DETECTIVE

DETECTIVE: DETECTION OF NGT PRODUCTS TO PROMOTE INNOVATION IN THE EUROPEAN UNION

Funded by the European Union

Frédéric Debode
Walloon Agricultural Research Centre

Wallonie recherche CRA-W

Content of the presentation

- **The DETECTIVE project**

  Aim – WP structure – Development of analytical methods – Databases

- **The GenEdit database**

  Overview

DETECTIVE, a four-year EU-funded research project (2024-2027)

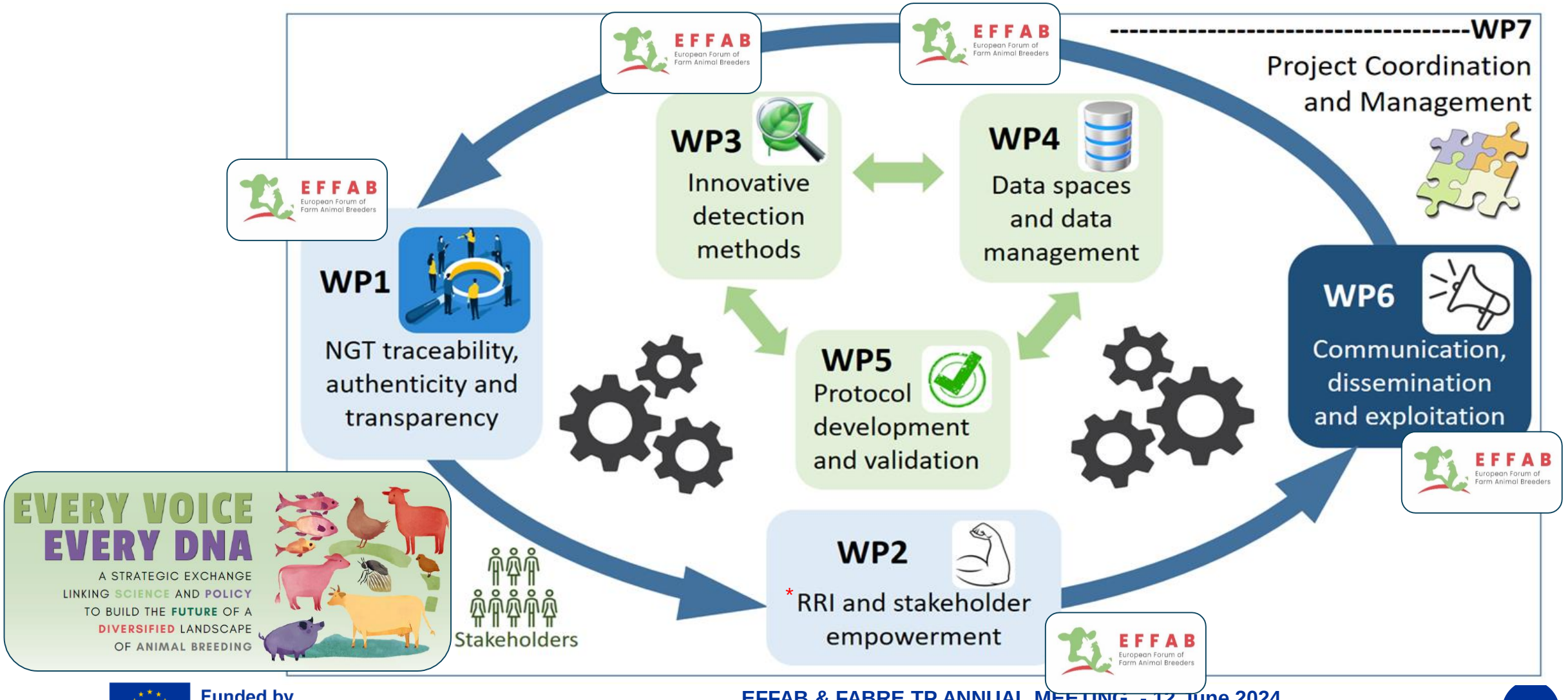
It aims to **develop and validate innovative detection methods for plants and animals** obtained with new genomic techniques (NGTs), as well as in their derivative products.

