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The World Animal Science News

Main Topics

- From WAAP members
- News from Science
- News from Industry
- Publications
- Meetings and Conferences
- Vacant Positions

EDITORIAL

Addressing Antibiotic Concerns on a United Front

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Consumers have a right to know where their food comes from and how it was produced, especially when it comes to antibiotic use in animals. Antibiotic resistance is a public concern and is a consequence of the use and misuse of antibiotics across society with responsibility shared by the human, animal, and environmental health communities.

The concern about the potential dangers of widespread antibiotic use in both humans and animals is justified. Scientific studies have revealed evidence that some antibiotics have become less effective and certain microbes have developed resistance to treatment. This is a genuine threat and the preservation of antibiotic effectiveness is in the best interest of human health.

But we also need to be clear about what is causing the problem of antibiotic resistance and how it can be most effectively addressed. Animal, human, and environmental health are intrinsically linked together and so logically they must be addressed together as part of a single and integrated One Health approach. To improve and defend the health of people, animals, and the environment will require broad thinking, not finger-pointing or one-sided alternatives. Physicians, veterinarians, and environmental health professionals must take shared responsibility and they must act together in a forward-looking, cooperative, and accountable way.

From the perspective of the agriculture community, antibiotics are one way, but not the only one, that farmers help to keep their animals healthy. Relying on antibiotics alone, or using excessively, is not sound farming. Veterinarians and farmers use many other methods to support animal health including vaccines and enzymes, as well as, high nutritional standards and stringent hygiene practices. Thorough application of good farming practices along with responsible use of antibiotics helps to enhance animal welfare and food safety.

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Editorial (continues)

What does responsible antibiotic use mean in agriculture?

Using antibiotics responsibly means treating an animal that is sick with the right dose of antibiotics at the right time to help them get better. It also means using antibiotics to control the spread of infection when there is a disease threat and identifying animals when they are at risk to help prevent unnecessary illness and suffering. This includes supporting veterinarian oversight of antibiotic use in treating animals to ensure that the most appropriate treatment is given at the right time in the right form following labeled instructions approved by our regulatory agencies.

Using antibiotics responsibly also means sometimes using them a little less to ensure they remain effective when it really matters. This is why the animal health community has been dedicated to finding alternatives to medically important human antibiotics and developing separate types of antibiotics for animals. Innovation in animal-only antibiotics not only helps to protect the important benefits of antibiotics for everyone, but also helps to support animal welfare and food safety.

Finally, using antibiotics responsibly means supporting the regulatory agencies that scientifically review antibiotics to ensure they are safe for the animal, the people who consume food provided by those animals, and for the environment. These agencies, such as the U.S. Food and Drug Administration, provide clearly identified rules on precisely what antibiotics animals can receive, in what dose, and for how long. This also means clearly communicating established guidelines on how long it takes to completely eliminate that antibiotic from the animal's body before any meat, milk, or eggs go to restaurants, stores, and supermarkets.

Addressing concerns about antibiotic use and it how it affects public health, food safety, and animal welfare

requires a shared commitment to: 1) evidenced-based decisions of how antibiotics should be used, either by the physician or by the veterinarian, grounded on sound and unbiased scientific information; 2) a united partnership between human, animal, and environmental health communities; and 3) providing transparent information about how and why antibiotics are used and making that information more accessible and transparent.

Clearly, responsible antibiotic use is a commitment that transcends boundaries between industries, geographies, and even animal species. As a company, Elanco is dedicated to protecting animal and human health, and we view it as our responsibility to move nimbly and successfully.

Elanco's 8-Point Antibiotic Stewardship Plan, announced in 2015 at the White House Forum on Antibiotic Stewardship, outlines our commitment to an aggressive eight-step plan to help safeguard animal and human health. This plan, aimed at making tangible advances quickly, includes significant research funding aimed at delivering new alternatives to the most challenging diseases. Specifically the plan outlines,

1. Act with responsibility globally

- We encourage policies that narrow the use of shared-class antibiotics and increase veterinarian oversight of the use of antibiotics.
- We continue to partner with stakeholders across the globe and across the supply chain to develop policies for the responsible use of antibiotics. A global approach is essential for antibiotic stewardship.

2. Cease marketing of growth promotion

- We are focused on two areas:
 1. Discontinuing the marketing of growth promotion uses for shared-class antibiotics.
 2. Working with regulatory agencies globally to update the product labels for shared-class antibiotics by the end of 2016.

- Our goal is and continues to be to help preserve the effectiveness of antibiotics for human health while ensuring animals have appropriate treatment options.
- Shared-class antibiotics will continue to be available to treat animals for therapeutic uses. Animal-only antibiotics continue to be available for both growth promotion and therapeutic uses.

