.) larvae reared on former foodstuffs <i>A. Gligorescu, C. Fischer, J. Fynbo and B. Larsen</i>	145
9:45	Coffee break	
10:15	Effect of dietary crude protein on growth performance of mealworms (<i>Tenebrio molitor</i>) <i>B.R. Paulicks, A. Vorndran, S. Kuenz and W. Windisch</i>	145
10:30	Suitability of agro-by-products for the rearing of <i>Zophobas morio</i> and <i>Alphitobius diaperinus</i> larvae <i>C.I. Rumbos, D.G.A.B. Oonincx, M. Gourgouta, V. Michail, I.T. Karapanagiotidis, A. Asimaki, E. Mente and C.G. Athanassiou</i>	146
10:45	Safety of black soldier fly (<i>Hermetia illucens</i>) larvae reared on substrates with veterinary drugs <i>E.F. Hoek - Van Den Hil, M.G.M. Van De Schans, G. Bor and H.J. Van Der Fels-Klerx</i>	146
11:00	Growth and nutrient conversion of BSF larvae fed substrates varying in chemical composition <i>T. Veldkamp, K. Van Rozen, P. Van Wikselaar, H.J.H. Elissen and R.Y. Van Der Weide</i>	147
11:15	Rearing density and dietary inclusion of cassava and taro leaves on growth performance in crickets <i>D. Cruz, H. Arevalo and D. Vernot</i>	147

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Session 06. Sensing dynamics in livestock physiology disruption through images and other non-invasive alternatives

Room: Sanada 1&2

Chair: Montanholi / Gondret

Session type: Theme session

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06.16	Determining colour in the CIELab space of bovine and porcine longissimus dorsi using computer vision <i>A. Catharina Batista, M. Almeida, C. Guedes, V. Santos, J. Manuel Almeida, A. Teixeira and S. Silva</i>	163
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Session 07. Mixed crop/livestock systems – do they deliver more resilient food systems

Room: Pischä + Parsenn

Chair: Boland

Session type: Challenge session

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Session 08.

Development of genetic and genomic systems in equid breeding

Room: Wisshorn

Chair: Stock

Session type: Theme session

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10:15	Assessing the value of genetic linear profiles for selecting for sport performance of riding horses <i>K.F. Stock, I. Workel, A. Hahn and W. Schulze-Schleppinghoff</i>	172
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11:45	Pseudoautosomal region as a key factor for the molecular detection of Turner’s syndrome in horses <i>Y. Pirosanto, N. Laseca, F. Azcona, A. Molina, M. Valera and S. Demyda-Peyrás</i>	174
12:00	Screening for genomic association with fertility in PRE horses using high density genotyping data <i>N. Laseca, S. Demyda-Peyrás, D.I. Perdomo-González, M. Ramón, M. Muñoz-Cruzado, B. Escribano, P. Azor, M. Valera and A. Molina</i>	174
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08.16	Are conformation characteristics of Pura Raza Española adult horses predictable? <i>M.D. Gómez, D.I. Perdomo-González, A. Molina, M.J. Sánchez-Guerrero and M. Valera</i>	177

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Session 09.

Feeding the gut: from microbiome to models

Room: Studio

Chair: Abdennebi-Najar / Goselink

Session type: Theme session

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9:45	Association between <i>in situ</i> rumen kinetics and <i>in vitro</i> gas production of corn silage nutrients <i>I. Ansia, R. Walvoort, A. Santos, B.M. Tas, J.A. Metcalf, H. Van Laar and W. Pellikaan</i>	180
10:00	Determination of linoleic acid requirements for dairy cows using a meta-analysis approach <i>P. Denis, A. Ferlay, P. Nozière, C. Gerard and P. Schmidely</i>	181
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11:15	<i>Ex vivo</i> intestinal model for the evaluation of nutrient bioaccessibility <i>M. Dell'Anno, F. Acocella, P. Riccaboni and L. Rossi</i>	182
11:30	Role of short chain fatty acids to counteract inflammatory stress in mucus secreting HT29-MTX cells <i>C. Giromini, A. Baldi, R. Rebutti, T.S. Sundaram and S. Purup</i>	182
11:45	Anti-protozoal efficacy of pine bark extracts against <i>Cryptosporidium parvum</i> in cell culture <i>B. Blomstrand, H. Enemark, Ø. Øines, H. Steinshamn, I. Aasen, K.-C. Mahnert, K. Sørheim, S. Athanasiadou, S. Thamsborg and I. Woolsey</i>	183
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09.13	<i>In vitro</i> study of the effect of riboflavin on hindgut microbial fermentation in pigs <i>Z. Amanzougarene, E. Pérez-Calvo, G. De La Fuente and M. Fondevila</i>	185
09.14	Low variability in gene expression of intestinal organoids and original tissue in pigs <i>D. Schokker, H. Woelders, R. Rikkers, S.K. Kar, O. Madsen, A. Taverner, N. Taverner, J. Wells and E. Ellen</i>	185

Session 10. Early career competition: stressing innovation in pig and poultry industry

Room: Sertig

Chair: Vigors / Nilsson / Trevisi

Session type: Early-career scientist's session

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9:15 Sows diet enriched with BCAA and/or Arg lead to an improvement of sow' and piglet' performance <i>F. Correa, P. Trevisi, D. Luise, H. Ohara, A. Simongiovanni, T. Chalvon-Demersay and P. Bosi</i>	186
9:30 Differences in enzyme activity between piglets fed dry feed or liquid feed prior to weaning <i>J.G. Madsen, N. Byrgesen, M.S. Cilieborg and C. Amdi</i>	187
9:45 Understanding piglets' intestinal microbiome changes caused by zinc oxide and apramycin <i>J.M. Ortiz-Sanjuán, H. Argüello, R. Cabrera-Rubio, F. Crispie, P.D. Cotter, J.J. Garrido and E.G. Manzanilla</i>	187
10:00 Blood serum metabolites and faecal VFA as tools to detect unbalanced diets in grower-finisher pigs <i>J. Camp Montoro, D. Solà-Oriol, R. Muns and E.G. Manzanilla</i>	188
10:15 Can genotyping and breeding value estimation for hens increase efficiency of layer breeding? <i>L. Büttgen, H. Simianer and T. Pook</i>	188
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11:15 Influence of sex on endogenous antioxidant defences in broiler chickens, a new perspective? <i>P. Engler, E. Richard and A. Benarbia</i>	189
11:30 Dietary protein and ractopamine effects on boar taint and testes parameters of immunocastrated pigs <i>T. Needham, R. Gous, H. Lambrechts, E. Pieterse and L. Hoffman</i>	190
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10.14	Attempts to assess the onset of sexual maturity in finishing boars <i>S. Niedersüß, R. Eisenreich, J. Dodenhoff, A. Rieger, S. Roiger, M. Heudecker and R. Fries</i>	192
10.15	A blend of active compounds (Fresh Up) to mitigate heat stress in lactating sows <i>E. Janvier, B. Freitas, S. Putrino, F. Payola, C. Launay, E. Schetelat, F. Guillard and A. Samson</i>	193
10.16	Genetic analysis of protein efficiency in Swiss Large White pigs <i>E.O. Ewaoluwagbemiga, H. Pausch, G. Bee and C. Kasper</i>	193

Session 11.**Low carbon animal nutrition: methane emission and climate**

Room: Davos

Chair: De Campeneere / Bruggeman

Session type: Theme session

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14:15	Effect of feed strategies on the carbon footprint and economic variables of cow-calf systems <i>P. Toro-Mujica</i>	194
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14:45	Tannins and essential oils as dietary ingredients to mitigate rumen methane and ammonia production <i>G. Foggi, M. Terranova, A. Cappucci, G. Conte, M. Kreuzer and M. Mele</i>	195
15:00	<i>In vitro</i> rumen total gas and methane formation from Northern hemisphere macroalgae <i>M. Thorsteinsson, H.H. Hansen, N.P. Nørskov and M.O. Nielsen</i>	196
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15:45	Could aquatic resources help to mitigate enteric methane from ruminants? invited <i>G. Van Duinkerken, W. Muizelaar and J. Dijkstra</i>	196
16:15	Feeding mixtures of seaweeds has no effect on methane emission of beef cattle <i>D. Humphries, Á. Pétursdóttir, S. Künzle, M. Rodehutschord, L. Ford and C. Reynolds</i>	197
16:30	Mitigation extent of GHG emissions in Sardinia dairy sheep farms by forage quality improvement <i>P. Sau, M.F. Lunesu, P. Arca, M.G. Serra, E. Vagnoni, A. Franca, G. Molle, M. Decandia, P. Duce and A.S. Atzori</i>	197
16:45	Life cycle assessment (LCA) of Simmenthal cattle organic farms in Italy <i>E. D'Agaro, S. Mattiussi and F. Rosa</i>	198

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11.13	Condensed tannins from Sainfoin (<i>Onobrychis viciifolia</i>): effects on <i>in vitro</i> ruminal parameters <i>S. Lobón, C. Baila, M. Blanco, I. Casasús and M. Joy</i>	200
11.14	Rumen ciliates and methane production of beef bulls fed a biodiverse haylage, low-starch Mixed Diets <i>A.E. Francisco, A. Vaz-Portugal, K. Paulos, J. Santos-Silva and M.T. Dentinho</i>	200
11.15	How much the introduction of legume-based forage can mitigate climate change in a sheep farm? <i>M.F. Lunesu, A.S. Atzori, A. Ledda, P. Sau, F. Lai, R. Rubattu, A. Mazza, A. Fenu, F. Correddu and A. Cannas</i>	201
11.16	Response in blood methemoglobin level in dairy cows supplemented with dietary nitrate <i>M. Maigaard, M.R. Weisbjerg, M. Johansen and P. Lund</i>	201
11.17	Effect of tannins in <i>Onobrychis</i> and <i>Quercus robur</i> on <i>in vitro</i> ruminal gas and ammonia formation <i>H. Sutter, K. Schweingruber, M. Terranova and M. Schick</i>	202

Session 12.

Single-step genomic evaluation

Room: Aspen 1&2

Chair: Wang

Session type: Free communications / Bottom-up session

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14:30	GEBV and h ² of milk traits in a nucleus of Sarda ewes depend on a matrix weight in ssGBLUP <i>S. Salaris, M.G. Usai, S. Casu and A. Carta</i>	204
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15:00	Interim genomic prediction for young genotyped animals for different single-step evaluations <i>J. Vandenplas, R. Bergsma and M.P.L. Calus</i>	205
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Chair: Hiemstra

Session type: Project session

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Room: Schwarzhorn

Chair: Charlier / Calus

Session type: Project session

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Chair: Morgan-Davies / Halachmi

Session type: Project session

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Room: Forum

Chair: Ammer / Dantas de Brito Almeida

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Room: Sanada 1&2

Chair: Hernández-Castellano

Session type: Theme session

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Session 17. **Going beyond the Feed vs Food competition: crops and animals together to address food and nutrition security**

Room: Pischia + Parsenn
Chair: O'Mara / Lee / Boland
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15:15	Evaluate the land-use efficiency of regional livestock systems from a food systems perspective invited <i>D. Hennessy, M. Schop, L. Shalloo and I.J.M. De Boer</i>	231
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Room: Seehorn

Chair: Berard

Session type: Theme session

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Session 19.

Young train – Innovative research and extension

Room: Wisshorn

Chair: Kuipers / Mielczarek

Session type: Early-career scientist's session

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Room: Sertig

Chair: Nilsson / Knol

Session type: Theme session

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Scientific programme

Tuesday 31 August

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Plenary session and Leroy Lectures

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Chair: Casasús

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Session 22.

Breeding for improved animal health, welfare and longevity I

Room: Davos

Chair: Minozzi / Gardan

Session type: Theme session

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Session 23.

The tortoise and the hare: finding the best balance between resilience and efficiency

Room: Aspen 1&2

Chair: Friggens

Session type: Project session

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Session 24.

From PLF sensor development to application in the field

Room: Schwarzhorn

Chair: Bloch / Druyan

Session type: Project session

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Session 25.

Sustainable livestock farming in mountain areas and harsh environments – challenge or opportunity?

Room: Jakobshorn
Chair: Pouloupoulou
Session type: Theme session

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Regulatory framework and advances in genetics and genomics of farmed insects

Room: Forum

Chair: Sandrock / Lefebvre

Session type: Theme session

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Sustainability and human health aspects of dairy and meat products and substitutes

Room: Sanada 1&2

Chair: De Vries / Hocquette

Session type: ADSA session

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Session 28. Evolutions and latest developments in equine production and management

Room: Pischia + Parsenn

Chair: Auclair-Ronzaud / Cox / Mantovani / Vial / De Palo

Session type: Theme session

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Session 29.

So you think your science is so great

Room: Seehorn
Chair: Keatinge
Session type: Theme session

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Young EAAP – opportunities for early career scientists

Room: Wisshorn
Chair: Wallgren / Adriaens / Pszczola
Session type: Early-career scientist's session

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ANIMAL NUTRITION 4.0

Room: Studio
Chair: Pinotti / Ranilla García
Session type: Industry session

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Session 32.

