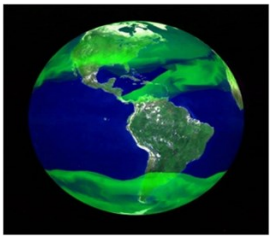
asggnment
The Animal Selection, Genetics and Genomics Network newsletter



The science behind genetic and genomic technologies that contribute to animal selection tools to mitigate methane emissions from ruminant livestock, requires a huge resource of animals of different breeds and species, and access to unique skills.

The ASGGN (Animal Selection, Genetics and Genomics Network) offers a forum and environment in which scientists from all over the world can share information and data. The network will facilitate a coordinated international research effort to achieve progress

ASGGN Meets in Dublin, Ireland

Thirty three delegates from 14 countries attended the second meeting of the ASGGN in Dublin, Ireland as a satellite to the 5th meeting of the Greenhouse Gases and Animal Agriculture Conference. Copies of the presentations and minutes from the meeting are available on the members' pages of the ASGGN website.

A draft of the White paper on "Breeding ruminants that emit less methane – development of consensus methods for measurement of methane" by the Methane Phenotype Working Group (MPWG) was presented to the group at Dublin. The MPWG was set up after the last ASGGN meeting in Cairns, Australia at which it was agreed that a common set of guidelines was required on phenotyping methane with the aim of breeding animals with lower methane emissions via genetic selection. The MPWG has come a long way with many more conundrums identified than solutions and these were put before the group at Dublin for discussion. The MPWG is to finish up the White paper, and produce a shorten version as a review paper for peer-reviewed publication.

It was agreed methane over time is the bare minimum that should be measured. We should co-measure economical important production traits and feed intake data would be nice but not necessary if we have a good proxy. It was also agreed that individual measurements have to be good enough to share, that whatever method is used there should be measures on the same animals in a reference method.

An interesting presentation on "Lessons learned from other traits" was presented by John McEwan, NZ. Utilising experience obtained from implementing measurement protocols for genetic improvement of a number of sheep traits such as fat/lean yield, faecal egg counts, CT scanning, facial eczema and flystrike the strong message was: "need only precision not accuracy" to achieve genetic gain in hard to measure traits.

Another aim of the ASGGN is to produce a Tool Kit, with a standard set of guidelines for sharing data. Two documents were presented to this effect 1) International data sharing and 2) Intellectual Property. From discussions it was decided that a working group be formed to discuss with ICAR the guidelines for formatting data for sharing. See article on page 4. Regards IP, the ASGGN position is that our members conduct Public Good research. We are committed to an IP environment that allows participants to share data for analysis purposes while protecting discovery rights of those generating proprietary information.

The final exciting outcome of the meeting, was the appointment of a new convenor of the ASGGN, Yvette de Haas, see article on page 2, and the announcement of the next ASGGN meeting to be held in conjunction with the WCGALP meeting, Vancouver, Canada, see page 6.

ASGGN
The animal selection, genetics and genomics network.

ASGGN
The animal selection, genetics and genomics network.

A Big Thank You

Hutton Oddy

Hutton Oddy and Grant Shackell have done a great job as the co-convenors of the Animal Selection Genetics Genomics Network (ASGGN) for the past 2 years. With their enthusiasm and effort, they have ensured that the ASGGN has progressed from a workshop involving 27 invited participants from 9 countries in 2011 to a mailing list of 252 from 43 countries. They have formulated the aim of the network: align international research efforts to provide animal breeding solutions for reducing enteric methane emissions from ruminant livestock. They have also set up the first working groups on: (1) defining methods for measuring methane traits in livestock, and (2) standardising data for sharing across international borders. And lastly, they have created an informative website, and a regular newsletter.

ASGGN is nowadays an active network that facilitates collaboration, discussion and critique within the scientific community in order to reduce costs and increase outputs across the entire network. In doing so, the Network provides a forum for scientists working to find breeding solutions to reduce enteric emissions, and facilitates the exchange of ideas, methods and results.

Grant Shackell

At the last network meeting in Dublin, both Hutton and Grant stepped back. Both Hutton and Grant have earned a big thank you for their effort and achievements!