3. Eliminate continuous use

- In certain geographies shared-class antibiotics are used for extended periods of time to treat specific diseases. This could lead to almost continuous use of antibiotics and thus a concern for resistance development.
- We are working to find alternatives that lessen the need for all shared-class antibiotics use.
- We support the veterinarians and other animal health experts who decide the most appropriate treatment currently available to ensure the health and welfare of the animal.
- We believe that leading with science is critical to developing alternative treatments and making the best decisions for animal health and welfare.

4. Eliminate over-the-counter sales

- Veterinarians have specialized training in selecting and administering treatment. Where available, we are working to ensure that the disease diagnosis and administration of antibiotics is managed with veterinarian oversight.
- We are working to develop standards through legislation and policy that supports veterinarian oversight.
- In places where veterinarian oversight is not available, we are working to educate farmers and others on the responsible use and administration of antibiotics.

5. Eliminate concurrent use

- Responsible use programs generally

discourage concurrent use. There is concern that concurrent use of antibiotics (using two shared-class antibiotics at the same time for the same condition) may lead to potential resistance.

- In instances when concurrent use may be the most appropriate treatment to ensure the health and welfare of the animal, the use should be done under veterinary oversight.
- We support efforts to ensure that the use of shared-class antibiotics focuses on the right drug, right dose, right duration, and right time.

6. Support veterinary oversight

- We believe that veterinarians and other animal health experts are uniquely qualified to determine how best to treat, control and prevent animal diseases to keep animals healthy.
- Where veterinary infrastructure is lacking, we will identify opportunities to support and invest in the global development of legislative, professional, and educational veterinary infrastructure to further enable responsible use and oversight of antibiotic use in animals.

7. Develop new animal-only antibiotics

- Antibiotics classes used exclusively in animals pose virtually no risk of contributing to human bacterial resistance. Animals are susceptible to different diseases and have different health needs than humans.
- We continue to invest in the development of new animal-only antibiotics to help ensure animal welfare by treating the specific needs of animals without compromising the use of antibiotics in humans.
- Animal-only antibiotics continue to be available for both growth promotion and therapeutic uses.

8. Create alternatives

- We are committed to pursuing new advancements that broaden our approach to

keeping animals healthy, including R&D and technical support in best management practices, farm hygiene, proper nutrition, husbandry, genetics, etc.

- Alternatives, such as vaccines and enzymes, will help reduce reliance on the use of shared-class antibiotics. Additionally, they will also help preserve effectiveness of antibiotics for human and animal health while ensuring food safety.

Achieving responsible antibiotic use requires a sound strategy that is global in scope and must include stakeholders across the supply chain to be effective. Science and technology are key to the solutions, which need to take a balanced approach in order to preserve animal health and welfare while also protecting human health and ensuring food safety. Elanco will provide updates on our progress and will host a summit in mid-2016 to bring together key stakeholders.

Only a united front, not a divided one, can we successfully and effectively address these antibiotic concerns. Only then can people make the decisions that are right for them and for their animals when it comes to responsible antibiotic use.

From WAAP Members

American Society of Animal Science

ASAS releases updated policy statements

The American Society of Animal Science has updated the policy statements found at the ASAS website, including a statement that discusses "Livestock's Important Role in International Agricultural Development." Other topics discussed in the policy statements include: climate change and animal agriculture, biotechnology, nutrition/health of animal products, water and water quality, and more. The documents open as pdfs. You may access them at: <https://asas.org/membership-services/public-policy/policy-statements>

2015: A year of change for the Journal of Animal Science

In 2015, the Journal of Animal Science saw major improvements in time from article submission to acceptance, as well as time from acceptance to online availability. The journal also is 20% larger, publishing just over 6,000 pages in 2015. Learn more about these accomplishments, as well as other improvements and changes in pricing and submission fees, at: <http://takingstock.asas.org/?p=17938>

To build upon these improvements, goals for 2016 for the Journal of Animal Science will focus on:

- Add a new article type to accommodate rapid publication of high-impact, critically important data in the animal sciences.
- Add an enhanced form of developmental review to aid in manuscript preparation.
- Reduce time to acceptance to under 70 days, helping to bring time to final publication closer to 5 months.
- Work to begin incentivizing high-efficient, high-quality review.

