

G2P in a dish WORKSHOP

JOUY-EN-JOSAS, FRANCE



3-7

FEBRUARY, 2025

Scientific Committee:

Michele Boichard (INRAE, France), Tiziana Brevini (Univ. Milan, Italy), Emily Clark (EMBL-EBI, UK), Richard Crooijmans (WU, Netherlands), Fulvio Gandolfi (Univ. Milan, Italy), Elisabetta Giuffra (INRAE, France), Marta Godia (WU Netherlands), Matthew Kent (NMBU Norway), Eduard Murani (FBN Germany), Alexey Sokolov (EMBL-EBI, UK), Yogmatee Roochun (EMBL-EBI), Ole Madsen (WU, Netherlands), Ramiro Alberio (Univ. Nottingham, UK), Christian Tiambo (CTLGH Kenya), Finn Grey (Univ. Edinburgh, UK), Bertrand Pain (INRAE France), Joseph Robertson, (NMBU Norway), Sigbjørn Lien (NMBU Norway), Kate Sutton, (Univ. Edinburgh, UK), Bart Gadella (Utrecht Univ. Netherlands).

Scientific Local Organizing Committee:

Celia Carbonne, Giorgia Egidy and Delphine Muller (INRAE, Div. Animal Genetics, GABI Unit); Bertrand Collet and Mathilde Peruzzi (INRAE, Div. Animal Health, VIM Unit); Claire Cherbuy and Matthieu SIMION (INRAE, Div. MICA, Micalis Unit).

Communication and logistics group:

Geena Cartick, Ana Granados, Maureen Mc Donald and Remark Temali (EFFAB, Belgium), Wendy Brand-Williams and Temitope Oluwafisayo Ige (INRAE, Div. Animal Genetics, GABI Unit)

WITH THANKS TO THE STAFF OF THE GABI UNIT
FOR PROVIDING LOCAL ASSISTANCE

WORKSHOP AGENDA

DAY 1, Monday, February 3

*IN BLUE: HYBRID SESSIONS

All sessions, breaks and lunches will be held in building 440 near the entrance unless specified otherwise. Other rooms are available for personal work if needed (please contact local INRAE organizers)

8:45 - 9:15: Welcome

**G2P RESEARCH FOR DOMESTICATED ANIMALS
WITHIN THE EUROPEAN RESEARCH LANDSCAPE**
Chair: Tina Hartwig (FBN, Germany)

9:15 - 9:30: Two years into EuroFAANG – Results, Services and Impact - Tina Hartwig (FBN, Germany)

9:30 - 9:45: What's next? Merging EuroFAANG and PhenoLive to GenoPHEnix - Etienne Labussière (INRAE, France)

9:45 - 10:15: *Coffee break / hanging posters*

10:15 - 10:40: *In vitro* G2P "3Rs" research in domesticated species - Elisabetta Giuffra (INRAE, France)

10:40 - 12:30: Program outline, round table introduction of lecturers and trainers, and pitches of individual participants - Moderator: Giorgia Egidy (INRAE, France)

12:30 - 13:30: Lunch

**BIOBANKING AND IN VITRO GENOME EDITING:
THEORY, RESEARCH EXAMPLES AND PRACTICE**
Chair: Richard Crooijmans (WUR, Netherlands)

13:30 - 13:50: Biobanking *in vitro* models - Michele Tixier-Boichard (INRAE, France)

13:50 - 14:10: Genome editing in fish cell lines: investigating genes involved in the antiviral response - Bertrand Collet (INRAE, France)

14:10 - 17:00: Practical session

- Session 1: *In vitro* models biobanking (INRAE) - move to building 320 - OR
- Session 3b: Light sheet imaging - OR
- Session 4: Culture, transfection and imaging of fish cell lines (INRAE)

17:00 - 17:45: *Snack / Poster session in main hall*

WORKSHOP AGENDA

DAY 2, Tuesday, February 4

*IN BLUE: HYBRID SESSIONS

**GENOME EDITING:
THEORY, RESEARCH EXAMPLES AND PRACTICE**
Chair: Giorgia Egidy (INRAE, France)

9:00 - 9:30: Extending whole genome screening to non-model organisms
- Victor Boyartchuk (NMBU, Norway)

9:30 - 10:10: High throughput phenotypic screens in livestock species
- Finn Grey (Univ. Edinburgh, UK)

10:10 - 10:30: *Coffee break*

10:30 - 12:30: Practical session
Session 2: Design of CRISPR/Cas9 experiment (Univ. Edinburgh)