New Convenor of ASGGN

At the annual meeting of the Animal Selection Genetics and Genomics Network (ASGGN) recently held in Dublin, Ireland, the leadership was handed over to me. My name is Yvette de Haas, and I work at the Animal Breeding and Genomics Centre of Wageningen UR Livestock Research. My background is in Animal Breeding and I got my degrees at Wageningen University. For a couple of years my main focus in research is on the improvement of resource efficiency of ruminants, especially dairy cattle. This includes a project to set up a breeding value for feed efficiency in the Netherlands, and an international collaboration between Australia, New Zealand, United States, Canada, Denmark, Germany, Scotland, Ireland and the Netherlands to combine data on dry matter intake of dairy cattle and to estimate direct genomic breeding values for these countries. Currently, I am also coordinating an FP7 Marie Curie EU-project called “GreenhouseMilk”.

This project holds 6 PhD-projects all helping us understand the role of energy efficiency and partitioning in the overall greenhouse gas output of dairy systems and develop innovative tools to help farmers select environmentally friendly bulls to suit their system and how to manage those bulls daughters in an appropriate manner. More recently, I am coordinating METHAGENE; which is a COST-Action with >50 scientists in 17 countries to develop protocols for large-scale methane measurements on individual ruminants for genetic evaluation.

I believe in the power of collaboration, and the synergy that can be created by sharing and discussing. I therefore look forward to being the new convenor of the ASGGN.

The 5th Greenhouse Gases and Animal Agriculture (GGAA) Conference was held in Dublin, Ireland from the 23rd to 26th June, 2013.

Previous meetings had been held in Japan (2001), Switzerland (2005), New Zealand (2007) and Canada (2010). The core programme covered diverse topics about the measurement, modelling and mitigation of animal derived greenhouse gases – with over 60 oral presentations and 300 posters presented in a very intense three days. Twenty-five of the invited papers were published as a special issue of ***animal*** and these were available to delegate at the meeting. These provide a concise and comprehensive review of the state-of-the-art for research on greenhouse gases in livestock systems.

The conference offered a venue for a range of international networks and research projects to meet over several days, before and after the main programme. Pre-conference 'techniques' workshops on rumen molecular microbiology, methane measurement and soil/manure techniques allowed delegates to see work in progress at some Irish research locations, UCD's Lyons farm and AFBI Hillsborough. Global Research Alliance Networks also took an active part in the meeting, holding a wide array of post-conference technical and business meetings. Of course the other key element of conferences is the opportunity to meet colleagues and GGAA 2013 provided many opportunities to catch up with old friends and to make new scientific contacts. It was particularly good to see a high proportion of postgraduates and post-doctoral researchers presenting their work.

In relation to the interests of the ASGGN group, there was a strong debate about the relative merits of direct and indirect approaches to select for reduced greenhouse gas emissions throughout the core programme and subsequent ASGGN meeting. John McEwan presented the first substantive data on genetic parameters for methane production from sheep. Individual methane measurements are costly and laborious, so progress has been slow, but they now have data from 1,225 animals in their analysis. John Basarab presented the indirect approach to reducing methane production per unit product through factors such as feed conversion efficiency and longevity. Full versions of these papers are available at:

Basarab JA, Beauchemin KA, Baron VS, Ominski KH, Guan LL and Miller SP 2013. Reducing GHG emissions through genetic improvement for feed efficiency: effects on enteric methane production. Animal 7 (suppl. 2), 303–315.

Pinares-Patiño CS, Hickey SM, Young EA, Dodds KG, MacLean S, Molano G, Sandoval E, Kjestrup H, Harland R, Pickering NK and McEwan JC 2013. Heritability estimates of methane emissions from sheep. Animal 7 (suppl. 2), 316–321.

Richard Dewhurst

Full length papers: animal, Volume 7 - Supplement s2 (Greenhouse Gases & Animal Agriculture Conference (GGAA 2013), 23rd - 26th June 2013, Dublin, Ireland) - June 2013.

1pg summaries: Advances in Animal Biosciences, Volume 4 - Issue 02 (Proceedings of the 5th Greenhouse Gases and Animal Agriculture Conference (GGAA 2013)) - June 2013

ASGGN ICAR working group formed

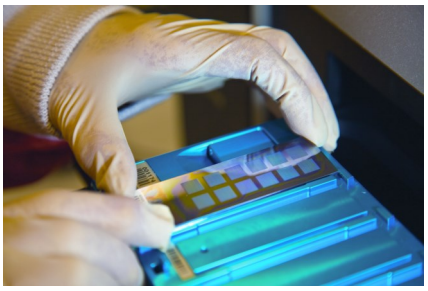
A working party has been assembled in order to develop a set of protocols that can be used to standardise international measures of greenhouse gas emissions. The proposed vehicle for dissemination of these protocols is registration with the international consortium for animal recording. ICAR sets standards and protocols for the measurement and recording of phenotypic and genotypic information. The system consistently centres around 4 major goals.