ASAS hosts "Snack and Fact" briefing

On December 14, 2015, the American Society of Animal Science hosted a "Snack and Fact" briefing in Washington, D.C. Two ASAS members served as speakers for the event. They discussed the challenges and opportunities associated with communicating animal science information with the public, news media, policy makers, and students. Learn more at: <http://takingstock.asas.org/?p=18128>

e-Posters coming to 2016 JAM

Posters will be electronic at the 2016 Joint Annual Meeting (JAM), to be held July 19-23, 2016, in Salt Lake City, Utah. The new format will allow posters to be interactive and more in-depth. Authors will have the ability to embed files and links, such as videos, url links and support data. The e-Poster format also will eliminate the need to limit poster size to the traditional 4-foot by 8-foot space. During JAM, attendees will be able to view any poster, no matter what day of the meeting it is. When poster sessions are not actively going on, all of the e-Poster screens will return to their home

screen. Each home screen contains links to every poster shown on that screen during JAM. Learn more at: <http://takingstock.asas.org/?p=17196>

JAM pre-conference to focus on gut microbiome

Plans are underway for the 2016 Joint Annual Meeting (JAM) to kick off with a pre-conference symposium on “Gut Microbiota, Diet, and Health.” The symposium will be hosted by the American Society of Animal Science and the American Society for Nutrition. The goal of the symposium is to provide the latest science regarding the interplay of nutrition and the microbiome by bringing together experts in nutrition science, animal science, microbiology, gastroenterology, neuroscience, and metabolism. Register today for the 2016 ASAS-ADSA-CSAS-WSASAS Joint Annual Meeting in Salt Lake City, Utah, July 19-23, 2016.

Asociación Latinoamericana de Producción Animal

The Latin American Association for Animal Science will celebrate the 50 years of existence next year in Recife (Brazil). Everyone is welcome to join this animal science conference that is going to be a very interested conference. Last November the XXIV Congress of ALPA, held in Puerto Varas (Chile), was very interesting with many important communications and invited speakers.

European Federation of Animal Science

2016 Annual Meeting will be held in United Kingdom

The 67th Annual Meeting of EAAP will be held at The Waterfront Conference and Exhibition Centre in the heart of Belfast (UK) and on the banks of the River Lagan and runs from 29 August – 2 Sept 2016. More info at www.eaap2016.org More than 1000 animal scientists from all over the world are expected. There will be around 55 scientific sessions. Registrations are already open. Abstracts submission is open and the deadline is March 1st. Please see the specific webpage for more information: <http://www.eaap2016.org/abstracts/>

EAAP for Genetic Resources

EAAP became member of the ABS Consultation Forum of EU about the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from the Utilization in the Union. The first meeting was held on January 21st.

Plenary Session at Belfast about Sustainable Food Production

The Plenary Session at Belfast will be, like always, very attractive. There will be invited four main speakers T. Searchinger, J—F. Soussana, P. Thornton and I. Givens. For more information please see the Plenary Session program at: http://www.eaap.org/wp-content/uploads/2015/12/Discovery_Plenary.pdf.

News from Science

Joint FAO-IAEA research looks for a stable-isotope based method to quantify feed intake

In an expert consultation organized by the Joint FAO/IAEA Division based in Vienna, Austria, the challenges and needs of developing countries in the context of feeds and feeding of animals for optimum productivity were presented and discussed, and the roles of stable isotopes in addressing those challenges and most promising applications were identified. It was concluded that an accurate methodology to quantify or predict dry matter intake of cattle under grasslands is not available to date. This limits the application of appropriate and efficient feed supplementation strategies to realise the full potential of cattle in grasslands. Grasslands are among the largest ecosystems in the world, estimated to cover 40.5 percent of the terrestrial area excluding Greenland and Antarctica Grasslands. These are important as a feed source for livestock. In both developed and developing countries, many millions of livestock farmers, ranchers and pastoralists depend on grasslands for their livelihoods. Against this backdrop, the experts developed a Coordinate Research Project (CRP) to

evaluate a method combining different n-alkanes profiles with natural ^{13}C concentration data to quantify feed intake of plant species by cattle in rangelands containing multi-plant species. The method exploits the intrinsic alkane composition because individual plant species have their own alkane composition. Because the stable isotope measurement in alkanes is expensive, calibration using Near Infrared Reflectance Spectroscopy (NIRS) will also be developed to predict the dry matter intake data. The NIRS method is non-invasive, relatively low cost, easy to operate, and takes very little time (1-2 min per sample). It is anticipated that in practice NIRS will be used to provide advice to farmers. The project is entitled “Quantification of Intake and Diet Selection of Ruminants Grazing Heterogeneous Pasture using Compound Specific Stable Isotopes”, and aims to:

- Quantify intake and diet selection of cattle grazing/browsing heterogeneous pasture using compound specific stable isotopes of long chain n-alkanes.
- Create practical NIRS based prediction equations of total pasture dry matter intake, as well as its proportion of individual pasture species, based upon analysis of individual animal faecal composite samples.
- Evaluate impacts on animal performance and efficiency of potential feed supplementation strategies using existing animal metabolic models based upon predicted pasture dry matter intake.
- Strengthen research capacity among animal scientists in developing countries.
- Networking among animal scientists from developed and developing countries.