12:30 - 13:30: *Lunch*

**METADATA AND STANDARDS FOR G2P RESEARCH:
THEORY, RESEARCH EXAMPLES AND PRACTICE**
Chair: Christiaan Henkel (NMBU, Norway)

13:30 - 14:00: Developing metadata and standards for G2P research:
Examples from the FAANG Consortium - Emily L. Clark (EMBL-EBI, UK)

14:00 - 16:30: Practical session
Session 5: Metadata standards (EMBL-EBI)

16:30-17:00: Organoids: A tool for studying gastrointestinal tract diseases in porcine models - Tatiana Flisikowska (TUM, Germany)

17:00 - 17:45: *Snack / Poster session in main hall*

WORKSHOP AGENDA

DAY 3, Wednesday, February 5

*IN BLUE: HYBRID SESSIONS

G2P IN ORGANOIDS 1
THEORY, RESEARCH EXAMPLES AND PRACTICE
Chair: Remark Temali (EFFAB, Belgium)

9:00 - 12:00: Practical session

- Session 3a: Culture, transfection and imaging of pig organoids (moving to Building 320) - OR
- Session 1 repeated (moving to Building 320) - OR
- Session 4 repeated

10:10 - 10:30: Coffee break (both at Building 440 and at Building 320)

12:00 - 12:30: From Pluripotent Stem cells to organoids in domestic animals, an overview - Bertrand Pain (INRAE, France)

12:30 - 13:30: Lunch

ANALYSIS OF SINGLE CELL DATA:
THEORY, RESEARCH EXAMPLES AND PRACTICE
Chair: Pierre Boudinot (INRAE, France)

13:30 - 14:00: Which cell types do I have in my sample? Using single cell sequencing to assess and compare cell composition in tissue and organoids - Ole Madsen (WUR, Netherlands)

14:00 - 17:00: Practical session

Session 6: Single-cell data analysis: organoids vs. tissues (WUR)

17:00: Departure (by train) for Social Dinner in Paris

RadioEat restaurant, 116 Avenue du Président Kennedy, 75016 Paris

22:00: Return by bus from Paris to hotels

WORKSHOP AGENDA

DAY 4, Thursday, February 6

*IN BLUE: HYBRID SESSIONS

IN VITRO VS. IN VIVO G2P RESEARCH AND THE LINKS TO INDUSTRY

Chair: Huaijun Zhou (UC-Davis, USA)

9:00 - 9:30: Genome-edited mammals as part of the H2020 RUMIGEN project and as a tool for studying G2P in farm animals - Eric Pailhoux (INRAE, France)

9:30 - 10:00: Advanced intestinal *in vitro* platform for the functional characterization of feeds in aquaculture - Fulvio Gandolfi (Univ. Milan, Italy)

10:00 - 10:30: *In vitro* models for comparative embryology - Ramiro Alberio (Univ. Nottingham, UK)

10:30 - 10:50: *Coffee break*

10:50 - 11:20: Incorporating functional annotation genomics data in animal breeding applications - Derek Bickhart (Hendrix Genetics, Netherlands)

11:20 - 11:50: Facilitating the uptake of *in vitro* methods in research and testing - Maurice Whelan (European Commission Joint Research Centre, JRC, Italy)

11:50 - 12:30: **Round Table 1: Routes to more widespread applications of *in vitro* G2P** - Chair: Emily Clark (EMBL-EBI, UK)

12:30 - 13:30: *Lunch*

G2P IN ORGANOIDs - 2: THEORY, RESEARCH EXAMPLES AND PRACTICE

Chair: Michele Tixier-Boichard (INRAE, France)

13:30 - 16:30: **Practical session**

- Session 3a: repeated (moving to Building 320) - OR

- Session 3b: repeated - OR

- Sessions 4: visualize results in lab

16:30 - 17:00: Comparative genomics and cell physiology insights into resilience at the organismal level - Carla Bonetti Madelaire (S. Diego Zoo, USA)

17:00 - 17:45: *Snack / Poster session in main hall*

WORKSHOP AGENDA

DAY 5, Friday, February 7

*IN BLUE: HYBRID SESSIONS

**WRAPPING UP:
OUTCOMES OF THE WORKSHOP AND FUTURE PERSPECTIVES**
Chair: Elisabetta Giuffra (INRAE, France)

9:00 - 10:00: Practical session
Sessions 4 and 3a: Visualize results in lab

10:00 - 10:20: Coffee break

10:20 - 11:30: Discussion within and between Training Paths.

11:30 - 12:30: Round table 2: *In vitro* vs. *in vivo* G2P research, which perspectives? - Chair: Huaijun Zhou (UC-Davis, USA)

12:30 - 13:30: Lunch

13:30 - 14:00: Conclusions and Closing.