Meat and fat quality in broilers and finishing pigs

Room: Sertig

Chair: Bee / Stadnicka

Session type: Working group session

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16:00	Multicriteria performance of fattening pigs assessed with the bioclimatic model ThermiPig <i>N. Quiniou, A. Cadéro, M. Marcon and L. Brossard</i>	337
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16:45	Effect of high ambient temperature on carcass composition of pigs slaughtered at the same age <i>G. Daumas, A.M. Serviento, M. Monziols and D. Renaudeau</i>	338
17:00	Effect of restricted feeding or amino acid deficiency on the muscle content of pig carcasses and cuts <i>G. Daumas, M. Monziols and N. Quiniou</i>	338

17:15	Muscle and backfat thickness in Bísaro pigs with different immunocastration protocols <i>S. Botelho-Fontela, G. Matos, M. Almeida, C. Castelo, G. Paixão, R. Payan-Carreira, A. Esteves and S. Silva</i>	339
17:30	Last supper – the effect of feed intake before slaughter on pork quality traits <i>C. Neubert, N. Khayatzaheh, R. Zurkirch and M.R.L. Scheeder</i>	339
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32.13	Effects of immunocastration protocols in the meat quality of female Bísaro pigs <i>S. Botelho-Fontela, S. Ferreira, M. Almeida, C. Castelo, G. Paixão, R. Payan-Carreira, S. Silva, A. Esteves and J. Silva</i>	342
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32.15	Association (ACLY) gene polymorphism and fattening, slaughter and pork quality traits in Polish pigs <i>A. Terman, D. Polasik, M. Tyra, M. Szyndler-Nędza and G. Żak</i>	343
32.16	Thermography to assess testicular temperature in immunocastrated bísaro pigs <i>M. Almeida, S. Botelho-Fontela, S. Ferreira, C. Castelo, G. Paixão, R. Payan-Carreira, A. Esteves and S. Silva</i>	344
32.17	Preparation for identification of ATAC-seq signals associated with high fat level in Złotnicka White <i>K. Piórkowska, W. Witarski, K. Kruczek, K. Ropka-Molik, M. Tyra, M. Szyndler-Nędza and G. Żak</i>	344
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32.20	Impact of swine immunocastration on fat quality of Teruel dry-cured hams <i>L. Pérez-Ciria, G. Ripoll, M. Blanco, J. Álvarez-Rodríguez, F.J. Miana-Mena and M.A. Latorre</i>	346
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32.22	Intra- and inter-observer reliability when assessing white striping in turkey breast muscle <i>N. Van Staaveren, R. Vanderhout, E. Leishman, H. Hiscock, E.A. Abdalla, B. Mankanjuola, S. Barbut, A. Harlander, B.J. Wood and C.F. Baes</i>	347

Scientific programme

Wednesday 1 September

Session 33. Breeding for improved animal health, welfare and longevity: cattle II

Room: Davos

Chair: Poppe / Minozzi

Session type: Theme session

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8:00	A major QTL at LHCGR for multiple birth in Holstein cattle <i>S. Widmer, F.R. Seefried, P. Von Rohr, I.M. Häfliger, M. Spengeler and C. Drögemüller</i>	347
8:15	Selection against infectious diseases: genetic variation and response to selection <i>P. Bijma, A. Hulst and M.C.M. De Jong</i>	348
8:30	Genetic relationships between multiple ketosis related traits in Swiss Brown Swiss dairy cattle <i>U. Schuler, L.M. Dale and S. Wegmann</i>	348
8:45	Prevalence of known recessive disease alleles in Italian beef cattle <i>J.G.P. Jacinto, A. Gentile, F. Sbarra and C. Drögemüller</i>	349
9:00	Resilience indicators calculated from daily activity in dairy cows <i>M. Poppe, H.A. Mulder, E. Mullaart and R.F. Veerkamp</i>	349
9:15	Do we really breed for healthier cows, and can we do better? <i>H. Simianer, D. Foster, S. Rensing, J. Heise and C. Reimer</i>	350
9:30	Exploiting massive genotyping and sequencing data to improve fertility in Swiss dairy cattle <i>I.M. Häfliger, F.R. Seefried and C. Drögemüller</i>	350
9:45 Coffee break		
10:15	Impact of Holstein haplotypes <i>J.B.C.H.M. Van Kaam, M. Marusi and M. Cassandro</i>	351
10:30	New insights into resistance to paratuberculosis from sequence-based GWAS in Holstein cattle <i>M.-P. Sanchez, R. Guatteo, A. Delafosse, A. Davergne, C. Grohs, P. Blanquefort, A. Joly, L. Schibler, C. Fourichon and D. Boichard</i>	351
10:45	Is longevity still needed in dairy cattle breeding goals? <i>C. Schmidtmann, G. Thaller and M. Kargo</i>	352
11:00	Across countries genomic prediction using national breeding values versus MACE breeding values <i>M. Sallam, H. Benhajali, S. Savoia, D.J. De Koning and E. Strandberg</i>	352
11:15	Mapping of multiple loci affecting rearing success in four Swiss dairy cattle populations <i>M. Spengeler, M. Berweger, S. Widmer, I.M. Häfliger, C. Drögemüller and F.R. Seefried</i>	353
11:30	Genetic evaluation of a novel longevity indicator for North American Angus cattle <i>H.R. Oliveira, L.F. Brito, S.P. Miller and F.S. Schenkel</i>	353
Poster Session 33		Book of Abstracts page
33.14	Identification of copy number variants (CNVs) associated with somatic cell score in Holstein cattle <i>S.G. Narayana, F.S. Schenkel, T.C.S. Chud, A. Butty, C. Baes, F. Malchiodi and H.W. Barkema</i>	354

Session 34. Breeding for the future: technology finds application in new phenotypes

Room: Aspen 1&2

Chair: Granados Chapatte / Schibler

Session type: Challenge session

Theatre Session 34

9:00 Introduction: keynote speech

J. Van Arendonk

9:15 A better life for pigs and laying hens, tools to phenotype behaviour in chicken and pigs and to store data: how data technology can improve traits such as animal behaviour

P. Bijma

9:25 Optical flow for assessing broiler welfare at a flock level

M. Dawkins

9:35 Phenotypic tools in Salmon related to welfare; examples how data driven technologies can be applied to improve welfare in fish

E. Durland

9:45 New advances based on our feed station and its use for feed efficiency phenotyping

S. Mignon-Grasteau

9:55 Q&A

10:00 Coffee break

10:30 Data driven technologies: overview of current research and possibilities related to producing proxies for new phenotypes important to a sustainable and responsible livestock production

P. Klimek

10:40 Use of breeding technologies at farm level in ruminants

10:50 Open hybrid discussion

11:50 Wrap up

Session 35. Good health of pigs and poultry: increasing robustness through feeding and management – part 1

Room: Schwarzhorn

Chair: Daş / Vigors

Session type: Theme session

Theatre Session 35

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8:00 Pre-weaning feeding management to support early robustness of piglets and post-weaning health 355

invited *P. Bosi*

8:30 Two ways of milk replacer administration enhances survival rate and faecal microbial profile of pigs 355

P. Trevisi, D. Luise, F. Correa, M. Vitali, C. Negrini, K.J. Volshoj, J.M. Madsen, M.A. Ton Nu and P. Bosi

8:45 Differences between conventional and artificially reared piglets from the same herd 356

C. Amdi, M.L.M. Pedersen, A.R. Williams, C. Larsen and J.G. Madsen

9:00	Preliminary results on the effect of keeping pigs in home environment post weaning <i>J.F.M. Winters, C. Kobek-Kjeldager, L. Foldager and L.J. Pedersen</i>	356
9:15	Effect of dietary resin acid and zinc oxide in weaned piglets subjected to an immune challenge <i>X. Guan, H. Kettunen, R. Santos, J. Vuorenmaa and F. Molist</i>	357
9:30	Effects of live yeast supplementation as a substitute to antibiotics growth promoters in piglets <i>T. Kiros, G. Kuhn, S. Long and X. Piao</i>	357

9:45 Coffee break

10:15	Effect of plant-derived product supplementation on sow and piglet physiology <i>L. Herve, H. Quesnel, A. Greuter, L. Hugonin and N. Le Floc'h</i>	358
10:30	Effect of extracted olive oil wastewater in post weaning phase on infected piglets <i>M.R. Mellino, C. Ollagnier, N. Pradervand, G. Bee and G. Battacone</i>	358
10:45	Medium-chain fatty acids boost polymorphonuclear cell viability in weaned piglets <i>M. De Vos, S. Tanghe, R. D'Inca, K. Lannoo, K. Demeyere and E. Meyer</i>	359
11:00	Supra-nutritional levels of riboflavin on gut health and oxidative stress in post-weaned piglets <i>E. Perez Calvo, J. Schmeisser, B. Blokker, S. Etheve, G. Litta, M. Walsh and A.M. Klunter</i>	359
11:15	Effect of different sources and doses of Cu on ileal microbiota and feed efficiency of weanling pigs <i>A. Forouzandeh, D. Solà-Oriol, L. Blavi, M. Rodríguez, A. Monteiro and J.F. Pérez</i>	360
11:30	Effects of two copper sources on oxidative stress, inflammation, and gene abundance in growing pigs <i>L. Blavi, J.F. Pérez, A. Forouzandeh, F. González, M. De Angelo, A. Romeo, H.H. Stein and D. Solà</i>	360
11:45	Testing natural alternatives to iron injection for organic piglets <i>E. Merlot, C. Robert, C. Clouard, R. Resmond, S. Ferchaud and A. Prunier</i>	361

Poster Session 35

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35.14	Zinc excretion from weaned pigs relates to zinc intake: a meta-analysis <i>S.V. Hansen and T.S. Nielsen</i>	361
35.15	A mixture of amino acids and condensed tannins reduces post-weaning inflammation in weaned piglets <i>J. Michiels, M. Majdeddin, J. Degroote, N. Van Noten, W. Lambert, Y. Hou, H. Ohara, C. Van Kerschaever, E. Van Liefferingen, M. Vandaele and T. Chalvon-Demersay</i>	362
35.16	The physiological requirement for zinc in newly weaned piglets: a dose-response trial <i>S.V. Hansen, N.P. Nørskov, J.V. Nørgaard, T.A. Woyengo and T.S. Nielsen</i>	362
35.17	Dietary supplementation of standardized citrus extract to pigs shortens their fattening period <i>S. Cisse, H. Bui, M. Buffiere, A. Benarbia and D. Guilet</i>	363
35.18	Preliminary study of microbial quality of animal drinking water for fattening pigs <i>C. Heinemann, C.D. Leubner and J. Steinhoff-Wagner</i>	363

Session 36.

Advancing sustainable livestock systems for resilient sustainable food systems

Room: Jakobshorn

Chair: Lee / Bourgeois Lüthi

Session type: Theme session

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8:00	Advancing sustainable livestock systems for resilient sustainable food systems <i>S. Tarawali, F. Schneider and E. Arce Diaz</i>	364
8:30	Estimating carbon sequestration in Portuguese sown biodiverse pastures using machine learning <i>T.G. Morais, R.F.M. Teixeira, M. Jongen, N.R. Rodrigues, I. Gama and T. Domingos</i>	364
8:45	Technical, economic and environmental performances of two contrasted dairy production systems <i>V. Brocard, E. Tranvoiz, S. Dupré, S. Foray, G. Trou and D. Follet</i>	365
9:00	Assessing the sustainability of multiple grass-fed and grain-fed beef systems in the Western USA <i>S.C. Klopatek, E. Marvinney, A. Kendall, X. Yang and J.W. Oltjen</i>	365
9:15	Dairy farming in need of a new approach and paradigm? <i>A. Sundrum, J. Habel, S. Hoischen-Taubner, E. Schwabenbauer, V. Uhlig and D. Möller</i>	366
9:30	Livestock disease resilience: from individual to herd level <i>A.B. Doeschl-Wilson, P.W. Knap, T. Opriessnig and S.J. More</i>	366
9:45 Coffee break		
10:15	Monitoring emissions of the intensive livestock systems in Northern Italy: the Mitigactions project <i>M. Berton, E. Sturaro, S. Schiavon, A. Cecchinato, G. Xiccato, M. Birolo and L. Gallo</i>	367
10:30	Modelling economic performance and greenhouse gas emissions in dairy calf to beef production systems <i>M. Kearney, E. O'Riordan, J. Breen and P. Crosson</i>	367
10:45	The nitrogen footprint assessment on South Korean intensive dairy farms <i>R. Ibdhi, T.H. Kim, R. Bharanidharan and K.H. Kim</i>	368
11:00	Grazing systems performance across increasing levels of sward biodiversity in non-fertilised swards <i>M.J. Rivero, R.J. Orr, B. Griffith, R. Pywell, B. Woodcock and J. Tallowin</i>	368
11:15	Modelling pathways of slurry from livestock production facilities into the environment <i>R. Haupt, C. Heinemann, M. Guse, S.M. Schmid, V. Overmeyer, P. Ebertz and J. Steinhoff-Wagner</i>	369
11:30	Livestock practices of health monitoring in organic farms: useful to think agroecological redesign <i>C. Manoli, P. Roussel, C. Balme, C. Experton and F. Hellec</i>	369
11:45	Blue water productivity in beef farms in two Italian northern regions <i>G. Pirlo, S. Uggeri, L. Migliorati and S. Carè</i>	370
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36.14	Milk urea concentrations in different dairy cattle breeds <i>A. Burren, N. Salzgeber, L. Casanova, C. Flury and S. Probst</i>	370
36.15	The effect of teat disinfectant ingredients on teat skin bacteria associated with mastitis <i>D. Gleeson and S. Fitzpatrick</i>	371
36.16	Comparison of different methods for the evaluation of teat disinfectant products <i>S. Fitzpatrick and D. Gleeson</i>	371