The expected outputs from the project are:

- A uniform dataset of n-alkanes concentrations and their stable carbon isotope composition of common pasture grass, legume and browse species, measured in many world ecosystems, which are consumed by cattle.
- An improved prediction of intake and diet

selection/composition of cattle consuming mixtures of plant species in pastures/rangelands.

- A practical NIRS based prediction equation of intake and diet composition of cattle consuming multi-species pasture grasses, legumes and browses.
- Recommendations for future research and development using stable isotope compositions of pasture/rangeland grasses, legumes and browses.
- Publications and dissemination of results.
- Regional and international collaborative linkages.

The expert meeting was attended by five experts, one each from Australia (Shimin Liu), Netherlands (Jan Dijkstra), South Africa (Ignatius V Nsahlai), Switzerland (Jorge Spangenberg) and the United States of America (Peter Robinson). Staff members from AGE (Mohammed Shamsuddin, Mario Garcia Podesta and Gerrit J. Viljoen), AGA (Harinder Makkar) and NAHU - Nutritional and Health-Related Environmental Studies Section of IAEA (Christine Salter) also contributed to the discussions. This project is expected to conclude in 2020.

A large group of institutions identify key policy challenges for livestock and climate change

A new report summarizes the results from the EU supported project AnimalChange and presents the key policy challenges identified. The paper benefits from the contributions of a broad group of scientists engaged in AnimalChange, as well as representatives from governments, inter-governmental organizations, private sector organizations and non-governmental organizations.

AnimalChange constituted a unique opportunity to concentrate scientific efforts on the livestock and climate change nexus and confront outcomes with policy makers and stakeholders. The project confirmed the key role livestock can potentially play in mitigating climate change through the development of more productive and resilient –

climate smart – food systems. Results revealed that, in the short term, the European livestock sector can make a limited contribution to EU GHG emission reduction efforts, by curbing overall direct emission intensity by about 15 to 20 percent between 2005 and 2025. Production systems in Europe are already relatively efficient and marginal adjustments such as feed supplementation, biogas and energy use efficiency measures can only generate limited mitigation gains. The short-term mitigation potential is estimated to be substantially greater outside the European Union.

The project recognized that efforts to address climate change in the EU livestock sector are being made, especially through research and private sector-led gains in efficiency. These should be strengthened and complemented with targeted public policies to enhance livestock sector's contribution to reducing GHG emissions within agriculture and within the Effort Sharing – mechanism to achieve economy-wide mitigation objective set by the European Union as part of the “20-20-20” targets of its climate and energy package. In the short term, adaptation efforts in the European Union may focus on extreme weather events and emerging diseases. Over the longer term, as average temperatures, rainfall and CO₂ concentration in the atmosphere evolve and impact grass and crop yields, geographical distribution of livestock and feeding strategies will also need to evolve. The project revealed potential synergies in mitigation and adaptation but also identified substantial economic and social risks arising from allowing producers and consumers to carry the entire adaptation burden. Project findings urge public policies and multi-stakeholder initiatives to address these issues and prevent negative economic, social and equity outcomes.

First genetically edited cows arrive at UC Davis

Two calves have been modified so that they don't grow horns. New techniques were designed to help pack more cows into pens, trucks and therefore

lower costs for farmers are expected.

The two calves that grace a muddy pen on the UC Davis campus will never grow horns typical of their breed. Instead, they'll always sport soft hair on the parts of their heads where hard mounds normally emerge. Named Spotigy and Buri, the calves were designed in a petri dish at a Minnesota-based genetics lab, with the goal of making them easier to pack into pens and trucks without the nuisance of their horns taking up valuable space. Their offspring may also lack horns, and generations of hornless cows could follow, potentially saving the dairy and cattle industry millions of dollars, said Alison Van Eenennaam, a geneticist at UC Davis' College of Agriculture and Environmental Sciences who worked with the Minnesota lab Recombinetics. The research has raised concerns among some farmers and animal-rights activists who warn of the health and ethical risks of consuming genetically modified food, but so far, that hasn't stopped the research drive.

At UC Davis, animal geneticist Pablo Juan Ross has been trying to perfect a technique developed a decade ago but now gaining more acceptance to design cattle that produce only male offspring.

“Males grow faster than females, and in beef production they are more desirable,” Ross said. Another project uses stem cells to produce a clone animal, Ross said. Genetic editing could also help design cows that are less prone to pneumonia, which would reduce their need for antibiotics.

With the two dairy calves, a precise section of DNA responsible for horn growth was knocked out and replaced with a precise section from a cow that does not produce that trait. Many cattle varieties do not grow horns, including Angus cattle. With dairy cattle – both male and female – horns are a given, and the animals are dehorned soon after they're born. If the technique is successful, it will allow the industry to bypass decades of breeding for polled, or hornless, cows.

Typically, the horns are cut out of the animal, which can involve heavy expenses and lots of suffering for the animals. The cost of dehorning can be a lot.