1. Implementation of continuous genetic improvement
2. Setting of clear standards and guidelines
3. Delivery of shared services
4. Facilitation of research and development

It is international and pan species with a primary function to define practical methods for recording significant numbers of records for the purpose of genetic selection. More recently ICAR has extended its interest to recording for the purpose of traceability and quality assurance, farm management and animal health. ICAR is currently interested in methane emission as a trait that affects commercial production.

In order to become a working group within ICAR, ASGGN needs to become a member of ICAR, agree on terms of reference and obtain approval from the ICAR board. There is a meeting of the ICAR Board on 22/23rd November. The prerequisite for submitting an application is a general proposal or letter outlining the purpose of the group and requesting membership.

The purpose of setting up the current working party is to submit an application to ICAR on behalf of the ASGGN network. With membership we hope to achieve:



- Consensus on a set of protocols to harmonise the sharing, meta-analysis, and comparison of international data.
- Consensus on individual animal identification.
- Standardised trait definitions including proxy traits e.g. MIR spectra, rumen community, VFA, DMI
- A set of standards for reporting of accuracy and precision requirement for high throughput data sufficient for selection of livestock for genetic gain.

Current Members are Yvette de Haas, Nicolas Gengler, Jan Lassen, Brian Wickham, Eileen Wall, Frédéric deHareng, Natalie Pickering, John McEwan, & Suzanne Rowe. Please get in touch if you would like more information or to be involved (**suzanne.rowe@agresearch.co.nz**) .

About ASGGN

The Network website is at www.asggn.org

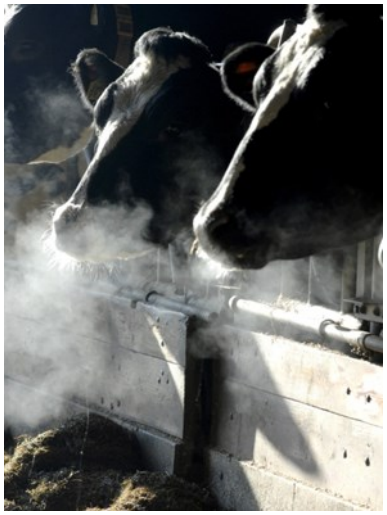
Make a note to check it frequently. For example, current news about upcoming conferences is posted as soon as we get notification. While the site is updated regularly, it also needs your input in order to remain current.

Contributions, suggestions (and corrections) can be placed on the website by forwarding them to the administrator Natalie Pickering at **natalie.pickering@agresearch.co.nz**

This is your website. Please make use of it. The only way for the website to be successful is for the members use it - and to ensure that anything of interest is placed on it.

The first thing you should do is sign up as a member. This will give you access to the Members only pages where you will find the a members directory, minutes of meetings, Network documents and a Forum option.

METHAGENE



In order to mitigate methane emission from livestock, over 50 scientists from 17 European countries have joined forces. In all these countries reliable methods to measure methane emission from cows are already being worked on, and this knowledge is now being compiled in a COST-Action (**http://www.cost.eu/domains_actions/fa/Actions/FA1302?**).

The aim of METHAGENE is to discuss and agree on 1) protocols to harmonise large-scale methane measurements using different techniques; 2) easy to record and inexpensive proxies for methane emissions to be used for genetic evaluations; and 3) approaches for incorporating methane emissions into national breeding strategies.

The European Commission provides € 600,000 for a period of four years. This grant will be used for training, meetings, exchange of scientists and travel costs, and will be coordinated by Yvette de Haas (NL) and Jan Lassen (DK).

Ovine Genome

The Ovine genome has been updated to version 3.1 and is available on, CSIRO, NCBI and Golden Path websites with preliminary annotation. It will also shortly be annotated with Ensembl gene models and numerous SNPs identified as part of creating the high density ovine SNP chip. This version is likely to be stable for at least the next 18 months and is a considerable improvement on the first ovine genome assembly. The availability of this resource will greatly aid workers examining the host genetics of lower ruminant methane emissions in a wide range of studies.