36.17	Differences in nutrient use efficiency and food-feed competition among Chinese dairy farms <i>Y. Wang, I.J.M. De Boer and C.E. Van Middelaar</i>	372
36.18	Estimation of carbon footprint in Iberian out-door pig farms <i>P. García-Suárez, A. Horrillo, P. Gaspar, M. Escribano and F.J. Mesías</i>	372
36.19	Analytical methods to formulate blend of rich-saponin plants for reducing ammonia emission in farms <i>M. Le Bot, H. Jolivet, S. Suor-Cherer, M. Buffiere and A. Benarbia</i>	373
36.20	Does mixing cattle with broilers on pasture yield any benefits? <i>S. Hübner and K. Barth</i>	373
36.21	The sheep performances in a grassland-based system is improved when combined with beef cattle <i>K. Vazeille, C. Jury, S. Prache, B. Septchat, C. Troquier, P. Veysset and M. Benoit</i>	374
36.22	French emission factors of TSP, PM10 and PM2.5: results of field measurements <i>N. Guingand, S. Lagadec and M. Hassouna</i>	374
36.23	The effect of litter type on broiler performance, litter quality and ammonia concentrations <i>M. Brink, G.P.J. Janssens, P. Demeyer, Ö. Bağcı and E. Delezie</i>	375

Session 37. Sustainability assessments of insects as food and feed in a circular economy

Room: Forum

Chair: Smetana / Veldkamp

Session type: Theme session

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8:00	Entomoponics: combining <i>Tenebrio molitor</i> production and greenhouse vegetable production <i>C.L. Coudron, D. Deruytter and J. Claeys</i>	375
8:15	Industrial symbiosis in insect production – a sustainable eco-efficient and circular business model <i>C. Phan Van Phi, M. Walraven, M. Bézagu, M. Lefranc and C. Ray</i>	376
8:30	ValuSect: valuable insects <i>S. Van Miert</i>	376
8:45	Bioavailability of zinc, iron and calcium in cereal porridge fortified with cricket powder <i>N.C. Maiyo, F.M. Khamis, M.W. Okoth, G.O. Abong, E.R. Omuse and C.M. Tanga</i>	377
9:00	Precision insect farming: heatmaps to monitor growth and behaviour of <i>Tenebrio molitor</i> larvae <i>T. Sprangers, P. Vanloofsvelt and F. Wouters</i>	377
9:15	Environmental opportunities and trade-offs of using feedstuffs for laying hens: LCA of 3 pathways <i>M. McBride, P. Patterson, C. Loyola, C. Papadimitriou and P. Pearson</i>	378
9:30	The effect of rearing conditions on the CO ₂ output and required air flow in <i>Tenebrio molitor</i> rearing <i>V.K. Wooding and B. Steiner</i>	378
9:45	Coffee break	
10:15	Environmental impact of feeds utilized for poultry protein productions: soybean vs insect larvae <i>D. Ristic, C.L. Coudron, A. Schiavone, J. Claeys, F. Gai and S. Smetana</i>	379
10:30	Rapid authentication of edible insect powders by DART/HRMS coupled to mid-level data fusion <i>A. Tata, S. Belluco, A. Massaro, A. Negro, M. Bragolusi, R. Piro and F. Marzoli</i>	379
10:45	Strengthening agricultural circularity – the relevance of insect frass <i>C. Muraru, C. Derrien, M. Beiter and A. Grassi</i>	380

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37.11	Inventory and state of the art for sustainable insect production <i>D.A. Peguero, A. Green, S. Smetana and A. Mathys</i>	380
37.12	CELLOW-FeeP Project – circular economic: live larvae recycling organic waste for rural poultry <i>L. Gasco, A. Schiavone, S. Cerolini, I. Biasato, V. Bongiorno, M.T. Capucchio, E. Dinuccio, I. Ferrocino, V. Moretti, D.M. Nucera, S. Bellezza Oddon, M. Renna, F. Bellagamba, G. Tedeschi and L. Zaniboni</i>	381
37.13	Development of new methodologies to measure digestibility of <i>Tenebrio molitor</i> <i>F.P. Peyrichou</i>	381
37.14	Susceptibility of <i>Alphitobius diaperinus</i> meal to infestations by major stored-product insects <i>M. Rigopoulou, C.I. Rumbos and C.G. Athanassiou</i>	382
37.15	Awareness of chemical hazards in edible insects: toxicokinetics and toxicodynamics of Hg in mealworms <i>D.N. Cardoso, A. Fernandes, R.G. Morgado, M. Prodana, J. Pinto, A. Mostafaine and S. Loureiro</i>	382
37.16	EntoPower: greenhouse gases emissions from <i>Hermetia illucens</i> larvae production <i>J. Andersen, C. Fischer and L.-H. Heckmann</i>	383

Session 38. Computing in PLF: cloud and edge computing and smart algorithms

Room: Sanada 1&2

Chair: Pastell

Session type: Theme session

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9:00	The shades of gray in model building and its opportunities for precision livestock farming invited <i>R. Muñoz-Tamayo</i>	383
9:30	Opportunities for using computer vision and animal tracking in welfare assessment invited <i>O. Guzhva</i>	384
10:00	Q&A with invited speakers <i>I. Adriaens and M. Pastell</i>	384
10:15	Validation of a real-time location system for neighbour detection in dairy cow groups <i>N. Melzer, B. Foris and J. Langbein</i>	385
10:30	Detecting behavioural patterns of cows using an automated tracking system <i>J. Stachowicz, F. Adrion, H. Nasser and U. Umstätter</i>	385
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11:15	Happy cow or thinking pig – facial recognition tool for automated welfare <i>S. Neethirajan and B. Kemp</i>	386
11:30	SESAM sensor technology for milk producers <i>L.M. Dale, Z. Vassilev, J. Bieger, K. Drössler, F.J. Auer, M. Erhart, T. Hehn, T. Peikenkamp, M. Klopčič, A. Werner, Sesam Consortium and M. Hoenen</i>	386
11:45	Classification of cow behaviour for sensor assisted alpine milk production <i>T. Peikenkamp, D. Plaia, T. Hehn, D. Gaida, M. Hoenen and A. Ule</i>	387
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Session 39. Nutrient competition between production and animal health – interactions of nutrition, immunity and microbiota

Room: Pischä + Parsenn

Chair: Gross

Session type: Theme session

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Room: Seehorn

Chair: Foskolos

Session type: Theme session

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Session 41. Joint EAAP/ADSA session 'Future of housing for cattle' – part 1

Room: Wisshorn

Chair: Costa / Klopčič

Session type: Freewalk session

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Session 42.

Inclusive livestock nutrition: where we have a trade-off between performance, environmental sustainability and animal welfare

Room: Studio

Chair: Bruggeman / De Campeneere

Session type: Theme session

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42.14	Rumen fatty acids in pasture cattle supplemented with safflower or soybean, and chitosan addition <i>T. Fernandes, N.G. Silva, L.E.F. Oliveira, L.R. Feitosa, C.C. Silva, T.M. Souza, S.P. Alves, R.J.B. Bessa and R.H.T.B. Goes</i>	417
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Session 43. **Optimisation of sheep and goats production systems: strategies for sustainable and resilient agroecosystems**

Room: Sertig

Chair: Cadavez

Session type: Theme session

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Session 44.

PLF methods for measuring health, welfare and caring for individual animals

Room: Davos

Chair: Adriaens / Bloch

Session type: Theme session

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Session 45.

Free communications in animal genetics

Room: Aspen 1&2

Chair: Cecchinato

Session type: Free communications / Bottom-up session

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Session 46.

Use of genomic information

Room: Schwarzhorn

Chair: Sell-Kubiak

Session type: Free communications / Bottom-up session

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Chair: Thenard / Siqueira

Session type: Theme session

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Session 48.

Insects: standardisation and terminology

Room: Forum

Chair: Deruytter / Shumo

Session type: Working group session

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Transgenerational effect of nutrition (feeding of mother, effect on offspring)

Room: Sanada 1&2

Chair: Kreuzer-Redmer / Alvarez Rodriguez

Session type: Theme session

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Session 50. Novel developments of milk removal in conventional, automated and cow-calf contact systems

Room: Pischä + Parsenn

Chair: Bruckmaier

Session type: Theme session

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Session 51.

Organic production of milk and meat

Room: Seehorn
Chair: De Marchi / Maurer
Session type: Project session

Theatre Session 51

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14:30	Current use of contentious inputs in European organic animal production <i>invited S. Athanasiadou, C. Chylinski, B. Moeskops, D. Michie, C. Experton, H. Steinshamn, F. Leiber and V. Maurer</i>	487
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15:15	NMR spectroscopy as a tool to discriminate between organic and conventional cow milk <i>M. Franzoi, M. Ghetti, G. Meoni, L. Tenori, P. Turano, C. Luchinat, V. Vigolo, M. Penasa and M. De Marchi</i>	488
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51.15	Animal health and welfare planning for European organic dairy herds – development and expansion <i>M. Walkenhorst, V. Maurer, S. Athanasiadou, K. Still, D. Yanez-Ruiz, A. Fauriat, E. Chemin, O. Tavares and C. Experton</i>	494
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Session 52.

Joint EAAP/ADSA session 'Future of housing for cattle' – part 2

Room: Wisshorn

Chair: Costa / Klopčič

Session type: Freewalk session

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Session 53. Good health of pigs and poultry: increasing robustness through feeding and management - part 2

Room: Studio

Chair: Trevisi / Minozzi

Session type: Theme session

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15:30	Assessment of the capacity of sepiolitic clay (E 563) to adsorb aflatoxin B1 in poultry diets <i>Z. Amanzougarene and J.I. Tolosa</i>	502
15:45	Impact of black soldier fly larvae oil in slow growth broiler diet on breeding and meat parameters <i>M. Bézagu, C. Phan Van Phi, C. Crepelle, M. Bournaison, L. Warin, E. Pampouille, M. Walraven and M. Lefranc</i>	503
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53.13	Standardized natural essential oils prove their repellent effect on chewing lice <i>H. Bui, C. Vandenbossche, I. Chiu, M.A. Benarbia and P. Chicoteau</i>	507
53.14	Saponins and citroflavonoids reduced growth of <i>Histomonas meleagridis</i> <i>in vitro</i> <i>M.E.A. Benarbia, P. Engler and P. Chicoteau</i>	507

Session 54.