A European network of research stations is created

The Large Hadron Collider, a.k.a. CERN, found success in a simple idea: Invest in a laboratory that no one institution could sustain on its own, and then make it accessible for physicists around the world. Astronomers have done the same with telescopes, while neuroscientists are collaborating to build brain imaging observatories. Now, in the Jan. 5 edition of Trends in Plant Science, agricultural researchers present their vision for how a similar idea could work for them. Rather than a single laboratory, the authors want to open a network of research stations across Europe — from a field in Scotland to an outpost in Sicily. Not only would this provide investigators with easy access to a range of different soil properties, temperatures and atmospheric conditions to study plant/crop growth, the authors said it would allow more expensive equipment (for example, open-field installations to create artificial levels of carbon dioxide) to be a shared resource.

“Present field research facilities are aimed at making regional agriculture prosperous,” explained co-author Hartmut Stutzel of Leibniz Universität Hannover in Germany. “To us, it is obvious that the ‘challenges’ of the 21st century — productivity increase, climate change and environmental sustainability — will require more advanced research infrastructures covering a wider range of environments.”

Stutzel and colleagues, including Nicolas Bruggemann of Forschungszentrum Jülich in Germany and Dirk Inze of VIB and Ghent University in Belgium, are at just the beginning of the process of creating their network, dubbed ECOFE (European Consortium for Open Field Experimentation). The idea was born last February at a meeting of Science Europe and goes back to discussions within a German Research Foundation working group four years ago. Now, the researchers are approaching European ministries to explore the possibilities for ECOFE’s creation.

In addition to finding financial and political investment, ECOFE’s success will hinge on whether scientists at the various institutional research

stations will be able to sacrifice a bit of their autonomy to focus on targeted research projects, Stutzel said.

He likened the network to a car-sharing service in which researchers will give up the autonomy and control of their own laboratories in order to gain access to facilities in different cities. If ECOFE catches on, thousands of scientists could be using the network to work together on a range of “big picture” agricultural problems.

“It will be a rather new paradigm for many traditional scientists, but I think the communities are ready to accept this challenge and understand that research in the 21st century requires these types of infrastructures,” Stutzel said. “We must now try to make political decision-makers aware that a speedy implementation of a network for open-field experimentation is fundamental for future agricultural research.”

This work was made possible with the financial support of the European Research Council.

Regulate, rather than prohibit, the use of food waste as feed: learning from East Asian experiences

Nations such as Japan and South Korea offer working models for the safe, regulated use of food waste as animal feed. As the EU faces both a deficit in protein sources for animal feed and calls to create a zero-waste, circular economy, there is a growing mandate to reconsider the ban on swill. Regulating, rather than prohibiting, the use of food waste as pig feed could safely produce high-quality pork, with substantial economic and environmental benefits. To read more: <http://www.feedipedia.org/content/regulate-rather-prohibit-use-food-waste-feed-learning-east-asian-experiences>

Impacts of feeding less food-competing feedstuffs to livestock on global food system sustainability

According to a new study led by the Research Institute of Organic Agriculture (FiBL) on behalf of the Food and Agriculture Organization FAO, reducing the proportion of human-edible animal feed grown on cropland might have a positive effect on the availability of food and important

environmental indicators such as GHG-emissions and nitrogen surplus. Less competition between production of food and animal feed proves to be an effective approach to sustainably providing food for the estimated 10 billion people in 2050. To read more:

<http://rsif.royalsocietypublishing.org/content/royinterface/12/113/20150891.full.pdf>

News from Industry

Vet food-safety lab gets \$1.9m boost for toxicology testing

The California Animal Health & Food Safety Laboratory System, based at the University of California-Davis, has received a \$1.89 million, five-year grant from the federal Food Emergency Response Network to support its food-safety efforts. The new grant will increase the capacity of the lab's toxicology services to respond to contamination threats to the U.S. food supply involving food animals and to carry out day-to-day diagnostic and early detection activities.

“Without the network's support, we could not provide many of the current analytical toxicology services that are vital to protecting the food supply and ensuring public health,” said Robert Poppenga, a toxicologist at the UC-Davis lab.

Zoetis divests certain sites, products to Huvepharma

Zoetis signed an asset purchase agreement last December with Huvepharma, a European animal health company, for the divestment by Zoetis of two manufacturing sites in the U.S.: Laurinburg, NC and Longmont CO.

