

Europe Horizon 2020: an update

Jean-Charles Cavitte
European Commission, DG AGRI

(presented by E. Giuffra)

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The presentation shall neither be binding nor construed
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Commission

Research call under Horizon 2020 societal Challenge 2 (incl. agriculture)

SFS-30-2018-2019-2020: Agri-Aqua Labs

Scope A. [2018]: Understanding the genome of farmed animals, its expression and translation into traits

Background

Our understanding of the biological mechanisms underpinning traits remains limited. A major goal of biological research is to use genome information to predict **complex outcomes**.

FAANG initiative: A coordinated international action to accelerate genome to phenome (<http://www.faang.org/index>)

There are 3 recent USDA NIFA awards (<https://goo.gl/rZ5Y4s>) addressing functional annotation of genome of Pig (C. Tuggle, Grant 2018-67015-27501); Cattle (P Ross, Grant 2018-67015-27500) and Poultry (Y Drechsler, Grant 2018-67015-27499)



Related projects:

FAANG-Europe (COST action; <http://faang-europe.org/>)



Scope A. [2018]: Understanding the genome of farmed animals, its expression and translation into traits

Requirements

- **Map out** what part of farmed animal genomes are active and under which circumstances, **characterise** the resulting phenotypes and **assess** how phenotypes are affected by genetic and epigenetic changes. **Bioinformatic analyses**. Help to develop or extend **terminologies** (ontologies) to describe, represent and standardize annotation.
- **Target one or more farmed animal species with high-quality genome assemblies** (in particular cows, chicken, pigs, sheep, salmon and other relevant species), focussing on specific tissue panels, and address correlations between normal and abnormal situations. **May** target different physiological and developmental stages and different breeds.
- **Use FAANG** standards/core assays and coordinate with other projects to minimise overlaps.
- Data should be submitted to **relevant European biological data archives** to ensure they are available to the community (EMBL-EBI).
- **Develop** & test, where appropriate, tools to measure related phenotypes, including intermediate phenotypes. *May* include biomarkers and proxies, sensors.

Scope A. [2018]: Understanding the genome of farmed animals, its expression and translation into traits

Cross-cutting aspects

- Topic applies to **both terrestrial and aquatic animals**
- Proposals should include a **task to cluster with other projects financed under this topic.**
- **International cooperation**
- Open Science

Budget

- Indicative EU contribution/project: EUR 6 million.
- The **18 million euro budget** for the topic would enable selection of 3 projects.

Outcome of call:

- 3 proposed projects selected covering main categories: cattle; pig and chicken; fish
- On-going contractual preparation for the 3 projects

Some of the H2020 SC2 collaborative projects with farm animal genomics

GenTORE: *Genomic management Tools to Optimise Resilience & Efficiency to optimise cattle resilience and efficiency (R&E) in widely varying environments. Applicable across the full range of systems (beef, milk and mixed).* <http://www.gentore.eu/project.html>

SMARTER: *small ruminants,* https://cordis.europa.eu/project/rcn/215954_en.html;

Treasure: <https://treasure.kis.si/> (genetic resources; pigs; some genomics)

Feed-a-Gene : <https://www.feed-a-gene.eu/> (monogastrics; genetics; some nutrigenomics)

SusTradeOff, SusSheP & ReDiverse: ERA-NET SusAn projects

<http://www.era-susan.eu/> (genetics&some genomics: production/health in sheep-poultry; fertility sheep; **GenRes** dairy cattle)

SAPHIR & Parafishcontrol on animal health (HPI, vaccinology) including genomics work.

FP7 projects



And... GENE2FARM, 3SR, etc

Next steps/possibilities (1)

Under Horizon 2020 SC2, call 2020

On (terrestrial) livestock:

Draft topic on "Genome and epigenome enabled breeding", planned for the call 2020, to partly build on projects selected under SFS-30

On livestock microbiome:

Draft topic on "Healthy livestock microbial ecosystem for sustainable production"

(No special focus on international cooperation)

Next steps/possibilities (2)

Next EU Framework Programme for research and innovation: "Horizon Europe" (HEU)

- Proposals subject to institutional discussions. **HEU due to start in 2021**
- **Proposed budget increased** for agriculture research and innovation under Cluster 5 ("food and natural resources")
- **Important focus on innovation**, but also enabling/basic science (not only fundamental thorough European Research Council)
- **Highlight on international cooperation**

Next steps/possibilities (3)

Next EU Framework Programme for research and innovation: "Horizon Europe" (HEU)

International cooperation, enabling science, infrastructures, are highlighted in the "strategic approach to EU agricultural research and innovation" (final outcome of an European Conference in 2016)

The IRC (International Research Consortium) idea proposed by the DG AGRI services in 2015 (at the GO-FAANG meeting) was not taken up. However, the services are still ready to consider **how to further contribute to the strengthening of international cooperation in livestock genomics, not least FAANG.**

In this framework, an EU research/networking initiative, able to coordinate European countries into an international initiative, could be an option to be considered under the forthcoming HEU

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