Proceedings of the 6th Dairy Solutions Symposium now available

The 6th Dairy Solutions Symposium, was held at University College Dublin (UCD), Dublin, Ireland June 20th and 21st 2012 . The topic of the symposium was 'Optimising Production Efficiencies, Lowering Environmental Impact'. A series of papers from this symposium have now been published, you can find them at Advances in Animal Biosciences, Volume 4 - Supplement s1 (Proceedings of the Dairy Solutions Symposium, 20th – 21st June 2012, University College Dublin, Dublin, Ireland) - September 2013

Rumen Microbial Genomics

RMG NETWORK
RUMEN MICROBIAL GENOMICS NETWORK

Contact:: Adrian Cookson
rmg.network@agresearch.co.nz

GLOBAL RUMEN CENSUS

Contact: Gemma Henderson
global.rumen.census@agresearch.co.nz

HUNGATE1000
A catalogue of reference genomes from the rumen microbiome.

Contact: Bill Kelly
hungate1000@agresearch.co.nz

Contributions are being invited for the next RMG networks newsletter "The Network Chronicles".
Please contact Carl Yeoman carl.yeoman@montana.edu

The Rumen Microbial Genomics Network is a global collaborative network of researchers with a common set of principles and guidelines in rumen microbial genomics to underpin the development of worldwide CH_4 mitigation and rumen adaptation technologies.

The Global Rumen Census project recognises that microbes play an important role in the nutrition and health status of ruminants, as well as in the production of the greenhouse gas methane. This project aims to survey the diversity of microbes present in rumen samples obtained from a range of locations and farming situations covering a range of ruminant species, breeds, feeds and locations.

The Hungate 1000 project aims to produce a reference set of sequenced genomes of available cultivated rumen bacteria and methanogenic archaea, together with representative cultures of rumen anaerobic fungi and ciliate protozoa.

ASGGN Meeting Vancouver, Canada
17th August 2014

The next international meeting of the ASGGN will be as a satellite immediately before the World Congress on Genetics Applied to Livestock Production

This will be the 4th annual meeting of the ASGGN, following on from the inaugural workshop held in Auckland, NZ (May 2011) and the meetings held in conjunction with ISAG, July 2012 (Cairns, AUS) and GGAA, June 2013 (Dublin, Ireland) .

The joint US-Canada organizing committee is proud to welcome you to the 10th World Congress on Genetics Applied to Livestock Production (WCGALP) being held from 17 – 22 August 2014 at the Westin Bayshore Conference Center situated on the bay in the gorgeous city of Vancouver, British Columbia, Canada.

This congress is the premier conference for researchers and professionals involved in genetic improvement of livestock. Delegates from around the world gather every four years to attend the scientific program and network with colleagues. An impressive list of opening and plenary speakers is being confirmed. As the opening speaker, Prof Bill Hill will give a historical prospective of the WCGALP on Sunday evening prior to the Opening Reception. Also, three of the daily plenary speakers have been confirmed; delegates will hear from Stephan Beck, Jerry Taylor and Peter Visscher.

Check this site for more information as the date approaches. http://wcgalp.com/

Registration is now open for the 10th WCGALP, to get the discount register before 1st January 2014, and don't forget to tick the box to also register for the ASGGN workshop to be held on Sunday 17th August.

Upcoming Conferences

Plant and Animal Genomes XXII: January 11-15th 2014, San Diego

The Plant and Animal Genome XXII Conference is designed to provide a forum on recent developments and future plans for plant and animal genome projects. Consisting of technical presentations, poster sessions, exhibits and workshops, the conference is an excellent opportunity to exchange ideas and applications on this internationally important project. The deadline for early bird registration is November 1, 2013. All PAG XXII participants are invited to submit abstracts for the poster session. Abstract submission deadline is November 1, 2013. www.intlpag.org/ .

International Society for Animal Genetics, July 2014, Xi'an, China

The 34th conference of the International Society of Animal Genetics (ISAG) will be held in July 2014 in Xi'an, China (www.isag2014.com). ISAG is devoted to the study of the immunogenetics, molecular genetics and functional genomics of economically important domesticated animals. It is a scientific society that promotes scientific research and facilitates communication and dissemination of knowledge among scientists worldwide. For the first time in its remarkable 60 years history, the conference is now moving to China.