Huvepharma will also assume the assets and operations and, subject to approval from the lessor, the lease of a Zoetis manufacturing and distribution site in Van Buren AK. Zoetis said its employees at all three sites will transfer to Huvepharma. The agreement also provides for the divestment by

Zoetis of a portfolio of products, most of which are associated with the Laurinburg, Longmont and Van Buren sites. These products include medicated feed additives, water-soluble therapeutics and nutritionals for livestock sold in the U.S. and international markets

Publications

The new publications from FAO about genetic resources: The 57th issue of the Journal of Animal Genetic Resources that is available at: <http://www.fao.org/3/a-i5198t.pdf>

The Journal of Insects as Food and Feed (JIFF) was just launched in 2015. It covers edible insects from harvesting in the wild through to industrial scale production. The fourth issue of JIFF is now available. This issue contains a lot of Open Access articles, which you can read without a subscription. In the editorial, the editors of JIFF respond to the EFSA scientific opinion on a risk profile related to production and consumption of insects as food and feed. Also very interesting for animal scientists is the opinion paper about “Protecting the environment through insect farming as a means to produce protein for use as livestock, poultry, and aquaculture feed”.

Besides the two mentioned (Open Access) articles, this issue contains four research articles and a review article, as well as some book reviews. Articles can be read and downloaded through <http://www.wageningenacademic.com/toc/jiff/1/4>.

The new issue of Animal Frontiers is finally out. This issue title is “Animal breeding in the genomics era” (guest editors Noelia Ibanez-Escriche and Henner Simianer). This issue of Animal Frontiers begins with a review of Theo Meuwissen, Ben Hayes, and Mike Goddard exactly fifteen years since the genomic revolution in animal breeding was triggered by the publication of the seminal paper by the same authors. Other 11 articles make this publication a must-read issue. The publications

can be fully downloaded for free at: <https://www.animalsciencepublications.org/publications/af>

Animal Frontiers is a magazine published quarterly by AMSA, ASAS, CSAS and EAAP.

Meetings and Conferences

EU workshop about antimicrobial resistance, February 16th 2016

A workshop will be organized in Brussels, as part of the evaluation of the EU Action Plan against the rising threats from Antimicrobial Resistance. The objectives of the workshop will be to inform stakeholders about evaluation progress and the findings from the evaluation, and to obtain feedback from participants about the emerging findings.

International Dairy Federation Parallel Symposia, April 11th-13th 2016

The symposia will be held in Dublin, Ireland comprising of the Concentrated & Dried Milk Products Symposium, and the Cheese Science & Technology Symposium. The program is now available at http://www.idfingredientsandcheese2016.com/preliminary_programme.html

Leading experts will contribute keynote talks during a special feature on Infant Milk Formula and Adult Nutritionals which will address important developments concerning regulation, analytical methodology and novel ingredients.

Large Dairy Herd Management Conference, May 1st-4th 2016

The Conference will be held in Oak Brook IL (USA). This conference is designed to provide an opportunity for authors to obtain feedback on the chapter papers developed for the Large Dairy Herd Management e-Book. The conference includes 96 sessions, the full list of topics and editors visit the conference website. Key stakeholders in the international dairy science community will be a part of the conversation about the above topics that impact large dairy herd management. This includes but is not limited to dairy extension specialists, researchers, dairy educators, consultants, allied

industry representatives, and dairy producers.

16th International Conference on Production Diseases in Farm Animals, June 20th-23rd 2016

The conference will be held in Wageningen (the Netherlands). The objective of the ICPD is “to advance the study and understanding of health and disease in animals managed for food production”. All researchers in the field of production diseases in farm animals are invited to submit abstracts for presentation of their research results at the conference (oral or poster), within the following scientific sessions: Reproductive disorders in farm animals; Heat stress: consequences and prevention; Locomotion disorders; Adaptation to lactation; Gut health and microbiota. Production diseases in poultry; Welfare and production trade-offs; Economics of disease; Prohealth: Sustainable control of pig and poultry production disease (in cooperation with the EU project Prohealth); Free communications. The abstract submission website is NOW open – deadline for submission is 15 February 2016.

Conference about camelids reproduction, July 1st-3rd 2016.

The International Congress for Animal Reproduction organizes a conference about camelids reproduction in Wien (Austria) July 1-3 2016. More info at: <http://www.animalgenome.org/community/mail/db/6888.pdf>

JAM meeting (ADSA, ASAS, CSAS, WSASAS), July 19th – 23rd 2016

The JAM meeting this year will be in Salt Lake City, Utah (USA) at the Salt Palace Convention Centre. This year's meeting theme is Animals and Science: Big Solutions for Grand Challenges. The meeting will be followed in the same location by the ISAG annual meeting.

International Society for Animal Genetics conference, July 23rd – 27th 2016

The conference kicks off on July 23 with a scientific program devoted to an emerging area of functional annotation of animal genomes (FAANG). This first day has been organized to overlap with the American Society of Animal Science (ASAS) meeting, offering ISAG delegates the opportunity to engage with peers from the wider animal science community. The FAANG scientific program will be followed by the ISAG opening reception, and an evening at the Days of '47 rodeo. This year ISAG will honour two scientists for their accomplishments and contributions to animal genetics. Leif Andersson and Michel Georges have been nominated by the Executive Committee to be Honorary Members of the Society. This is the highest honour that ISAG bestows.