20 partners (Coordinator: Dennis Eriksson)

DETECTIVE – Expected results and impacts

1. Develop reliable detection methods to address the sustainable farming and food systems challenges
2. Validate detection methods for enforcement authorities as well as for developers and agro-food operators
3. Empower enforcement authorities, developers and agri-food operators for the authenticity and traceability of products obtained through NGTs
4. Enable informed consumer choices by enhancing transparency and traceability across the food chains
5. Foster innovation in the food chain systems linked to NGTs

WP structure and interdependencies



*RRI = Responsible Research and Innovation

WP3. Development of detection methods

WP leader : Wallonie recherche CRA-W

Task 3.1.Collection of samples

- **Types of mutations:** deletions, substitutions, of one or more than one nucleotide, etc.
- **Organisms:** it is essential to consider various categories of commercially important plants but also animals (such as beef, pork, poultry, and fish).
- **Gene/trait categories**
- **Complexity of the genome**
- **Status:** commercialisation, pre-commercialisation, research
- **Developers:** ability to bring products from development to commercialisation stage
- **Processing:** applicability to processed food
- **Origin:** countries
- **NGT category:** NGT1 and NGT2

→ **Important to have a collaboration with animal breeders**

EFFAB European Forum of Farm Animal Breeders

WP3. Development of detection methods

DETECTIVE

Task 3.2. Targeted approaches

- Methods that are present in control laboratories (qPCR, dPCR,…)
- Methods used in the medical field (adapted for food and feed?)
- Additional methods (sequencing,…)

Task 3.3. Multi-targets approaches

Methods able to detect several modifications in one single experiment.

Task 3.4. Untargeted approaches

Methods looking at different sequences (high-throughput sequencing approaches, machine learning, detection of mutations, off-target detection)

→ Evaluation of the approaches
→ Link with databases (WP4)
→ Methods will be selected for validation (WP5)
→ Methods used by the developers of the material can be evaluated under different performance criteria

