

Workshop on Genome Edited Farm Animals

STANDING COMMITTEES / WORKSHOPS

Organised by a standing committee

no

Date and meeting time:

24th July 2016 at 14.00hrs

Chair, name and contact email:

Bruce Whitelaw
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Agenda / programme

14.00 Introductory remarks, Bruce Whitelaw

14.15 CD163- a gatekeeper for susceptibility to PRRSV, Randy Prather (University of Missouri)

14.45 Characterisation of CD163 modification pig for PRSSV resistance, Chen (China Agricultural University) – did not turn up

15.00 Heritable multiplex gene editing via CRISPR/Cas9 exhibits no detectable genome-wide off-target effects in sheep, Xiaolong Wang (Northwest A&F University)

15.30 Break

16.00 Generation of novel glycosylated anti-CD20 monoclonal antibody in milk of transgenic cattle, Ran Zhang, (China Agricultural University)

16.15 Skin-specific transgenic expression of ovine b-catenin in mice, Wang (China Agricultural University) – did not turn up

16.30 Targeted IGF1 promoter modification in mice using small intestine-specific regulatory element, Zheng (China Agricultural University) – did not turn up

16.45 Concluding remarks, Bruce Whitelaw

Number of participants at meeting:

during the session ranged between 30 and 80

Summary of the meeting including votes, decisions taken and plans for future conferences

We have successfully held a Workshop on Genetically Engineered Livestock at Xi'an (2014) and Salt Lake City (2016). I, unfortunately due to unforeseen family commitment, was not at Xi'an (I am grateful to Alan Archibald who stepped in at short notice to chair in my absence) but did chair the Workshop in Salt Lake City: at one stage the Canyon B room was fully occupied, demonstrating the interest in this topic by the ISAG participants.

There were three talks:

- Randy Prather presented his exciting progress with pigs null for CD163 which are resistant to PRRSV – a project that bridges academia and industry

- Xiaolong Wang presented work using CRISPR/Cas9 in sheep arguing for a lack of off-targets – this argument was vigorously questioned by the workshop participants.
- Ran Zhang presented her data on production of a monoclonal antibody in cow's milk – this transgenic story enabled discussion about the similarities and differences between genome editing and transgenic technologies.

These presentations were a natural follow on from the very well attended Plenary Session in the morning where Randall Platt and Scott Fahrenkrug expounded the virtues of genome editing.

This year's Workshop had 6 scheduled speakers. The invited speaker Randy Prather (Missouri) plus five selected talks from submitted abstracts (all from China). Only two of the Chinese presenters (from China Agricultural University and Northwest A&F University) actually attended the conference (due to visa issues) which released more time for discussion. This turned out to be very useful as a full and enthusiastic debate about why we should have this Workshop at ISAG ensued. Topics covered scope and how this forum/Society could contribute and complement other activities in this space (e.g. UC Davis Tahoe Conference, PAG, ISTT, IETS).

There was unanimous support for the *Workshop* by the participants.

Although many topics were discussed, several aspects have particular importance with regard to this proposal:

- To only address breeding or more broadly reverse genetics / functional genomics (as a route to proving causation) – the latter being preferred
- Focus on Genome Editing – but include transgenic studies were addressing genome analysis and applied genetics
- The need to inform and regularly update ISAG members of advances in the technology
- That this technology is international in impact and activity
- The opportunity to create a 'knowledgeable group' in this topic – to assist communication to other stakeholders (e.g. media, public); enabling ISAG to participate in the dialogue aiming to ensure appropriate stewardship of this technology
- The presence of both academia and industry at the Workshop – the mix was considered important but that the Workshop should be academic orientated
- To cover all animal species (the Plenary and Workshop presentations this year only covered pig and sheep)
- Concern around the stigma associated with the phrase "Genetic Engineering" – with lively debate about alternative Workshop titles (but no consensus)

To address the comments above while recognising ISAG's guardianship role of animal molecular genetics, I propose a new Workshop title of Genome Edited Animals; and for the Workshop in Dublin next year to have a broader species coverage, specifically to include chickens and hopefully fish. Ample discussion time will also be allocated (to build on the discussion that happened this year).

If the Executive Committee was to support this proposal I would be happy to chair the Standing Committee and would seek volunteers (by email) to be Members of the Standing Committee (by end of September).

Committee members (the new committee)

Chair	term of service	E mail address:
Bruce Whitelaw	2016-2020	bruce.whitelaw@roslin.ed.ac.uk
Other members	term of service	E mail address:
Xiaolong Wang	2016-2020	xiaolongwang@nwafu.edu.cn
Tad Sonstergard	2016-2020	tad@recombinetics.com

[I will seek an addition member from participants at the next ISAG in Dublin, ideally to reflect geography (from Australia, Europe and South America) and species (ideally, avian and fish)]

SIGNATURES

Chair

