

Short webinar report – 26th March 2021

ANIMAL GENOME EDITING IN THE SPOTLIGHT

Welcoming – Ana Granados Chapatte, EFFAB & FABRE-TB

The third session of the webinar series #BreedersTalkGreen, titled *“Animal Genome Editing in the Spotlight”* was opened by Ana Granados Chapatte, EFFAB’s Director and Secretary General of FABRE-TB. Ana highlighted the strong role of science and research in the program of the series of webinars #BreedersTalkGreen. Ana also explained the EFFAB commitments to responsible and balanced breeding shown through – Code EFABAR. The Code of good practices for responsible breeding is a tool to show those commitments to the public and policy makers, responsiblebreeding.eu.

To introduce the topic, Ana also showed the main outputs of a survey conducted amongst FABRE TP members in 2019. Members of FABRE TP think that GE could be one more tool in the toolbox of animal breeders to improve animal health and welfare.

Frank Swartenbroux, - Policy Officer, Biotechnology unit - DG SANTE, European Commission – “The European Commission’s study on New Genomic Techniques”

Frank started his presentation by explaining how the Court of Justice’s judgment (CJEU C-528-16) in 2018 has changed the mutagenesis exemption foreseen in the GMO directive. The exemption is now only applicable for *“conventional methods used in several applications and with long safety history”*. This result in new genomic techniques (NGTs) that are fully subject to the GMO legislation in EU. Within the scope of the Council request (EU) 2019/1904, a profound in-house study is being done by DG SANTE on the state of play of implementation of EU GMO legislation for novel genomic techniques. The NGT study will be completed by an overview on the risk assessment of NGT plants made by EFSA, a report performed by the EU Joint Research center (JRC) on the current and near future scientific and technological developments. The study is expected to be published on 30 April 2021.

Anna Wargelius -Virgin Salmon

Anna Wargelius (MSc, PhD) works as Group leader, Principal Scientist at the Institute of Marine Research (IMR) in Norway. Anna’s presentation was centred around her daily work with gene editing technology focusing on the lowest level of targeted mutagenesis interesting to increase the sustainability of salmon farming. She explained the “Virgin Salmon” project which aims to avoid the mix of salmon farmed populations with wild ones if escapes occur. This is a major environmental concern for aquaculture farming. Anna explained a novel approach to achieve sterility of farmed salmon, which can be accomplished by knocking out the *dnd* gene using CRISPR-Cas9. The method will allow to produce salmon genetically sterile but at the same time fertile. This means the salmon can still produce a lot of sterile fish, so the method shows great potential for implementation in the field.

Sigrd Bratlie - A proposal for a smart and modern EU regulation

Sigrd Bratlie is Project leader at NCE Heidner Biocluster and a member of the GENEinnovate research

consortium on sustainable use of genome editing in plant and animal breeding in Norway. EFFAB members in Norway are also involved in this project. Sigrid's presentation was about the legal and societal aspects of genome editing and a proposal for a smart and modern regulation. The public opinion on genome editing can vary and depends on the purpose for which technologies are used for. Sigrid showed statistics in her presentation illustrating that the majority is positive towards traits that can be perceived to have benefits. The responses are however less positive and in fact skeptical when it comes to using genome editing to increase productivity in animals and for what can be perceived as more trivial traits such as pinching color. This very well illustrates that genome editing is not just something people are "for" or "against" as a technology, it is all about how it can be potentially used. The debate in Europe is still very polarized which is also directly reflected in the current regulatory system.

One of the consequences with the current regulation is that it favors the bigger businesses as it implies a very expensive approval process. Different regulations and labelling requirements for identical products leads to lower industry interest and enforcing legislation will indeed be challenging. On the other hand, deregulation is not an option. If so, there will be no oversight and no option to assess risk or other consequences, such as impact on sustainability and, no real consumer choice if there is no obligation in labelling such products. All these results were the background of a project in Norway. The main question asked on that report was "How can we utilize the potential of genetic engineering in a safe and sustainable way that promotes trust and transparency?". The solution they came up with when working on the report was a more differentiated regulatory framework that better reflects the different uses of genetic engineering. It is a three-tiered framework based on the nature of the genetic change.