WP4. Data spaces and data management

WP leader : ILVO

Task 4.1: Building a federated data space structure

Task 4.2: The GenEdit database

- Current situation
- Trends
- Define strategies

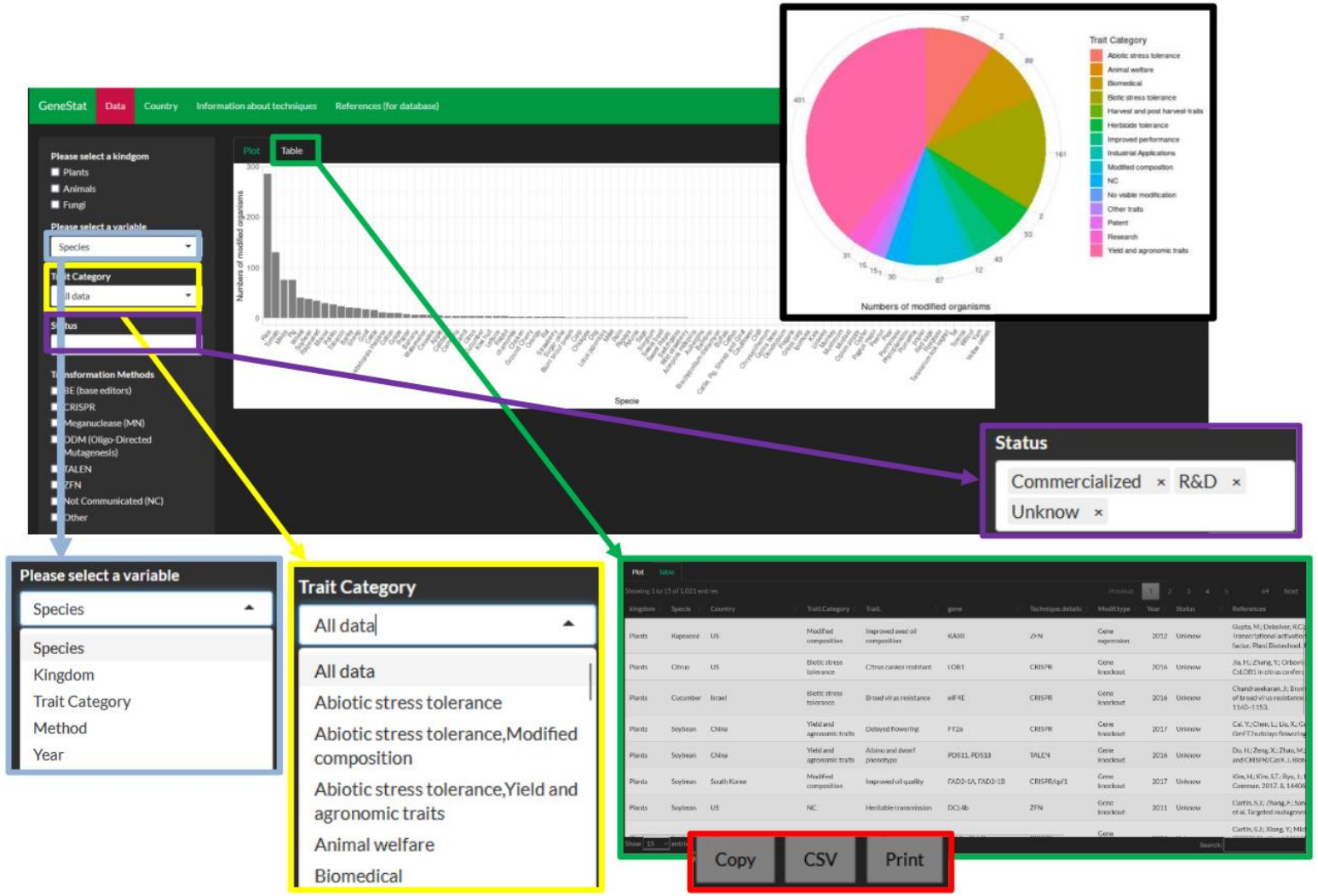
DATABASE 1
GenEdit database

- Species
- Countries
- Traits