Sheep and goats management and reproduction

Room: Sertig

Chair: Hadjipavlou

Session type: Theme session

Theatre Session 54

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14:30	SheepNet: the technical and practical knowledge reservoir to increase EU sheep productivity <i>T.W.J. Keady, C. Morgan-Davies, I. Beltrán De Heredia, A. Carta, D. Gavojdian, S. OcAk and J.M. Gautier</i>	508
14:45	Response to male effect in two Greek indigenous sheep breeds, Karagouniko and Florina <i>I.A. Giantsis, G. Symeon, D. Antonopoulou and M. Avdi</i>	508
15:00	Factors influencing the short term ovarian response of milking Lacaune ewes to the male effect <i>N. Debus, E. Laclef, A. Lurette, M. Alhamada, A. Tesniere, E. González-García, J.B. Menassol and F. Bocquier</i>	509
15:15	Oestrus and fertility responses in ewes treated with modified Ovsynch and progesterone therapy <i>H.O. Nafriya, H. Singh, R. Dutt and L.C. Ranga</i>	509

15:30	Influence of heat synchronization and feeding programs on reproductive performances of Awassi sheep <i>P. Jarrouj, S. Wehbe, K. Hosheimy and R. El Balaa</i>	510
15:45	Development of diagnostic tests for subclinical mastitis in sheep at the point of care <i>D. Vassilakos, E. Dalaka, A.I. Kalogianni, M. Moschovas, A.I. Gelasakis, I. Politis and G. Theodorou</i>	510
16:00	Inclusion of sainfoin in the fattening concentrate: performance and carcass traits of light lambs <i>C. Baila, M. Joy, M. Blanco, I. Casasús, G. Ripoll and S. Lobón</i>	513

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16:45	The use of olive cake by-product in ruminant diets <i>O. Tzamaloukas, M.C. Neofytou, P.E. Simitzis, D. Sparaggis and D. Miltiadou</i>	511
17:15	Influence of synchronisation protocols and feeding programs on vaginal flora of Awassi sheep <i>S. Wehbe, P. Jarrouj, K. Hosheimy, C. Iskandar and R. El Balaa</i>	512
17:30	Effect of the presence of adult companion animals on rumen microbial colonization in goat kids <i>J.M. Palma-Hidalgo, E. Jimenez, A.I. Martin-Garcia, D.R. Yanez-Ruiz and A. Belanche</i>	512
17:45	Ultrasound measurements of eye muscle depth in rams of two sheep breeds in Slovenia <i>M. Bizjak, G. Gorjanc and M. Simčič</i>	513
18:00	Evaluation of a multi-actor farm team in prudent use of antibiotics in French and Greek dairy sheep <i>E. Royer, A. Mavrommatis, F. Leen, L. Delaisse, E. Tsiplakou, H. Ferreira and G. Zervas</i>	511

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54.13	How omega 3 enriched diets of sheep affect the microbiota of produced kefalograviera cheese <i>A. Tzora, E. Bonos, I. Giannenas, K. Fotou, A. Karamoutsios, A. Nelli, E. Sidiropoulou, D. Lazari, K. Grigoriadou and I. Skoufos</i>	514
54.14	Seasonal variation of Selenium, manganese, zinc and copper concentration in milk of Sarda dairy ewes <i>M.F. Guiso, G. Battacone, L. Canu, M. Deroma, I. Langasco, G. Sanna, G. Pulina and A. Nudda</i>	514
54.15	The effect of concentrate supplementation on grazing or housed lamb carcass and meat quality <i>A. Cividini</i>	515
54.16	Evaluation of Avocado (<i>Persea americana</i> , Laureceae) by-products for Ruminants Feeding <i>I. Martín-García, A. Belanche, J.M. Palma-Hidalgo, P. Romero and D.R. Yáñez-Ruiz</i>	515
54.17	Does carob inclusion in lambs diet affect rumen parakeratosis and faecal dry matter digestibility? <i>J. Pelegrin-Valls, B. Serrano-Pérez, M.J. Martín-Alonso, E. Molina and J. Álvarez-Rodríguez</i>	516

Scientific programme

Thursday 2 September

Session 55.

Sustainable Insect Chain (H2020 SUSINCHAIN)

Room: Davos

Chair: Veldkamp / Gasco

Session type: Project session

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8:00 Barriers and risks for large-scale commercialization of insect proteins for food and feed in Europe <i>F. Alleweldt, S. Kara, H.H. Niyonsaba, J. Höhler, H.J. Van Der Fels-Klerx, M.P.M. Meuwissen, B.A. Rumpold, M. Nikravec, N. Langen, M. Peters, R. Zanolli and A.I.A. Costa</i>	516
8:30 Upscaling insect rearing: key results and future prospects <i>D. Deruytter, C.L. Coudron, J. Van Schelt, G. Zorzetto, J. Krause, G. Marklewitz, A. Wegereef, M. Dudek, P. Gobbi, D.A. Peguero, A. Mathys, M. Camara-Ruiz, S. Rojo, C. Steinhausen, J.L. Rukov, A.B. Jensen and M. Van Der Borght</i>	517
9:00 Insect processing technologies investigated in the H2020 project SUSINCHAIN <i>L. Van Campenhout, D. Vandeweyer and M. Van Der Borght</i>	517
9:45 Coffee break	
10:15 'Insects in animal feed': structure, aims and preliminary results of digestibility trials <i>L. Gasco, E.-J. Lock, S. Chatzifotis, A. Jansman, A. Schiavone and T. Veldkamp</i>	518
10:45 Insects for food: can insect-based food products be part of a regular dinner in Europe? <i>N. Roos, L. Aquilanti, M. Van Der Borght, I.E. Chiriach, L.M. Cunha, R. Flore, C. Maya, A. Osimani, M. Peters, J.L. Rukov, Y. Sun, D. Vanderweyer, T. Veldkamp and A.I.A. Costa</i>	518
11:15 Safety of insect for feed and food investigated in the H2020 project SUSINCHAIN <i>H.J. Van Der Fels-Klerx, E.F. Hoek-Van Den Hil, N. Meijer, D. Vandeweyer, L. Van Campenhout and M. Bosch</i>	519
11:45 Building economic and environmental optimization model of sustainable insect chains <i>S. Smetana, S.M. Hossaini, D.A. Peguero, A. Green, A. Mathys, A. Tonda and V. Heinz</i>	519

Session 56.

Free communications: Crossbreeding - Conservation of local breeds

Room: Aspen 1&2

Chair: Hinrichs

Session type: Working group session

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8:00 Genomic predictions of crossbred dairy cows based on breed of origin of alleles <i>J.H. Eiriksson, K. Byskov, J.R. Thomassen, G. Su and O.F. Christensen</i>	520
8:15 Predicting of the purebred-crossbred genetic correlation using marker data in parental lines <i>P. Duenk, P. Bijma, Y.C.J. Wientjes and M.P.L. Calus</i>	520
8:30 Comparing growth and feed intake in pure- and crossbred heifers fed different energy concentrations <i>K. Johansen, L. Hein, P. Spleth, M. Vestergaard, H.M. Nielsen and M. Kargo</i>	521
8:45 Simulation study on rotational crossbreeding and advanced OCS methods in dairy cattle <i>J. Stock, H. Esfandyari, D. Hinrichs, R. Wellmann and J. Bennewitz</i>	521

9:00	Simulating common breeding schemes for local and mainstream Red dairy cattle breeds across Europe <i>M. Slagboom, H. Liu, C. Schmidtman, J.R. Thomasen and M. Kargo</i>	522
9:15	Impact of kinship matrix in genomic optimum contribution selection on allelic diversity in cattle <i>E. Gautason, G. Sahana, B. Gulbrandtsen and P. Berg</i>	522
9:30	Performance of genomic selection conducted from different base populations <i>D. Bersabé, B. Villanueva, A. Caballero, M.A. Toro and J. Fernández</i>	523

9:45 Coffee break

10:15	Using high-density SNP data to unravel the origin of the Franches-Montagnes horse breed <i>A.I. Gmel, R. Von Niederhäusern, A. Ricard, V. Gerber and M. Neuditschko</i>	523
10:30	Genome wide association studies of growth traits in grazing Rasa Aragonesa ewes <i>K. Lakhssassi, C. Meneses, P. Sarto, J.H. Calvo and M. Serrano</i>	524

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56.11	Use of crossbreeding with Angus and Belgian Blue bulls in dairy herds <i>D. Gavojdian, I. Nicolae and M. Mincu</i>	525
56.12	Strengthening the added value of rare breeds in Poland <i>E. Sosin and A. Chelmińska</i>	525
56.13	Possibilities of meat use of autochthonous breed beef the Polish Red <i>K.K. Wiśniewski and B. Kuczyńska</i>	526

Session 57.

Exploiting sequence data

Room: Schwarzhorn

Chair: Berg

Session type: Theme session

Theatre Session 57

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8:00	131 deeply sequenced cattle trios reveal parent-of-origin effects in de novo structural variations <i>Y.-L. Lee, G. Costa Monteiro Moreira, L. Karim, E. Mullaart, W. Coppieters, R.F. Veerkamp, M.A.M. Groenen, M. Bosse, A.C. Bouwman, M. Georges and C. Charlier</i>	526
8:30	Evidence of rare misassemblies in the bovine reference genome revealed by population genetic metrics <i>S. Qanbari, R. Schnabel and D. Wittenburg</i>	529
8:45	Bisulfite vs nanopore long-reads to sequence the dairy cattle epigenome <i>A. López-Catalina, A. Bach, M. Gutiérrez-Rivas and O. González-Recio</i>	527
9:00	Benchmarking phasing software with whole-genome sequenced cattle trios <i>C. Oget-Ebrad, N. Kadri, G. Costa Monteiro Moreira, L. Karim, W. Coppieters, M. Georges and T. Druet</i>	528
9:15	Effects of adding large scale custom genotypes on genomic prediction accuracy <i>F.R. Seefried, I.M. Häfliger, C. Drögemüller and M. Spengeler</i>	528
9:30	<i>Bos taurus</i> introgressed segments in the UOA <i>Bos indicus</i> assembly <i>M. Naji, Y. Utsunomiya, J. Soelkner, B. Rosen and G. Meszaros</i>	529

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- 10:15 CNV impact on gene expression 527
M. Mielczarek, M. Frąszczak, A. Zielak-Steciwko, B. Nowak, B. Hofman, J. Pierścińska and J. Szyda
- 10:30 En route to routine genotyping by low-pass sequencing in Swiss pig breeds 530
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- 10:45 Preliminary genomic analysis of robustness in a mice population 530
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Session 58.

Animal behaviour: from horses to hens

Room: Jakobshorn

Chair: Boyle / Dantas de Brito Almeida / Mantovani

Session type: Theme session

Theatre Session 58

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C. Wyss, C.D. Dahl, K. Zuberbühler and I. Bachmann
- 8:15 Do horses perform social referencing with their owner? 532
H. Sutter, S. Briefer Freymond, A.-L. Maigrot and I. Bachmann
- 8:30 Do rider-horse pairs have similar personality traits? 532
S. Briefer Freymond, A. Maigrot, H. Sutter, C. Chariatte and I. Bachmann
- 8:45 The relationship between upper body motion and vertical ground reaction forces in trotting horses 533
C. Roepstorff, A. Gmel, S. Arpagaus, F.M. Serra Bragança, L. Roepstorff and M.A. Weishaupt
- 9:00 Head and neck position and behaviour in ridden elite dressage horses in warm-up and test situation 533
K. Kienapfel-Henseleit, L. Piccolo, R. Reulke, D. Rueß and I. Bachmann-Rieder
- 9:15 Mixing feed in compost increases use but not cleanliness of rooting areas for growing-finishing pigs 534
M. Knoll, E.A.M. Bokkers, C. Leeb, C. Wimpler, H.M.-L. Andersen, R. Thomsen, B. Früh and M. Holinger
- 9:30 Effect of sudden noises on gestating sows' behaviour 534
C. Gaillard and M. Durand

9:45 Coffee break

- 10:15 Is a short observation period sufficient for behavioural studies? 535
T. Wilder, J. Krieter, N. Kemper and K. Büttner
- 10:30 Health and behaviour of dairy calves reared with milk from bucket versus mother during four months 535
A. Bieber, M. Walkenhorst, R. Eppenstein, J.K. Probst, S. Thuer, C. Baki and A. Spengler Neff
- 10:45 Differences in pecking behaviour between conventional layer hybrids and dual-purpose hens 536
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58.12	The use of elevated platforms and perches in different heights by pullets during rearing <i>A. Riedel, S. Käslau, N. Kemper and B. Spindler</i>	537
58.13	A pain assessment method for goat kids based on the Grimace scale- <i>C. Trujillo-Ortega, L.E. Hernández-Castellano, S. Martín-Martell, A. Argüello and N. Castro</i>	537

Session 59.**CYBELE project on high performance computing for precision livestock farming**

Room: Forum

Chair: Maselyne

Session type: Project session

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8:30	A two-step deep learning model for pen-level estimation of slaughter pig live weight distribution <i>D.B. Jensen and F. Hakansson</i>	538
8:45	Video-based classification of agonistic behaviour in pigs using a combination of CNN and RNN <i>F. Hakansson and D. Jensen</i>	539
9:00	Individual pig health monitoring using multivariate analysis on feeding, drinking and weight data <i>C. Vandenbussche, F. Castaldi, B. Sonck, J. Vangeyte and J. Maselyne</i>	539
9:15	Evaluating machine learning techniques applied to the problem of boar taint <i>G. Makridis, E. Heyrman, L. Vanhaecke, F. Tuytens, S. Janssens, N. Buys, M. Aluwé and F. Mavrepis</i>	540
9:30	Enhancing in-line meat processing traceability using deep learning <i>R. Van De Vijver, F. Castaldi, B. Callens, M. Aluwé, R. Klont, J. Vangeyte and J. Maselyne</i>	540
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10:15	Prediction of pork meat quality parameters with existing hyperspectral devices <i>B.H.R. Callens, S. De Smet, S.R. Cool, F. Castaldi, R. Van De Vijver, E. Kowalski and M. Aluwé</i>	541
10:30	Towards in-line fish species classification in beam-trawl fisheries for real time stock assessment <i>R. Van De Vijver, F. Castaldi, K. Sys, H. Polet, H. Lenoir, J. Vangeyte and J. Maselyne</i>	541
10:45	Applying machine learning to production data from aquaculture to predict fish growth <i>S. Davy and K. Matuleviciute</i>	542

Session 60. European collaboration in research towards sustainable pig production