Dr. Franck Meijboom, Associate Professor of Ethics at the Utrecht University – "Broadening the debate on Breeding: on the Ethical and Societal dimensions of innovations in livestock breeding".

In light of the ethical debate on breeding, Franck underlined the importance of including socio-ethical dimensions. Although the innovations in animal breeding are not possible without expertise in scientific fields, there are more than technical challenges that must be addressed. We should focus on "*why and for whom*" questions, rather than "*how and what*". We need to broaden the debate and these questions come from breeding, technology, and animals' aspects and ethics must fit in.

How to increase public acceptance? This is a relevant part of discussion, and it must be included from the beginning, not just added at the end. For GE, it should be included in steps towards practical implications and gene editing in practice. Experts are essential, but not enough while public engagement is essential. An important take away from Franck's presentation was how new technologies often can make the existing debate much more explicit. Franck pointed out that by using new technologies, new issues will arise. Again, Franck underlined, we must not limit the discussion. Questions, awareness, and openness will lead to justice. Professionals must therefore act in a responsible way and answer all kinds of questions from society about what they are doing, and why they are doing it.

Q&A Session

The presentations were followed by an insightful Q&A session. Laurent Schibler, Chairman of FABRE TP presented FABRE-TPs conclusions on Genome Editing. He explained that there has been an ongoing

discussion looking into the different visions, in order to find a common vision for animal science and for the breeding sector. This technology provides great opportunities to improve knowledge and to meet diversity of social concerns. He highlighted that Genome Editing application in farm animals is almost the same as selection. Genome Editing should not be prohibited by any regulations, but it should be regulated. Genetically modified organisms' regulations are not relevant. In addition, GE is not the solution for all the traits we are focused on in animal breeding. It can only be used for very few traits which are driven by small parts of the genome, like disease resistance.

Chairman of EFFAB, Craig Lewis informed the webinar that it is a humble privilege for EFFAB to represent its' members who are the voices of breeders of multiple species. These species include aquaculture cattle, sheep, goats, poultry, pigs and currently also moving into insects. These breeders represent the actual farmers in the sector across Europe. For centuries, we have been progressive in terms of breeding in Europe and globally leading for innovation in terms of selective breeding across multiple species. This debate is about seeing where Europe fits into a more global breeding platform. This is testament to the work of EFFAB. Shortly after, Craig ended his intervention by highlighting that Code EFABAR shows that European Breeders and producers are proactive in trying to make sure that we have sustainable, balanced, and responsible breeding. In the context of animal breeding, it is key to focus on the core principles of innovation:

- Utilising technology in the context of animal breeding.
- Proactively being in open dialogue with the citizens of Europe.

All stakeholders in the supply chain must be heard. *“Doing the right thing for the animal is core to what we do and making sure that animal well-being and sustainable breeding is at the core of what we do”.*

Discussion

Following the presentations, a panel discussion and a Q&A session were held. The discussion session was moderated by Cagla Yuksel Kaya Kuyululu, Senior Project Manager at EFFAB. A wide range of questions came from the audience, including NGOs attending and their concerns on the way we breed animals and why GE is needed. To conclude the third session of the Breeders' Talk Green series, member of the Steering Committee of EFFAB, Ashie Norris, thanked the over 350 people who attended the webinar, the speakers and team EFFAB for the organisation. Ashie indicated that we could have spent a lot more time on the issue and indicated that we are slow when it comes to developing a framework around how we can legislate for genome editing. Breeding is a global activity, and we need to bring the public along with us, and we need legislators to help us to do this. For that, we need a framework. Covid-19 showed us that in Europe, politicians are not always at the forefront of scientific innovation. A key learning from the pandemic is that we must listen to the science.

EFFAB and FABRE-TP would like to thank all participants and speakers for actively joining the session and for all their inputs. We are looking forward to continuing our webinar series “Breeders talk Green”.

If you have any questions, ideas or input please contact us via email: effab@effab.info.