GPLER3

A third and final funding round of the New Zealand Fund for Global Partnerships in Livestock Emissions Research (GPLER Fund) opened on Monday 5 August 2013.

The GPLER Fund is a contestable international research fund set up by New Zealand in support of the objectives of the Global Research Alliance on Agricultural Greenhouse Gases, in particular its Livestock Research Group.

Key features of the third funding round

- Maximum of NZ$10 million available for the third funding round. Successful projects are expected to be in the range of NZ$1-4 million and lasting up to four years in duration. Projects from Round 3 are expected to start from March 2015 and must end by 30 June 2019.

- The third funding round follows the same two-stage application process as the previous rounds, beginning with submitting a short Expression Of Interest (EOI). Successful EOIs are then invited to submit full proposals. The call for EOIs is now open. EOIs must be submitted by 2 December 2013 (2pm New Zealand Standard Time).

Further details on the GPLER Fund, the grand research challenges, the application process for the third funding round and the requisite forms can be downloaded from **www.mpi.govt.nz/nzlivestockemissionsfund**. Please read these documents carefully before beginning the application process.

Closing date for EOIs

2nd December 2013

(2pm NZ ST)

Please circulate this information to your science networks, colleagues and other interested individuals.

For further questions please contact to Sue Escott-Brown at the Ministry for Primary Industries: **sue.escott-brown@mpi.govt.nz**

ERA-NET Plus action "Climate Smart Agriculture"

A call for pre-proposals for adaptation of European agriculture to climate change in its broad sense is now open until December 2nd, 2013 under the ERA-NET Plus action "Climate Smart Agriculture: Adaptation of agricultural systems in Europe" co-funded by the Seventh Framework Programme (FP7) of the European Commission. Four areas are highlighted as key to advancing research on :

Closing date for EOIs

2nd December 2013

(1pm CET)

1. genetics and breeding of animals and plants to increase resilience to climate change;
2. pests and diseases of animals and plants linked to climate and posing significant risks;
3. adaptive management of water and soil resources; and
4. options for adapting agricultural systems.

- The indicative total available budget amounts to 20 M€ from 22 national funding organisations from 18 countries and the European Commission.

- Two-stage application process, beginning with submitting a pre-proposal. Successful pre-proposals will be notified on 20th January 2014, who will then be invited to submit a full project proposal by 1st April 2014. Selected projects should begin in September 2014.

More information can be found at: **http://www.faccejpi.com/FACCE-activities/ERA-NET-Plus-on-Climate-Smart-Agriculture**

Global Research Alliance Senior Scientist (GRASS) Award

Supporting research in Agricultural Greenhouse Gases

The New Zealand Government in support of the goals of the Global Research Alliance is funding senior scientists from Alliance member countries to participate in an exchange programme to enhance collaboration and the building of mutually beneficial research partnerships between New Zealand and other Global Research Alliance countries.

Focus areas

- Methane emissions from livestock and livestock wastes
- Nitrous oxide emissions from livestock wastes
- Enhancement of pastoral soil carbon sinks
- Integrated whole farming systems impacts at all scales as they relate to livestock emissions.
- National inventory development as it relates to livestock emissions

Eligibility

To be eligible, you must:

- Have a PhD or be a scientist with at least 5 years experience participating in/leading major projects that align to the priorities of LEARN, the Alliance or other relevant national strategies.
- Demonstrate impact and leadership in your professional field.
- Be able to contribute to scientific research and its application in your home region and the larger Alliance network, based on your networking record.
- Work in collaboration with a New Zealand research organisation.
- Be resident and normally employed on a permanent contract by a research organisation in an Alliance member country.

Funding

The exchange must be between 6 weeks and 6 months duration.

- Up to $30,000 for 6 months (pro rata for less than 6 months) will be provided to recipients to cover actual and reasonable living expenses.
- Up to $5,000 will be provided for economy airfares and travel/medical insurance.
- Up to $5,000 will be awarded for associated research costs.

For more details refer to the LEARN Website: www.livestockemissions.net or email the New Zealand Agricultural Greenhouse Gas Research Centre:
enquiry@nzagrc.org.nz

Contact ASGGN

Convener	Yvette de Haas	yvette.dehaas@wur.nl
Webmanager	Natalie Pickering	natalie.pickering@agresearch.co.nz
Website:		www.asggn.org