Room: Sanada 1&2

Chair: Millet

Session type: Discovery session

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9:00	Sustainable pig production systems: the SusPigSys system approach <i>invited</i> S. Dippel, M. Gębska, S. Hörtenhuber, C. Hubbard, C. Leeb, K. De Roest, H. Spooler, A. Valros and The Suspigsys Team	542
9:30	Improving pig production: a whole system approach – insights and proposals from PigSys <i>invited</i> B. Sturm, N. Quiniou, L. Brossard, K.H. Jeppsson, K. Myllerup, A. Zacepins, S. Müller, G. Pexas, A. Nasirahmadi, V. Komasilovs, A.C. Olsson, K. Dominiak, S. Raut, F. Udesen, M. Marcon and S. Edwards	543
10:00	PEGaSus: Phosphorus efficiency in pig and chicken – An animal-centred view on the phosphorus cycle <i>invited</i> M. Oster, H. Reyer, C. Mulvenna, D. Fornara, E. Ball, H.D. Poulsen, N. Ekane, A. Rosemarin, L. Arata, A. Chakrabarti, P. Sckokai, E. Magowan and K. Wimmers	543
10:30 Coffee break		
11:00	Sustainability in pork production with immunocastration <i>invited</i> V. Stefanski, M. Aluwe, M. Čandek-Potokar, P. Ingenbleek, E. Kostyra, E. Labussiere, H. Maribo, S. Millet, M. Skrlep, A. Van Den Broeke, M. Vrecl, S. Zakowska-Biemans and The Susi Team	544
11:30	PIGWEB: an infrastructure for experimental research for sustainable pig production <i>invited</i> J. Van Milgen, S. Millet, R. Westin, C. Larzul, C. Kaya, J.V. Nørgaard, C.C. Metges and G. Bee	544

Session 61. Workshop: Meta-analysis applied to animal science

Room: Pischä + Parsenn

Chair: Tzamaloukas

Session type: Early-career scientist's session

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9:30	Meta-analysis and mechanistic modelling D. Sauvant and C. Loncke	545
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61.03	Environmental enrichment reduces feather damage in laying hens: a meta-analysis N. Van Staaveren, J. Ellis, C.F. Baes and A. Harlander	546

Session 62. Joint EAAP/ADSA session 'Future of housing for cattle' – part 3

Room: Wisshorn

Chair: Costa / Klopčič

Session type: Freewalk session

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9:00	Dairy cattle housing and management for warm climates A. De Vries and I.M.M. Toledo	546
9:15	Performances of mechanical ventilation in dairy farms B. Fagoo	547

9:30	Comfort assessment through different ear positions in Murrah buffalo calves <i>S. Jamwal, P.J. Singh, M.L. Kamboj, R. Rajneesh and R. Rath</i>	547
9:45	The effect of floor type on the performance and behaviour of housed finishing beef steers <i>C.E. McGettigan, M. McGee, E.G. O’Riordan, A.K. Kelly and B. Earley</i>	548
10:00	Antibiotic use in cubicle and freewalk housing systems from 2005 to 2017 in the Netherlands <i>A. Kuipers and P.J. Galama</i>	548
10:15	Compost bedding pack barns compared to conventional cubicle housing – a multi-criteria analysis <i>V. Kvakkestad, G. Lien and K.A. Hovstad</i>	549
10:45	Coffee break	
11:15	Project FreeWalk highlights and policy implications <i>M. Klopčič, P.J. Galama, I. Blanco Penedo, L. Leso, K. Bruegemann, E. Ofner-Schroeck, M. Waldrop, K. Hovstad, J. Tomka and A. Kuipers</i>	549
11:30	Effect of the temporal evolution of compost-bedded pack performance and microbial counts in dairy cows <i>L. Llonch, A. Ferret and L. Castillejos</i>	550
11:45	Developments in cattle housing in Brazil <i>F.A. Damasceno</i>	550

Session 63.

Metabolism, oxidative stress and immune function

Room: Sertig

Chair: Sauerwein / Louveau

Session type: Project session

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9:00	Rumen bolus containing 1,25(OH)2D3-glycosides for prevention of hypocalcaemia in dairy cows <i>M. Meyer, C. Ollagnier, L. Eggerschwiler, K. Bühler, M. Meylan and P. Schlegel</i>	551
9:15	Characterization of immune and redox system crosstalk in the intestinal tract of suckling lambs <i>J. Pelegrin-Valls, J. Álvarez-Rodríguez, M.J. Martín-Alonso, C. Baila, S. Lobón, M. Joy and B. Serrano-Pérez</i>	551
9:30	MiRNAs in milk exosomes are differentially expressed based on the health status of the mammary gland <i>E. Scarsella, M. Cintio, A. Zeconi and B. Stefanon</i>	552
9:45	<i>Scutellaria baicalensis</i> extract reduced mammary epithelial cell apoptosis in milk of dairy cows <i>L. Nicolas, P. Roussel, P. Debournoux, R. Resmond, A. Le-Mouel, A.C. Dall Orsoletta, A. Steen, F. Robert and M. Boutinaud</i>	552
10:00	Pegbovigrastim injections altered the immunometabolic state of cows when administered at dry off <i>J.M. Strickland, J.L. De Campos, P.L. Ruegg and L.M. Sordillo</i>	553
10:15	Associations among fertility, mRNA expressions and profiles of cytokines in endometritic buffaloes <i>H. Singh, P.S. Brar, D. Deka, N. Singh and A.K. Arora</i>	553
10:30	Sperm motility and plasma membrane stability rely on aquaporins function in boar sperm capacitation <i>A. Delgado-Bermúdez, S. Recuero, A. Sandu, I. Barranco, J. Ribas-Maynou and M. Yeste</i>	554
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11:15	The role of oxidative stress and autophagy in meat quality defects <i>L. González-Blanco, V. Sierra, Y. Diñeiro, M.J. García, A. Coto-Montes and M. Oliván</i>	554
11:30	Effects of different levels of milk replacer for 14 weeks on mammary gland development in heifers <i>K.D. Seibt, T. Scheu, C. Koch, M.H. Ghaffari and H. Sauerwein</i>	555

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63.10	The effect of inclusion rate of concentrates and exogenous butyrate on stomach measurements in sheep <i>S. Świerk, M. Przybyło, R. Miltko, J. Flaga, E. Molik and P. Górka</i>	555
63.11	Bioavailability of three different rumen undegradable methionine sources in dairy cows <i>in vivo</i> <i>A. Kihal, M.E. Rodriguez-Prado and S. Calsamiglia</i>	556
63.12	Mitochondrial activity during satellite cell differentiation in piglets <i>K. Stange, A. Vincent, I. Louveau, M.H. Perruchot, M. Rontgen and F. Dessauge</i>	556
63.13	Expression of selected miRNAs and their common target genes in dairy cows' mammary gland parenchyma <i>E. Bagnicka, E. Kawecka-Grochocka, M. Zalewska, M. Rzewuska, T. Sakowski, K. Pawlina-Tyszko and T. Ząbek</i>	557
63.14	<i>In vivo</i> bioavailability estimates of different rumen-protected lysine products for dairy cattle <i>A. Kihal, C. Marques, M.E. Rodriguez-Prado and S. Calsamiglia</i>	557
63.15	<i>In vivo</i> bioavailability of rumen-protected methionine supplement in lactating dairy cows <i>F. Francia, A. Kihal, A. Belaid, M.E. Rodriguez-Prado and S. Calsamiglia</i>	558
63.16	Ketotic hepatocytes are less resistant to effect of zearalenone on expression of glucose metabolism <i>J. Barć, O. Lasek and Z.M. Kowalski</i>	558
63.17	Single nucleotide polymorphisms density in bovine genomes reveals their role in the immune response <i>M. Frąszczak, P. Grzesiak, M. Mielczarek and J. Szyda</i>	559

Session 64.**Sustainable Insect Chain (H2020 SUSINCHAIN)**

Room: Davos

Chair: Veldkamp / Gasco

Session type: Project session

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13:30	Barriers, risks, and opportunities for scaling up the European insect value chain <i>H.H. Niyonsaba, J. Höhler, H.J. Van Der Fels - Klerx, F. Alleweldt, S. Kara, R. Zanolli, A.I.A. Costa, M. Peters and M.P.M. Meuwissen</i>	559
13:45	The pH of wetfeed: does it influence the growth of <i>Tenebrio molitor</i> larvae? <i>J. Claeys, D. Deruytter and C. Coudron</i>	560
14:00	Transporting mealworm (<i>Tenebrio molitor</i>) eggs: the effect of temperature and relative humidity <i>D. Deruytter, C.L. Coudron and J. Claeys</i>	560
14:15	Optimising transport conditions for <i>A. domesticus</i> nymphs and eggs <i>C. Steinhäuser, J. Rukov, A. Bruun Jensen and A. Lecocq</i>	561
14:30	Vacuum packaging as storage and transport strategy for living or killed black soldier fly larvae <i>D. Vandeweyer, D. Lachi, D. Deruytter, M. Van Der Borgh and L. Van Campenhout</i>	561
14:45	Horizontal transfer of food pathogens from substrate to insects during rearing <i>D. Vandeweyer, D. Lachi, L. Van Moll, E. Gorrens, J. De Smet and L. Van Campenhout</i>	562
15:00	Texturization potential and microbial safety of fresh-frozen insects within high-moisture extrusion <i>L. Leonhardt, V. Lammers and S. Smetana</i>	562

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15:45	Pretreatment strategies to improve insect processing for use as protein rich animal feed ingredient <i>D.A. Peguero, M. Gold, C. Zurbrügg and A. Mathys</i>	563
16:00	Apparent digestibility of different batch of <i>Hermetia illucens</i> meals for rainbow trout <i>C. Caimi, F. Gai and L. Gasco</i>	563
16:15	<i>In vivo</i> and <i>in vitro</i> digestibility of black soldier fly larvae meal in Atlantic salmon <i>G. Radhakrishnan, M.S. Silva, R. Matos, P. Araujo, E.J. Lock, P.A.J. Prabhu and I. Belghit</i>	564
16:30	The nutritional composition of insect-based products for dinners in Europe <i>C. Maya, L. Aquilanti, M. Van Der Borght, I.E. Chiriac, R. Flore, A. Osimani, M. Peters, J.L. Rukov, Y. Sun, D. Vanderweyer, T. Veldkamp and N. Roos</i>	564
16:45	LCA modelling strategies and approaches to insect chains <i>S. Hossaini, R. Spykman and S. Smetana</i>	565
17:00	Multi-objective optimization for sustainable insect chains <i>A. Tonda, A. Green, S.M. Hossaini, A. Mathys, D.A. Peguero and S. Smetana</i>	565

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64.14	Effects of abiotic factors on viability of BSF eggs: preliminary results for improving egg transport <i>J. Krause, G. Zorzetto, M. Camara-Ruiz, S. Rojo, P. Gobbi and M. Dudek</i>	566
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Session 65. Contribution of animal breeding to solving societal challenges

Room: Aspen 1&2

Chair: Rydhmer

Session type: Challenge session

Theatre Session 65

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13:30	How animal breeding can help solving societal challenges invited <i>L. Rydhmer</i>	566
13:45	Animal breeding to solve societal pig production challenges? invited <i>S. Zira</i>	567
14:00	Social sustainability in aquaculture invited <i>G.D. Stentiford</i>	567

Session 66. Interaction between host genetics and gastro-intestinal tract microbiota genetics

Room: Schwarzhorn

Chair: Abdennebi-Najar

Session type: Theme session

Theatre Session 66

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13:30	Interplay between host genetics and the dynamics of the gut microbiota in pigs invited <i>C. Rogel-Gaillard, J. Estellé, M. Borey and C. Larzul</i>	568
14:00	Gut microbiome information enables additional discovery in genome-wide association studies in pigs <i>F. Tiezzi and C. Maltecca</i>	568

14:15	The microbial metabolome and its role in intramuscular fat deposition <i>A. Zubiri-Gaitán, A. Blasco and P. Hernández</i>	569
14:30	The rumen microbiota is modified in lambs divergently selected for residual feed intake <i>Q. Le Graverand, F. Tortereau, A. Meynadier, D. Marcon and C. Marie-Etancelin</i>	569
14:45	Breed differences in microbial composition associated with growth and carcass composition in pigs <i>C. Maltecca, Y. He and F. Tiezzi</i>	570
15:00	Bovine genomes influenced ruminal microbiome composition related to conjugated linoleic acid in beef <i>M. Martínez-Álvaro, C.-A. Duthie, J. Mattock, R.J. Dewhurst, M.A. Cleveland, M. Watson and R. Roehe</i>	570
15:15	Coffee break	
15:45	Microbiome and genetic contribution to the phenotypic variation of digestive efficiency in pig <i>V. Déru, F. Tiezzi, C. Carillier-Jacquin, B. Blanchet, L. Cauquil, O. Zemb, C. Maltecca, A. Bouquet and H. Gilbert</i>	571
16:00	Microbiability and microbiome-wide associations with feed efficiency and performance traits in pigs <i>A. Aliakbari, O. Zemb, C. Barilly, Y. Billon and H. Gilbert</i>	571
16:15	Effect of heat stress on faecal microbiota composition of gestating sows and of the female offspring <i>A.M. Serviento, D. Renaudeau, M. Castex and O. Zemb</i>	572
16:30	Multi-ome analysis to predict feed efficiency in pigs <i>L.M.G. Verschuren, A.J.M. Jansman, J. Van Milgen, O. Zemb, M.S. Hedemann, R. Bergsma and M.P.L. Calus</i>	572
16:45	Swine growth and carcass traits predicted in nucleus purebred using microbial information collected <i>C. Maltecca and F. Tiezzi</i>	573

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66.12	Estimation of genetic parameters for ruminal bacteria in Lacaune dairy ewes <i>G. Martinez Boggio, A. Meynadier, C. Allain and C. Marie-Etancelin</i>	573
66.13	Ruminal metabolism study of dairy ewes to link the ruminal microbiota and milk quality <i>S. Fresco, C. Marie-Etancelin, A. Meynadier, C. Allain and G. Martinez Boggio</i>	574

Session 67.

