



GENE-SWitCH

The regulatory GENome of SWine and CHicken:
Functional annotation during development

FINAL CONFERENCE EVENT



6th November 2023, 15:30 -
8th November 2023, 13:30 CET



University Foundation, Brussels
Meeting room: Felicien Cattier



Livestream available
from gene-switch.eu



REGISTER NOW

DAY 1: 6th November 2023 15:30-19:10 CET



15:30 Registration & Welcome by **Elisabetta Giuffra** (coordinator) & **Hervé Acloque** (deputy coordinator) - INRAE

16:00-19:10 Session 1: Identification and characterization of functional genomic elements

- **16:00** Introduction by **Alan Archibald** (UEDIN)
- **16:10** GENE-SWitCH: Samples collection and assays-by-sequence provided to the scientific community by **Hervé Acloque** (INRAE)
- **16:30** Profiling chromatin accessibility and gene expression during pig and chicken development by **Sylvain Foissac** (INRAE) and **Sarah Djebali** (INSERM)
- **17:10** Comparative analysis of methylation and epigenomic states across developmental stages by **Martjin Derks** (WUR)

17:30 - 17:50 Coffee break

- **17:50** Uncovering early transcriptomic landscape with ISOseq by **Sebastien Guizard** (UEDIN)
- **18:10** Q&A Session

18:30-19:10 Invited Keynote Speaker **Jack C.M. Dekkers** (Iowa State University)
“Genetics and genomics of potential indicator traits for disease resilience of grow-finish pigs”

19:30 Working DINNER at the conference centre

DAY 2: 7th November 2023
9:30-18:30 CET



09:30-13:00 Session 2: Implementing FAANG innovation for precision breeding

- **9:30** PART 1 - Introduction by **Elisabetta Giuffra** (INRAE)
- **9:50** Long-term effects of high-fiber maternal diets on the functional genome of pig offspring - Andrea Rau by **Andrea Rau** (INRAE)
- **10:20** PART 2 - Introduction by **Marco Bink** (Hendrix Genetics)
- **10:40** Using Bayesian variable selection, Machine Learning and individual omics for genomic prediction by **Mario Calus** (WUR)
- **10:55** Identification of transcriptional regulatory variants in pig duodenum, liver, and muscle tissues by **Maria Ballester** (IRTA)

11:10 - 11:30 Coffee break

- **11:30** Dynamic inclusion of functional genome annotations to improve the accuracy of genomic prediction in pigs by **Bruno Perez** (Hendrix Genetics)
- **11:45** Fine-mapping growth-related haplotypes in chickens by **Carl-Johan Rubin** (UU)
- **12:00** Sub-setting GWS SNPs based on functional annotations in chickens by **Andreas Kranis** (UEDIN)
- **12:15** Q&A Session

12:45-14:15 Networking lunch

14:15-15:00 Invited Keynote Speaker Laurent Franz (Ludwig Maximilian University)

“Ancient DNA, Extinction, Domestication and the Cost of Modern Farming”

15:00-18:30 Session 3 - Celebrating 10 years of FAANG

15:00 Introduction by FAANG coordinators **Elisabetta Giuffra** (INRAE), **Emily Clark** (UEDIN), **Huaijun Zhou** (University of California) & **Chris Tuggle** (Iowa State University)

- From FAANG to Fork: Highly annotated genomes as resources to improve farmed animal production by **Emily Clark** (UEDIN)

15:30 Main summary talks to present GENE-SWitCH outcomes

- Progress of integrated and comparative analyses by **Martijn Derks** (WUR)
- Ensemble gene and regulatory annotation for pig and chicken by **Garth Ilesley** (EMBL-EBI)
- Using functional and other biological data in genomic prediction by **Mario Calus** (WUR)
- Epigenetic effects of maternal high fibre diets in utero and the offspring by **Jerry Wells** (WUR)

16:30 - 16:45 - Coffee break

Round table: The functional genome for future Genotype-to-Phenotype research and applications in swine and poultry

16:45 - 17:15 Session 1: Genome annotations across developmental phases

- Chairs: **Hervé Acloque** (INRAE) & **Megan Davey** (UEDIN)
- Panellists: **Huaijun Zhou** (University of California), **Ramiro Alberio** (University of Nottingham), **Gabriel Costa** (University of Liege/BovReg), **Dan McQueen** (UEDIN/ AQUA-FAANG Project)

17:15 - 17:45 Session 2: The epigenetic impact of diets

- Chairs: **Elisabetta Giuffra** (INRAE) & **Jerry Wells** (WUR)
- Panelists: **Anne Gabory** (INRAE), **Carlos Guerrero Bosagna** (Uppsala University), **Chris Tuggle** (Iowa State University)

17:45 - 18:15 Session 3: Genomic selection of swine and poultry

- Chairs: **Marco Bink** (Hendrix Genetics) & **Mario Calus** (WUR)
- Panelists: **Romi Peni Subira** (University of Lleida), **Eli Grindflek** (Topigs Norsvin)

18:15 - 18:30 Conclusive remarks by **Elisabetta Giuffra** and **Hervé Acloque** (INRAE)



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FINAL CONFERENCE EVENT

DAY 3: 8th November 2023
9:00-12:30 CET

POLICY & ETHICS WORKSHOP

in collaboration with the GERONIMO Project



9:00 Registration and Welcome Coffee

9:15 Opening – GENE-SWitCH: achievements and perspectives for stakeholders by **Elisabetta Giuffra** (INRAE)

9:35 What's new in GERONIMO by **Tatiana Zerjal** (INRAE) and **Mario Calus** (WUR)

9:55 Introduction to Policy & Ethics Workshop: on the need to include stakeholders in the debate on ethics by **Franck Meijboom & Koen Kramer** (UU)

10:30 – 10:45 Coffee break

10:45 Interactive Session in subgroups led by **Franck Meijboom & Koen Kramer**, (UU)

- Central Questions: identifying relevant ethical issues, how to include/ deal with ethical concerns in policy, how to move forward?

12:00 Summary of each group discussion

12:15 Closure of the interactive session by **Franck Meijboom** (UU)

12:20 Conclusions by **Elisabetta Giuffra, Hervé Acloque and Tatiana Zerjal** (INRAE)

12:30 Closure of the GENE-SWitCH Final Conference by **Elisabetta Giuffra** (coordinator)

12:30 - 13:30 Networking Lunch



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