EAAP 67th Annual Meeting, August 29th – September 2nd 2016-01-2016

The 67th annual meeting of EAAP will be organized in Belfast (UK). The theme is Sustainable Food Production: Livestock's Key Role. This is Europe's largest animal science conference and will feature 1000 presentations and 1200 delegates.

Belfast is an exciting and highly accessible city. What sets Belfast apart from other cities is the warm welcome the people will give you, the sense of adventure, excitement and an unforgettable food experience to all who attend.

The content will cover the whole range of animal science including genetics, nutrition, animal management and health, physiology, cattle, sheep and goat, pig, poultry and horse production and livestock farming systems. It will also feature fish and food and there will be sessions featuring science relevant to industry.

5th Mediterranean Poultry Summit, October 20th-25th 2016

The 5th Mediterranean Poultry Summit will be held on board of a ship cruising through the Mediterranean sea, to ports in Italy, Spain and France. The innovative idea plans to stimulate interest in all

countries of the Mediterranean region and beyond, and will attract more scientists and industry people to the meetings. The 5 nights cruise will start from Savona (Italy), on October 20th 2016, and then sail to Rome, Barcelona, Marseille and back to Savona on October 25th. The idea is to have the scientific sessions during the morning and sightseeing at each port in the afternoon with entertainment on Board in the evening. The topics of the Summit will be concentrated on economics of poultry production, housing and management, alternative feed sources, food safety and disease control programs with special reference to the Mediterranean region conditions and needs. The scientific program is still to be developed. Those who register before January 31st will have a special discount.

International Symposium on work in agriculture, November 8th-11th 2016

The International Symposium on work in agriculture will be held at Maringa State University (Paraná, Brasil) from 8 to 11 November 2016. The topic of the Symposium is Complex realities and transformations in work in a diversity of farming models. The Symposium welcomes a diversity of perspectives on work in agriculture. To attract researchers who explore the changes in farming work, who take into account the diversity and dynamics of the forms of work organization in different farming models, who reflect on the future of the work of men and women, family workers and paid employees, there will be eight specific workshops. Further details of the workshop (and details to submit an abstract) can be found on the Symposium web page at <http://sites.uem.br/symposiumwa2016/>.

The deadline submission of abstracts is 15 February 2016.

XVII Iberomamericano Symposium on the Conservation and Use of Animal Genetic Resources, November 9th-11th 2016.

This event is organized by the Latin American Network on Biodiversity Conservation of Local

Pets for Sustainable Rural Development and will be held in Corrientes (Argentina). This network was created within the Latin American program. In 2008 the Association for the Conservation of Biodiversity of Local Pets for Sustainable Development (Red CONBIAND) recognized as scientific non-profit society that integrates directly with more than 500 researchers from more than 30 groups are created investigation of 21 Latin American countries, plus observers from the United States (University of Virginia), Germany (University of Stuttgart) and Italy (University of Perugia).

For more information, please visit <https://conbiand2016argentina.wordpress.com>

To know more, please visit: www.idfingredientsandcheese2016.com/

Vacant Positions

Research Fellow and Junior Research Fellow in Statistical Genetics and Genomics at Armidale (Australia)

The position location is in the University of New England in Armidale (Australia). The positions are for 2 years fixed-term full time, with the possibility of extension. The Animal Science and Genetics group at UNE is internationally highly regarded in the field of statistical and quantitative genetics. The group has a very strong expertise in large scale genetic evaluation, advanced statistical modelling and use of genomic information in large populations to predict genetic and phenotypic differences for complex traits. The core of this expertise resides at UNE in the School of Environmental and Rural Science (ERS) and in the Animal Genetics and Breeding Unit (AGBU), forming a community of over 40 statistical, quantitative and population geneticists at UNE, and with collaborating partners at CSIRO and the NSW Department of Primary Industries in Armidale.

The group is currently deeply involved in more strategic research concerning the use of genomic information for prediction of phenotype and genotype, and to develop efficient methods for using large scale and dense genotype information

in prediction. The work also includes Genome Wide Association Studies and dissection of genetic variance into various causative components for various species including livestock, mice and human. The candidates need to have completed, or nearly completed, a PhD in Animal Science, Genetics, Statistical Genetics or a related area and able to demonstrate a strong track record in research achievement along with experience with statistical analysis of quantitative genetic models and analysis of genomic data. More detail on each of these positions is available on <http://www.une.edu.au/jobs-at-une>. Closing date is 29 January 2016

Researcher in genetics/statistics at Geno SA (Norway)
Geno SA (www.geno.no) is a breeding organization for Norwegian Red (NRF), the main dairy breed in Norway. Geno's breeding program is based on science and continuous research and development in the areas dairy cattle breeding and genetics, fertility and artificial insemination. Geno's main office is located in Hamar, approx. 100 km north of Oslo.