Challenges and novel metrics of multi objective tools at farm/regional level

Room: Jakobshorn
Chair: Zehetmeier / Puillet
Session type: Challenge session

Theatre Session 67

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13:30	Assessing livestock systems – how indicators, system boundaries and methods may influence results <i>A. Muller</i>	574
	invited	
14:00	Combining farm-level modelling and environmentally-extended input-output analysis in beef production <i>M.P. Dos Santos, T.G. Morais, T. Domingos and R.F.M. Teixeira</i>	575
14:15	Environmental, economic and social metrics to enhance the sustainability of livestock systems <i>A. Aubry, R. McGuire, J. Birnie, N. Scollan and S. Morrison</i>	575
14:30	Emergy analysis of the sustainability of mountain grazing livestock systems <i>E. Muñoz-Ulecia, A. Briones-Hidrovo, A. Bernués, I. Casasús and D. Martín-Collado</i>	576

14:45	A refined method for calculating ruminant Livestock Units to improve farm performance analysis <i>M. Benoit and P. Veysset</i>	576
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16:00	Sustainability assessment of farms using SALCA sustain methodology <i>A. Roesch</i>	578
16:15	EcoCliCk – a web-based tool to transfer knowledge of GHG mitigation costs <i>A. Karer, V. Karger, A. Reindl and M. Zehetmeier</i>	578
16:30	Social-media friendly dashboards for communicating trade-offs related to animal production systems <i>F. Accatino</i>	579
16:45	Discussion on challenges and future research needs of models and tools applied to LFS <i>M. Zehetmeier</i>	579

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67.12	Assessment of the non-return rate using a codification of the insemination suitability <i>L. Von Tavel, S. Buri, S. Wegmann, J. Berger and M. Kirchhofer</i>	580
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Session 68. PLF MIR tools to monitor cows' welfare in particular the freedom from disease, hunger and stress (in collaboration with HappyMoo project)

Room: Forum

Chair: Gengler

Session type: Project session

Theatre Session 68

Book of Abstracts page

13:30	HappyMoo project – using milk mid-infrared spectrum to predict dairy cows' welfare status <i>J. Leblois, C. Bertozzi, M. Calmels, L. Dale, C. Grelet, C. Lecomte, L. Mirabito, M.-N. Tran, V. Vanden Dries, A. Werner, V. Wolf, F. Dehareng and HappyMoo Consortium</i>	580
13:45	Detecting welfare status in a milk sample: effects of housing modifications on milk spectra <i>M. Bahadi, D. Warner, A.A. Ismail, D.E. Santschi, D.M. Lefebvre, R. Duggavathi and E. Vasseur</i>	581
14:15	Identification of dairy cows chronic stress biomarkers <i>C. Grelet, V. Vanden Dries, J. Leblois, J. Wavreille, L. Mirabito, H. Soyeurt, S. Franceschini, N. Gengler, HappyMoo Consortium and F. Dehareng</i>	581
14:30	Heat stress assessments in dairy cattle based on milk MIR spectral data <i>H. Amamou, M. Mahouachi, A. Werner, N. Gengler, J. Bieger, K. Drössler, H. Hammami, HappyMoo Consortium and L.M. Dale</i>	582
14:45	'MastiMIR' an early warning system based on MIR spectra <i>L.M. Dale, M. Hoenen, E.J.P. Strang, K. Drössler, J. Bieger, HappyMoo Consortium and A. Werner</i>	582
15:00	Predicting mastitis with somatic cell count, differential somatic cell count and milk MIR spectra <i>L. Rienesl, M. Marginter and J. Sölkner</i>	583

15:15 Coffee break

15:45	#Freenotypes: extracting added value from routine milk recording using deep learning	583
invited	<i>S.J. Denholm, W. Brand, M. Busfield, A.P. Mitchell, A.T. Wells, T. Krzyzelewski, S.L. Smith, E. Wall and M.P. Coffey</i>	
16:15	Prediction of dry matter intake of dairy cows across multiple countries and production systems	584
	<i>A. Tedde, C. Grelet, P.N. Ho, J.E. Pryce, D. Hailemariam, Z. Wang, G. Plastow, N. Gengler, E. Froidmont, F. Dehareng, C. Bertozzi and H. Soyeurt</i>	
16:30	HappyMoo – dairy cows lameness prediction through milk mid-infrared spectral analysis	584
	<i>M.-N. Tran, L. Dale, N. Gengler, M. Jattiot, J. Leblois, D. Matthews, U. Schuler, HappyMoo Consortium and M. El Jabri</i>	
16:45	Multiple breeds and countries predictions of mineral contents from milk mid-infrared spectrometrie	585
	<i>O. Christophe, C. Grelet, C. Bertozzi, D. Veselko, C. Lecomte, P. Höckels, A. Werner, F.-J. Auer, N. Gengler, F. Dehareng and H. Soyeurt</i>	
17:00	Developing quantitative traits related to animal health status using a holistic big data approach	585
	<i>S. Franceschini, C. Grelet, C. Bertozzi, N. Gengler, Gpluse Consortium and H. Soyeurt</i>	
17:15	Genetic parameters for milk urea in dual-purpose Belgian Blue cows	586
	<i>H. Atashi, C. Bastin, Y. Chen, S. Vanderick, H. Wilmot and N. Gengler</i>	

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68.13	Predictive ability of MIR Spectra for detecting non-coagulating milk of Sarda ewes	586
	<i>G. Gaspa, F. Correddu, A. Cesarani, A. Pauciullo and N.P.P. MacCiotta</i>	

Session 69.

Improving animal welfare: do we need more regulations, or should the society decide?

Room: Sanada 1&2

Chair: De Briyne / Boyle

Session type: Challenge session

Session 70.

Improving sustainability of pig production by participatory research

Room: Pischä + Parsenn

Chair: Aluwé / Bee

Session type: Challenge session

Theatre Session 70

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15:00	Sustainable pig production in Switzerland thanks to knowledge building and transfer	587
invited	<i>R. Lühinger, D. Kümmerlen and M. Aepli</i>	
15:30	Concepts, production and marketing of pork animal welfare programs from a slaughterhouse perspective	588
invited	<i>N. Brand and H. Böckmann</i>	
16:00	Transformation towards sustainable pig production systems: how to make a game changer from approach	588
invited	<i>F. Marchand</i>	

16:15 Coffee break

16:45 Round table discussion

M. Aluwé and G. Bee

Room: Seehorn

Chair: Mayer / Klopčič

Session type: Theme session

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14:30	Grass silage for dairy cows: impact of harvest stage on yield, value, production and income <i>invited</i> V. Brocard, E. Tranvoiz and E. Cloet	589
15:00	Environmental cost analysis in organic Dehesa farms (SW Spain) A. Horrillo, M. Escribano, P. Gaspar and C. Díaz-Caro	589
15:15	Farmer and consumer attitudes towards utilizing composting bedding materials from cattle barns M. Klopčič, M.E. Waldrop, A. Kuipers and J. Roosen	590
15:30	Styrian agriculture – the past as a window to the future R. Mayer, E. Reisinger, T. Pichler and J. Lämmerer	590
15:45	The whole and the parts – effects of impaired animal health on farms' economic viability S. Hoischen-Taubner, J. Habel, A. Sundrum, E. Schwabenbauer, V. Uhlig and D. Möller	591
16:00	Assessing nitrogen use efficiency through blood and milk 15N enrichment in grazing dairy cows T. Haak, A. Münger, K.-H. Südekum and F. Schori	591
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17:00	Influence of inbreeding on milk production and fertility traits in Swiss Holstein cows A. Burren, M. Wyss, T. Neuenschwander and H. Joerg	592
17:15	Elevated vaginal and reticular temperature, and heart rate indicate early heat stress in dairy cows S. Ammer, A. Haase, S. Hoffmann, A. Pontiggia, A. Münger, R.M. Bruckmaier, M. Holinger, F. Dohme-Meier and N.M. Keil	593
17:30	Positive health-related effects of offering veal calves warm water from 1 to 3 months of age T. Jarltoft and M. Vestergaard	593
17:45	Efficiency of an essential oil-based mixture to cure clinical mastitis in dairy cows M. Guiadeur, N. Ballot, D. Bellenot, V. Hardit, P. Sulpice, L. Jouet, A. Fauriat and V. David	594
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71.13	Ecobreed – the economic value of a cow as selection criterion S.H.S.I. Schlebusch	595
71.14	NIRS potential for the prediction of feed efficiency in organic grazing dairy cows S. Ampuero Kragten, T. Haak, K.-H. Südekum and F. Schori	595
71.15	Better lactation start in dairy cattle with a protected standardised grape extract supplementation P. Engler, P. Roussel, L.S. Druhet, P. Caillis, M. Prezelin, J.M. Lamy and A. Benarbia	596
71.16	Consequences of hyperketolactia in early lactation dairy cows Z.M. Kowalski, M. Sabatowicz, R.J. Van Saun, W. Jagusiak, W. Młoczek and M. Spanghero	596

71.17	KetoMIR as a new indicator trait for subclinical ketosis and its use in herd management <i>A. Köck, L. Dale, A. Werner, M. Mayerhofer, F.J. Auer and C. Egger-Danner</i>	597
71.18	How to manage dairy cattle indoor-feeding period with insufficient grass silage stocks? <i>A. Palmio, S. Kajava and A. Sairanen</i>	597
71.19	Breeder's preferences in the choice of AI bulls at herd level <i>J. Braun, S. Gfeller, S. Buri, F. Schmitz-Hsu, S. Wegmann, H. Signer-Hasler and C. Flury</i>	598
71.20	Inbreeding rate in the conservative population of Red Polish cattle <i>P. Topolski and E. Sosin</i>	598
71.21	Relationship between cows' activity and the level of inbreeding <i>P. Topolski, K. Zukowski and A. Zarnecki</i>	599
71.22	A retrospective evaluation of production performance of Butana cattle kept in researech stations <i>E.A.M. Omer, S. Addo, M.-K.A. Ahmed and D. Hinrichs</i>	599
71.23	Feeding concentrated colostrum ensures sufficient uptake of IgG in newborn Holstein calves <i>T. Jarltoft, C.B. Jessen, M.B. Samarasinghe and M. Vestergaard</i>	600
71.24	Comparison of performances of 7 models to predict enteric methane emissions usable for dairies <i>S. Mendowski, V. Chatellier, M. Tournat, O. Garcia and G. Chesneau</i>	600
71.25	Experiences with GPS sensors for dairy / suckler cows on Slovenian Alpine pastures <i>M. Klopčič, M. Hahn, J. Steinfeld and K. Klopčič</i>	601
71.26	Land use conflict between farmers and herdsmen – implication for rural development <i>M.A. Oke</i>	601
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Session 72. Methods and technologies for research and smart nutrition management in dairy and beef cattle

Room: Wisshorn

Chair: Baumont

Session type: Project session / SMARTCOW

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14:45	invited Using N more efficiently in cattle production systems – challenges and opportunities <i>C. Reynolds, Z. Barker, L. Crompton, P. Lund, J. Dijkstra, R. Dewhurst, P. Nozière, G. Cantalapiedra-Hijar and R. Baumont</i>	603
15:15	Prediction of between-animal variation in N use efficiency in dairy cows from isotopic N signatures <i>M. Correa-Luna, M. Johansen, P. Nozière, A.R. Bayat, L.A. Crompton, C.K. Reynolds, E. Froidmont, N. Edouard, P. Lund, C. Martin and G. Cantalapiedra-Hijar</i>	603
15:30	Digestibility and intake become repeatable traits in young bulls with at least 7 days of measurement <i>R. Bellagi, R. Baumont, L. Salis, S. Alcouffe, G. Cantalapiedra-Hijar and P. Nozière</i>	604

15:45 Milk mid-infrared spectra to estimate rumen fermentation parameters 604
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16:00 Methane emission, microbiome and immune function in dairy cattle 605
P. Niu, U. Gimsa, P. Pope, B. Kuhla and A. Schwarm

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16:45 Detection of complex animal traits from data provided by activity sensors 605
I. Veissier, M.M. Mialon, R. Lardy, B. Meunier, M. Bouchon, L. Munskgaard, M. Terre, A. Valdecabres, K. Van Reenen, I. Van Dixhoorn and R. De Mol

17:00 Can a virtual cow model help precision feeding in dairy cattle? 606
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17:15 Prediction of total feed intake of dairy cows using a portable near-infrared microspectrometer 606
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17:30 Evaluation of strategies for feed efficiency phenotyping in the Norwegian red dairy cattle 607
A. Ehsani, H. Storlien, J. Jenko, H. Melbø Tajet, I. Pocnić, J. Obšteter and G. Gorjanc

17:45 Which methodology to study the effect of farming practices on cheese sensory properties? 607
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72.13 Encouraging research complementarities through mapping of cattle research infrastructures in Europe 608
P. Madrange, E. Kennedy, P. Ryan, C. Melis, R. Baumont and M. O'Donovan

72.14 Towards common standards, guidelines for measurement and data management in cattle research 609
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72.15 Transnational access to leading cattle research facilities within the EU SmartCow project 609
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72.16 Titanium dioxide as digestibility marker – between and within cow variation in faecal concentrations 610
G. Giagnoni, P. Lund, M.R. Weisbjerg and M. Johansen

72.17 Influence of measurement method of methane on the performances of faecal NIRS models in cattle 610
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72.18 Can we identify low CH₄ emitter dairy cattle by their milk carbon isotopic signatures? 611
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72.19 Investigating components of cow breath with potential for rumen diagnostics 611
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72.20 Effects of diet protein concentration on digestion and N balance of dairy cows over 3 lactations 612
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72.21 The effect of a molasses based liquid feed on fibre digestion, nitrogen utilisation and rumen pH 612
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72.22 Impact of physically effective fibre on chewing, nitrogen balance, and performance of lactating cow 613
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72.23	Validation of eating duration assessment from automatic feeder systems <i>E. Ternman, M. Terré, M. Bouchon, B. Meunier, L. Munksgaard and I. Veissier</i>	613
72.24	Definition of indicators of activity from data provided by wearable sensors in dairy cattle <i>I.D.E. Van Dixhoorn, R.M. De Mol, J.T.N. Van Der Werf, C.G. Van Reenen, L. Munksgaard, M. Terre, I. Veissier, M.M. Mialon, B. Meunier and M. Bouchon</i>	614
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72.31	Long-term effect of feeding a potentiated ZnO source on milk profile and serum Zn in dairy cows <i>M. Terré, D. Cardoso, D. Sabrià, N. Prat, E. Paran and A. Piñon</i>	617
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Session 73. Next generation in animal nutritional science (Young Scientists Session)

Room: Studio

Chair: Kreuzer-Redmer / Tretola

Session type: Early-career scientist's session

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14:30	Dietary tannins affect differently cow milk fatty acid profile according to grazing season <i>R. Menci, A. Natalello, M. Caccamo, G. Luciano, B. Valenti, A. Priolo and M. Coppa</i>	618
14:35	Effect of nanocurcumin and fish oil as natural anti-inflammatory compounds on calves' performance <i>S. Kamel Oroumieh, L. Van Meulebroek, R. Valizadeh, L. Vanhaecke and A.A. Naserian</i>	619
14:40	Effect of the administration of a high sugar diet on beef cattle growth performance and rumen health <i>S. Grossi, L. Rossi and C.A. Sgoifo Rossi</i>	619
14:45	Feed restriction affects protein and microRNA levels in dairy cows' milk <i>A. Leduc, S. Le Guillou, L. Bianchi, M. Gelé, L. Herve, P. Martin, J. Pires, Y. Faulconnier, C. Leroux, M. Boutinaud and F. Le Provost</i>	620
14:50	Co-expression of miRNAs in rumen fluid and tissue in cattle transitioned to high-grain diet <i>S. Ricci, R.M. Petri, C. Pacifico, A. Sener-Aydemir, R. Rivera Chacon, E. Castillo Lopez, N. Reisinger, Q. Zebeli and S. Kreuzer-Redmer</i>	620
14:55	Evaluation of miRNAs in the plasma and leucocytes of cattle fed forage or high-grain diets <i>O.E. Ojo, C. Pacifico, S. Johanns, S. Ricci, R. Rivera-Chácon, A. Sener-Aydemir, R.M. Petri, E. Castillo-Lopez, N. Reisinger, Q. Zebeli and S. Kreuzer-Redmer</i>	621

15:00	Effect of <i>Ceratonia siliqua</i> on coccidian faecal egg count and dry matter of faeces in light lambs <i>J. Pelegrin-Valls, B. Serrano-Pérez, D. Villalba, E. Molina, B. Aquilué and A. Álvarez-Rodríguez</i>	621
15:05	Plasmatic and ruminal metabolomes of lambs divergently selected on residual feed intake <i>F. Toutitou, A. Meynadier, N. Marty-Gasset, N. Vialaneix, G. Lefort and F. Tortereau</i>	622
15:10	Effect of inclusion of concentrates and exogenous butyrate on rumen wall development in sheep <i>S. Świerk, M. Przybyło, R. Miltko, J. Flaga, E. Molik and P. Górka</i>	622
15:15	<i>Tetraselmis</i> sp. incorporation in the post-weaning piglet diets: effects on productive performance <i>A.A.M. Chaves, C.F. Martins, D.M. Ribeiro, D.F. Carvalho, R.J.B. Bessa, A.M. Almeida and J.P.B. Freire</i>	623
15:20	Influence of fish oil in gestation and lactation diets on faecal microbiota of lactating piglets <i>E. Llauradó-Calero, E. Climent, E. Chenoll, I. Badiola, A.M.P. De Rozas, R. Lizardo, D. Torrallardona, E. Esteve-García and N. Tous</i>	623
15:25	An alternative <i>in vitro</i> model to investigate immunomodulatory functions of feed additives in chicken <i>F. Larsberg, M. Spreichert, D. Hesse, G.A. Brockmann and S. Kreuzer-Redmer</i>	624
15:30	The effect of linseed oil on <i>in vitro</i> fermentation kinetics using horse caecal fluid as inoculum <i>A. Waliczek, A. Kidane and R.B. Jensen</i>	624
15:35	Relationship between CH ₄ measured with sniffer method and dry matter intake in dairy cows <i>S. Mohamad Salleh, R. Danielsson, C. Kronqvist and J. Karlsson</i>	625
15:40	A new integrative mathematic approach to study metabolic trajectories of grazing dairy cows <i>E. Jorge-Smeding, M. Carriquiry, H. Naya, A. Mendoza and A.L. Astessiano</i>	625
15:45	Skills and knowledge expected by MSc students and professionals in animal sciences <i>C. Schreck, Y. Le Cozler, J. Flament, L. Montagne and S.P. Parois</i>	626
15:50	Perspectives for the animal nutrition higher education, employment, and research invited <i>A. Baldi</i>	626

Session 74. Omics in animal nutrition and physiology (the European joint doctorate program Molecular Animal Nutrition “MANNA”)

Room: Sertig

Chair: Eckersall / Sauerwein

Session type: Project session

	Theatre Session 74	Book of Abstracts page
14:30	Designing a metabolomics approach for identification of novel biomarkers in animal science <i>R. Birkler, L. Morgan, S. Shaham Niv, T. Wachsman and E. Gazit</i>	627
14:45	The C3 gene as a potential mediator of metabolic status and reproductive development in bull calves <i>K. Keogh, S. Coen, P. Lonergan, S. Fair and D.A. Kenny</i>	627
15:00	NMR spectroscopy reveals seminal plasma metabolites as sperm quality/functionality biomarkers in pig <i>Y. Mateo-Otero, P. Fernández-López, J. Ribas-Maynou, J. Roca, J. Miró, M. Yeste and I. Barranco</i>	628
15:15	Prediction of bull fertility based on the sperm methylome <i>V. Costes, A. Chaulot-Talmon, E. Sellem, J.P. Perrier, A. Aubert, L. Jouneau, C. Pontlevoy, C. Hozé, S. Fritz, M. Boussaha, C. Le Danvic, M.P. Sanchez, D. Boichard, L. Schibler, H. Jammes, F. Jaffrézic and H. Kiefer</i>	628
15:30	Transcriptomic profiling and functional assessment of omega-3 fatty acids in porcine enterocytes <i>T.S. Sundaram, C. Giromini, R. Rebutti, A. Baldi, M. Bhide and J. Pistl</i>	629

15:45	Preliminary application of dynamic proteomics to study broiler chicken growth and health status <i>J. Peinado-Izaguerra, M. McLaughlin, D. McKeegan, F. Riva, M. Bain, M. Bhide and T. Preston</i>	629
16:00	Machine learning tracking immune-related proteins in serum of periparturient dairy cows <i>A. Veshkini, M. Bonnet, H. Hammon, L. Vogel, A. Tröscher, M. Delosière, A. Delavaud, D. Viala, H. Sauerwein and F. Cecilian</i>	630
16:15 Coffee break		
16:45	Intramammary infection with non-aureus staphylococci modifies water buffalo milk lipidome <i>F. Cecilian, M. Audano, M.F. Addis, C. Lecchi, M.H. Ghaffari, M. Albertini, F. Tangorra, E. De Carlo, D. Vecchio, G. Cappelli, D. Di Vuolo, R. Piccinini, D. Caruso, N. Mitro and V. Bronzo</i>	630
17:00	Altered serum proteomes in newly weaned piglets born from the sows receiving a low ratio of $\omega 6:\omega 3$ <i>T.X. Nguyen, A. Gelemanović, S. McGill, S. Weidt, M. Piñero, A. Agazzi, P.D. Eckersall, R. Burchmore and G. Savoini</i>	631
17:15	Muscle proteomics of pre-weaned piglets from sows fed with extreme $\omega-6/\omega-3$ fatty acid ratio diets <i>Y.J.Y. Manaig, G. Savoini, A. Agazzi, S. Panseri, J.M. Folch and A. Sanchez</i>	631
17:30	Impact of the ratio of $\omega 6:\omega 3$ fatty acids in the maternal diet on milk pig exosome proteome profiles <i>R. Furioso Ferreira, T. Bles, F. Shakeri, A. Bunes, M. Sylvester, A. Agazzi, G. Savoini, V. Mrljak and H. Sauerwein</i>	632
17:45	Milk-derived exosomes modulate porcine monocyte immune function <i>G. Ávila, D. De Leonardis, J. Filipe, R. Furioso Ferreira, A. Agazzi, M. Comi, H. Sauerwein, C. Lecchi and F. Cecilian</i>	632
18:00	<i>In vitro</i> immunomodulatory effects of PUFA on porcine monocytes <i>G. Ávila, S. Di Mauro, J. Filipe, D. De Leonardis, C. Gini, A. Agazzi, M. Comi, C. Lecchi and F. Cecilian</i>	633
18:15	The role of citrus and cucumber diets in chicken gut microbiota profile using 16s rRNA sequencing <i>F. Riva, D. McGuinness, D. McKeegan, J. Peinado-Izaguerra, G. Bruggeman, D. Hermans, M. McLaughlin, D. Eckersall and M. Bain</i>	633

Poster Session 74

Book of Abstracts page

74.15	Impact of NGS data trimming on differential gene expression analysis <i>M. Kołomański, M. Frąszczak and M. Mielczarek</i>	634
74.16	Effect of enhanced early life nutrition on the anterior pituitary transcriptome of heifer calves <i>K. Keogh, A.K. Kelly and D.A. Kenny</i>	634
74.17	Major urinary protein knockout leads to lipid accumulation in young male but not in female mice <i>S. Greve, G.A. Kuhn and K. Giller</i>	635
74.18	Differentiation of intramuscular preadipocytes in low marbling beef cattle <i>B. Soret, J.A. Mendizabal, A. Arana and L. Alfonso</i>	635
74.19	Impacts of body condition score on reproductive performance and overall productivity of beef cows <i>R.F. Cooke and F.N.T. Cooke</i>	636
74.20	Idiopathic male subfertility in a Holstein Friesian AI bull: a case study <i>E. O'Callaghan, M. Stivnicka, C. O'Meara, B. Eivers, D.A. Kenny, S. Fair and P. Lonergan</i>	636
74.21	The effect of pasteurization in the expression of bovine milk microRNA <i>L. Abou El Qassim and L.J. Royo Martín</i>	637

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Technical tours – Friday 3 September

source: Alp Parpan



Tour 1

Cows, cheese, goats and sheep in a great tourist region

Destinations:

Visits to an alpine cheese dairy, a dairy goat and sheep farm, the educational farm Plantahof and Switzerland's largest cheese dairy.