The working area are in R&D projects and work packages, independently and in team; implementing R&D results; statistical analysis and work with genomic data (genotypes and sequence data and communication of R&D results. The required qualifications are: MSc or PhD level within genetics/statistics or mathematics; good skills in programming; good cooperation and communication skills; structured and flexible

For further information about the position, please contact Dr. Trygve R. Solberg, head of the R&D (+47 97757333, or e-mail trs@geno.no).

Postdoctoral Fellowship at CSIRO-Aquaculture breeding, genomic selection & quantitative genetics at Acton (Australia)

CSIRO Agriculture is seeking to appoint a highly motivated Postdoctoral Fellow. This role will work closely with leading genomics capability in CSIRO

and other Agriculture (plants and terrestrial animal) Programs but will apply and develop knowledge for the enhancement of commercial selective breeding programs in Aquaculture through the inclusion of genomic information. This will be done within national and international settings, and as part of a diverse multidisciplinary team. The location is Acton (ACT, Australia), the tenure is for 3 years. The requirements are: A doctorate in a relevant discipline area, such as statistical/quantitative genetics and/or applied breeding; demonstrated experience and a strong background in quantitative genetics/genomics; strong programming experience in R or Python, or a demonstrated ability to learn computer languages easily; prior knowledge or experience in applying methods for whole genome selection (genomic selection); not more than 3 years of relevant full time postdoctoral experience. The application close on January 24th. To view the full position details and selection criteria click here: <https://jobs.csiro.au/job/Canberra%2C-ACT-CSIRO-Postdoctoral-Fellowship-Aquaculture-breeding-&-quantitative-genetics/312345400/>

Postdoctoral researcher of experimental biology at Cornell University (USA)

The role of the postdoctoral researcher is to investigate the role of mitochondria in diseases at Cornell University. The candidates should have a recent doctoral degree and a strong background in cell biology, molecular biology, biochemistry and/or biophysics, with prior experience in or demonstrated potential learning work with cell culture, gene cloning and heterologous gene expression, gene knockout/editing in mammalian cells, DNA, RNA and protein purification and analysis, and mouse genetics models. Research experience on mitochondria will be a big plus. The candidate must send a cover letter with a list of 3 references and CV to: Dr. Zhenglong Gu. More info can be obtained by writing to zg27@cornell.edu or visit the website: <http://www.human.cornell.edu/bio.cfm?netid=zg27>

Animal geneticist is required at PIC in Hendersonville TN (USA)

PIC is currently hiring for a team member on the North American Genetic Services team. Job Description is to provide Genetic Services to PIC customers in North America, to provide genetic services to PIC Sales and Technical Services and to participate in development, enhancement and execution of routine genetic services to PIC internal and external customers. The candidate must have knowledge of pig production preferred, experience with processing and analyzing data. He/she must have MS in Animal Breeding required, PhD preferred, other scientific disciplines are also considered. Interested candidates can submit their resume to careers@pic.com

Postdoctoral Scholar at Iowa State University (USA)

A research position at the rank of Post-doctoral Scholar is available in the Department of Animal Science, Iowa State University in the area of Animal Breeding and Genetics / Animal Science with particular emphasis on gilt development and sow lifetime productivity.

Candidate will be expected to have a Ph.D. in Animal Breeding and Genetics or Animal Science with expertise in statistical design and data analysis. The candidate should be proficient or able to quickly learn use of computer software such as SAS, R, Excel, Word and other standard software packages as needed.

The successful candidate will primarily be responsible for assembling; collating and analyzing data from long-term study examining sow lifetime productivity. The study will take place in commercial facilities and involve collaboration among several universities, USDA and National Pork Board.

Please send the requested documents electronically as a single PDF file to stalder@iastate.edu.



Other

Here is a FAO press release on genetic diversity with title “Governments encouraged to use biodiversity and ecosystem services as strategy for climate change adaptation and disaster risk reduction”: www.waap.it/docs/fao.pdf

A short course about “mathematical modelling of infection dynamics” will be held on May 23rd-27th 2016, at Iowa State University, Ames IA (USA) by Drs. Andrea Doeschl-Wilson and Osvaldo Anacleto, The Roslin Institute & Royal School of Veterinary Studies, University of Edinburgh. Further details and registration information will follow in the near future.

The **World Animal Science News** is the Official WAAP Newsletter. This interesting update about activities of the global animal science community presents information on leading research institutions in the entire world and also informs on developments in the industry sector related to animal science and production. The Newsletter is sent to all WAAP member organizations and to their associates. You are all invited to submit information for the newsletter. Please send information, news, text, photos and logo to waap@waap.it.

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