Schedule:

07:30 Bus departs from Davos in front of Conference Centre
08:30 Sightseeing: historical railway in Wiesen
10:00 Arrival at 'Alp Parpan' (cows, alpine cheese dairy); lunch in Restaurant 'Stätzerhorn'
13:00 Arrival at organic goat and dairy sheep farm 'Waldhaus' in Chur
14:30 Arrival at educational and experimental farm 'Plantahof' in Landquart; drop off at the train station Landquart possible; In Landquart, there is an option to take the train to Zurich Airport/Zürich Flughafen (approximately 1h45 minutes)
15:30 Arrival at the cheese dairy 'Emmi'; drop off at the train station Landquart possible
16:30 Departure to Davos by bus
17:30 Arrival in Davos



source: Ivt Swissgenetics

Tour 2

Cattle breeding: 180 sires in Switzerland's largest AI-station, an organic dairy farm and a great research station

Destinations:

Visits to the Swissgenetics bull breeding station, an organic dairy farm, and the AgroVet Strickhof research station.

Schedule:

07:30 Bus departs from Davos in front of Conference Centre
10:00 Visit to Swissgenetics bull breeding station in Mülligen
11:45 Departure from Swissgenetics
12:15 Visit to an organic dairy farm; lunch at the farm
14:00 Departure from the farm
15:00 Visit to AgroVet Strickhof research station in Lindau
17:00 Departure from Strickhof
17:30 Arrival at Zurich Airport From Zurich Airport/Zürich Flughafen, there are frequent departures to Zurich Main Station/Zürich HB (approximately 15 minutes)
20:00 Arrival in Davos

source: suisag



Tour 3

Pig breeding in Switzerland: unique in the world

Destinations:

Visits to a nucleus breeding farm, a finisher farm, SUISAG and the Swiss test-station for pigs.

Important: Do not have contact with other pigs for at least 48 h before the tour!

Schedule:

- 07:30 Bus departs from Davos in front of Conference Centre
- 09:30 Visit to nucleus breeding farm Schwizer in Walenstadt
- 11:00 Departure from Farm Schwizer
- 11:15 Visit to finisher barn of farm Kurath in Walenstadt
- 11:45 Departure from Farm Kurath
- 13:30 Barbecue and visit to SUISAG and Swiss test-station for pigs in Sempach
- 15:30 Departure from SUISAG
- 16:30 Arrival at train station Wädenswil [Zugsymbol] In Wädenswil, there is an option to take the train to Zurich Main Station/Zürich HB and Zurich Airport/Zürich Flughafen (approximately 40 minutes)
- 20:00 Arrival in Davos



source: Vetsuisse Zürich

Tour 4

Horse tour: housing, training and high-tech equine sports medicine

Destinations:

Visits to an innovative boarding stable, a breeder of the indigenous Freiberger breed and the Equine Sports Medicine Unit of the Vetsuisse Faculty in Zurich

Schedule:

- 07:30 bus departs from Davos in front of Conference Centre
- 09:30 Arrival at Ponyhof Letzau, Oberriet
- 11:00 Departure from Oberriet
- 12:00 Arrival at Tonis Fribyhof in Jonschwil, lunch
- 14:30 Departure from Jonschwil
- 15:30 Arrival at Vetsuisse Zurich
- 17:15 Departure to Zurich airport or Zurich main station from Station 'Tierspital' by tramway From the station Zurich Vetsuisse/Tierspital, there are frequent departures to Zurich Main Station/Zürich HB and to Zurich Airport/Zürich Flughafen (approximately 25/30 minutes)
- or
- 17:15 Departure to Davos by bus
- 19:30 Arrival in Davos

Social events

source: Ivt Swissgenetics



Opening & award ceremony, welcome reception

- Time: Monday August 31, 19.00 – 22.00
- Venue: Davos Congress, 7270 Davos-Platz

On Monday evening, all participants are kindly invited to attend the Opening and Award Ceremony. During the subsequent welcome reception, we would like to give all participants the opportunity to meet friends, old and new, while enjoying Swiss-specialities served in the catering area of the conference centre.

Swiss Evening

- Time: Tuesday August 31, 19.00 – 22.30
- Different locations, see www.eaap2021.org and information desk in the conference centre.

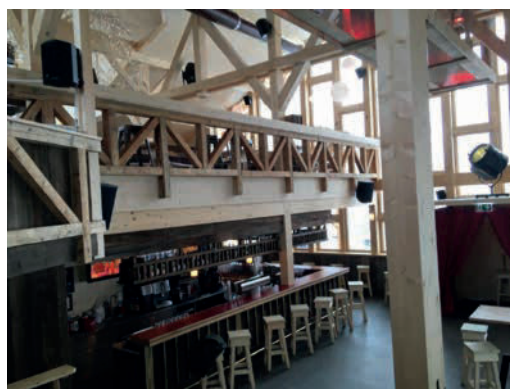
Due to the Covid-situation, the Swiss Evening is 'spread out' in three different locations.

The Swiss evening is meant to be a traditional yet informal get-together: you will sample traditional local food (certainly with lots of cheese) and hear traditional music including the alphorn, Swiss Örgeli and maybe even some yodeling.

Farewell-Dinner

- Time: Thursday September 2, 19.00 – 23.00

The Belle Epoque hotel 'Schatzalp' is the perfect setting for our Farewell Dinner. The charming Belle Epoque ambience takes you back to the turn of the last century. After a scenic ride on the Schatzalp cable car, we enjoy an aperitif whilst admiring the view from the hotel terrace over the Davos mountains. Afterwards, the Berghotel Schatzalp spoils us with a varied menu in the historic rooms.



source: Ivt Swissgenetics



source: Ivt Swissgenetics

Accompanying Persons Programme



source: szzy

Tuesday August 31

Full day tour: 9:00 – 18:00 (lunch included)

Theme 'VINTAGE TOUR'

Tour through Chur, the oldest city in Switzerland, where people lived 11,000 years ago. You walk from the modern train station through the lively centre into the winding streets of Chur's old town and up to the 800-year-old cathedral. Get to know historical Chur.

In the afternoon, we go on an informative and exclusive wine tour in the Bündner Herrschaft! You can expect information on historical and cultural backgrounds. A visit to vineyards with explanations of vines and winemaking will bring you closer to our centuries-old wine culture.

Wednesday September 1

Full day tour: 9:00 – 18:00 (lunch included)

Theme 'ENGADIN VALLEY'

The National Park Centre, designed by the world-famous Grisons architect Valerio Olgiati, impresses with its clear lines and its unusual spatial concept. Our exhibition guides give you special access to the national park and its nature.

In the afternoon, we will visit famous St. Moritz.

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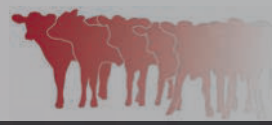
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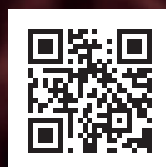


Selection of bulls in the headquarters



AI-Training in Mongolia

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Livestock sustainability domains



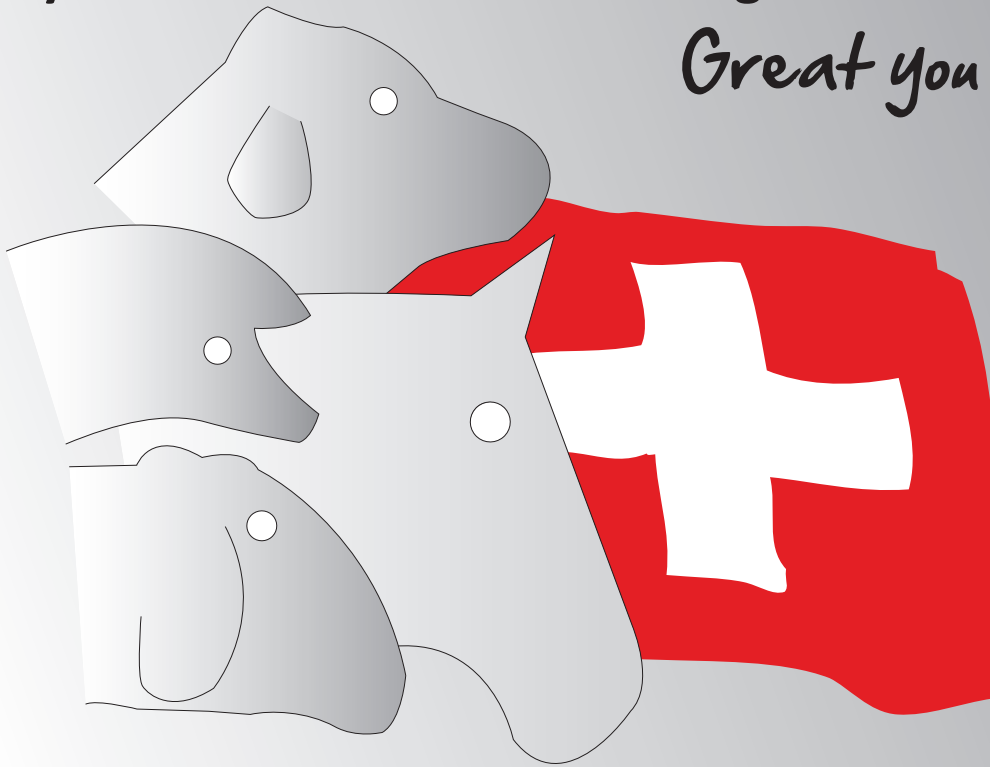
Food and Agriculture Organization of the United Nations

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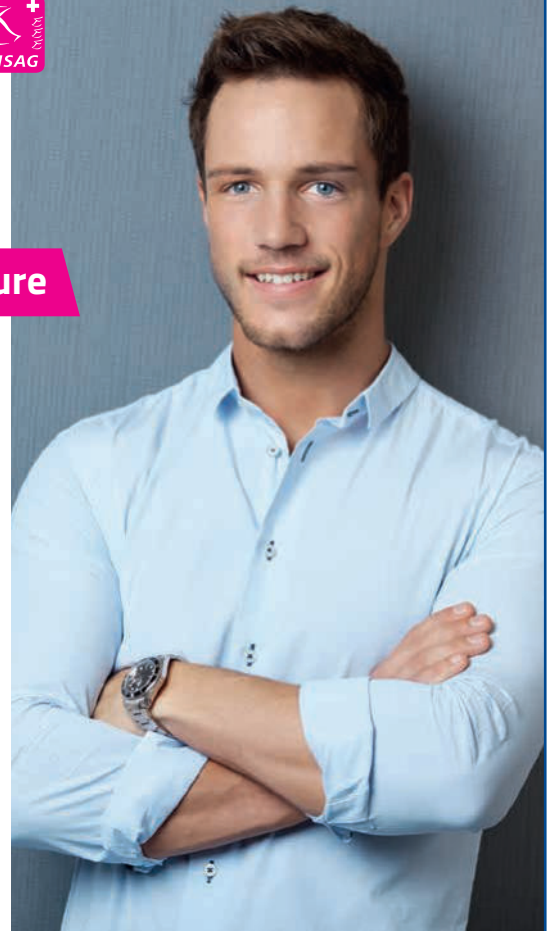
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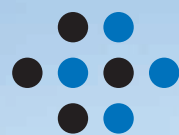
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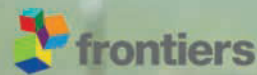
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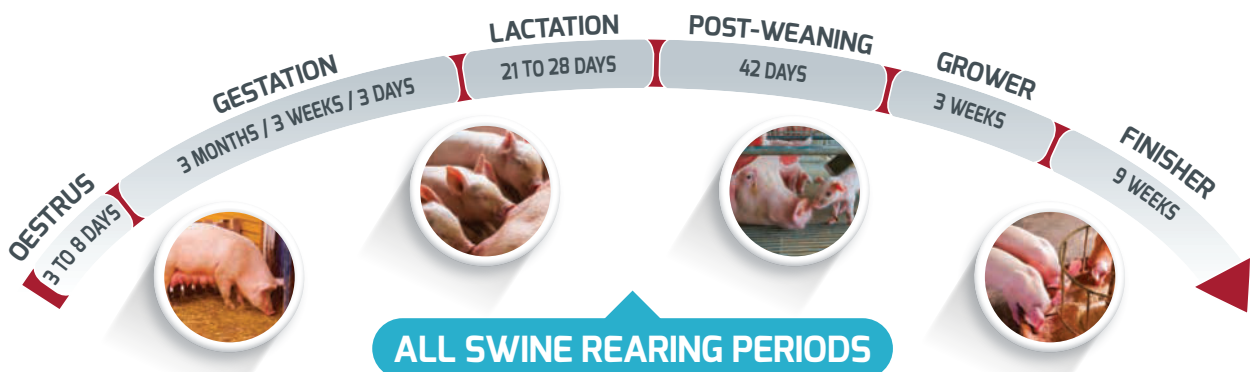
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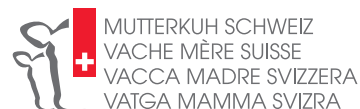
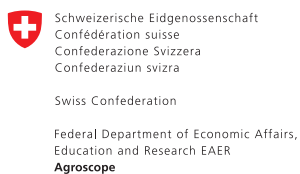
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