- Genes involved
- Links to publications

Task 4.3: Building additional databases

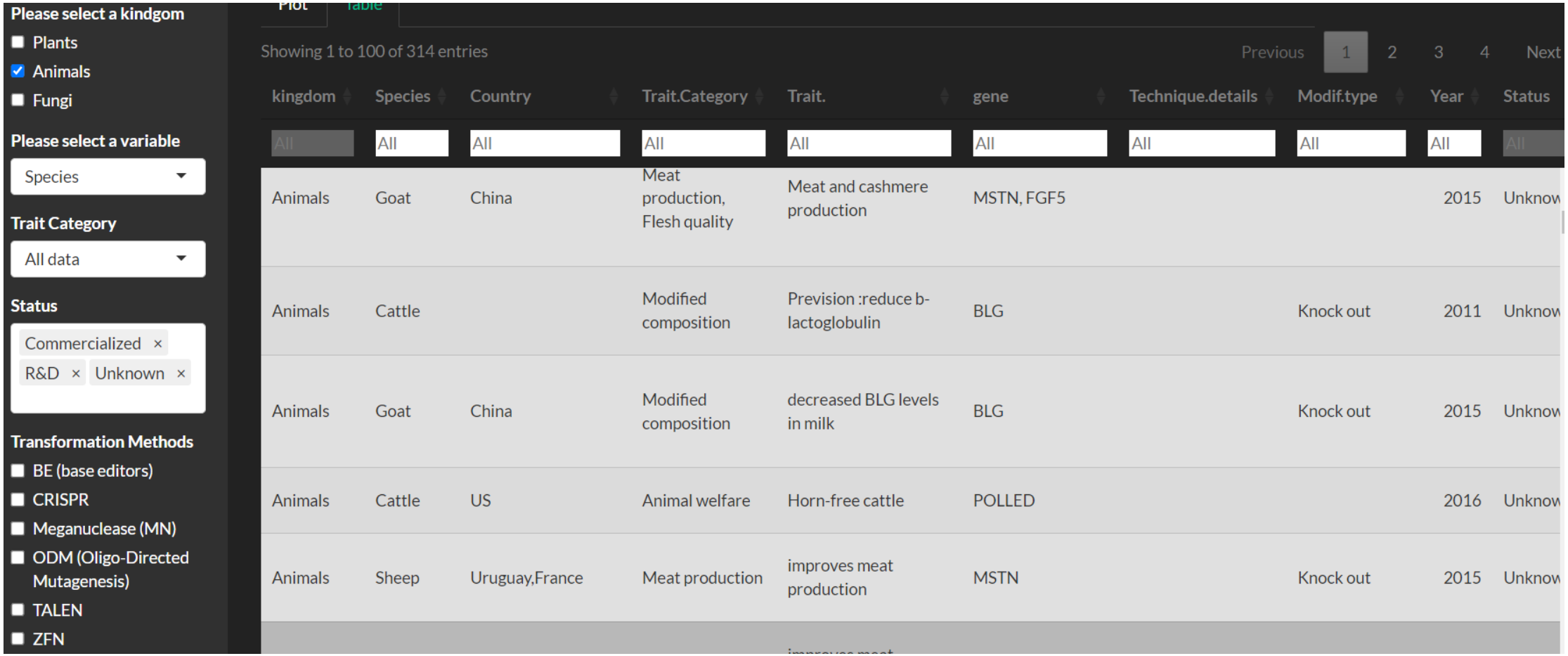
The GenEdit database

1157 entries
840 plants
314 animals



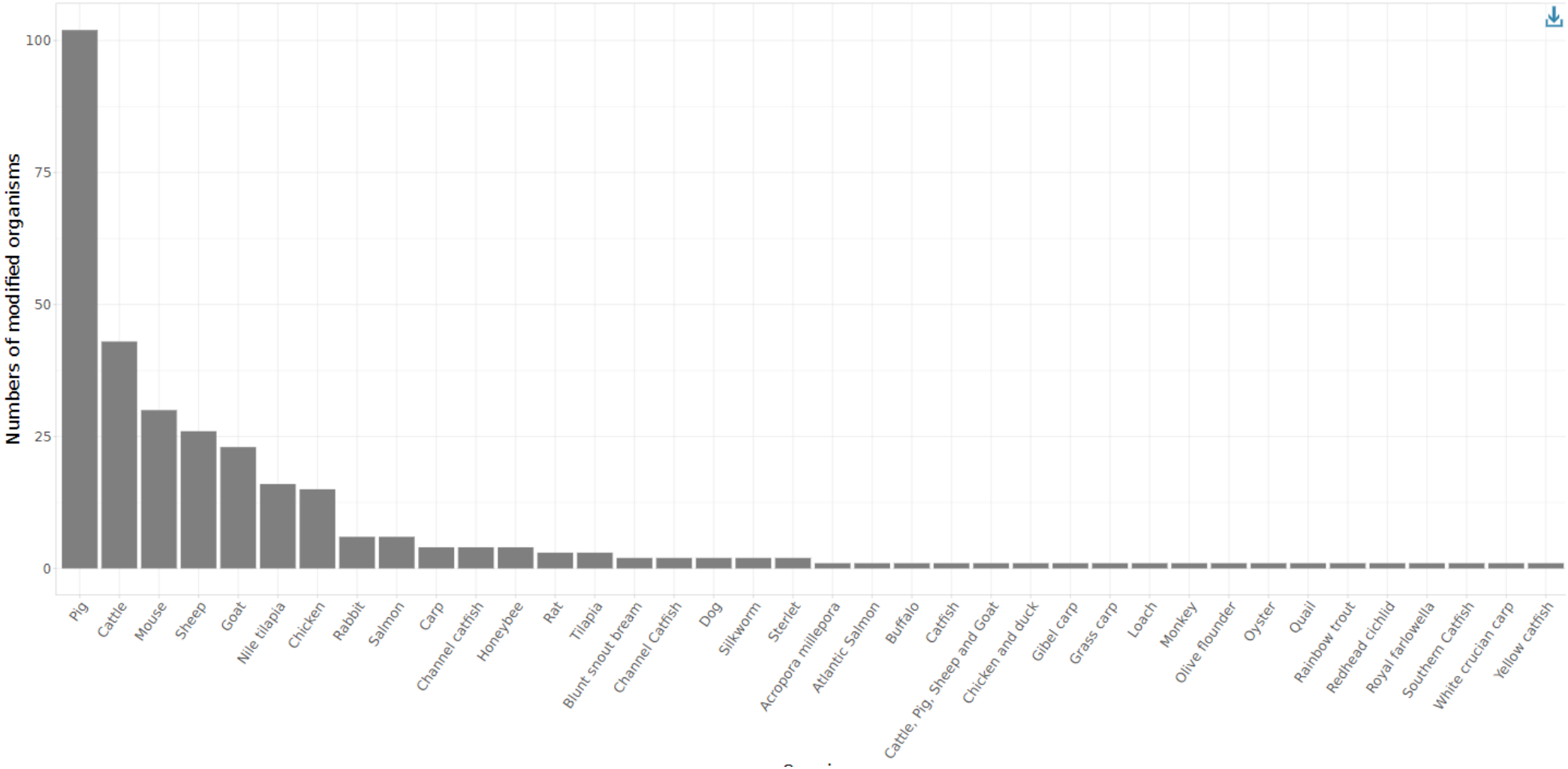
The GenEdit database

Exclusively based on published information

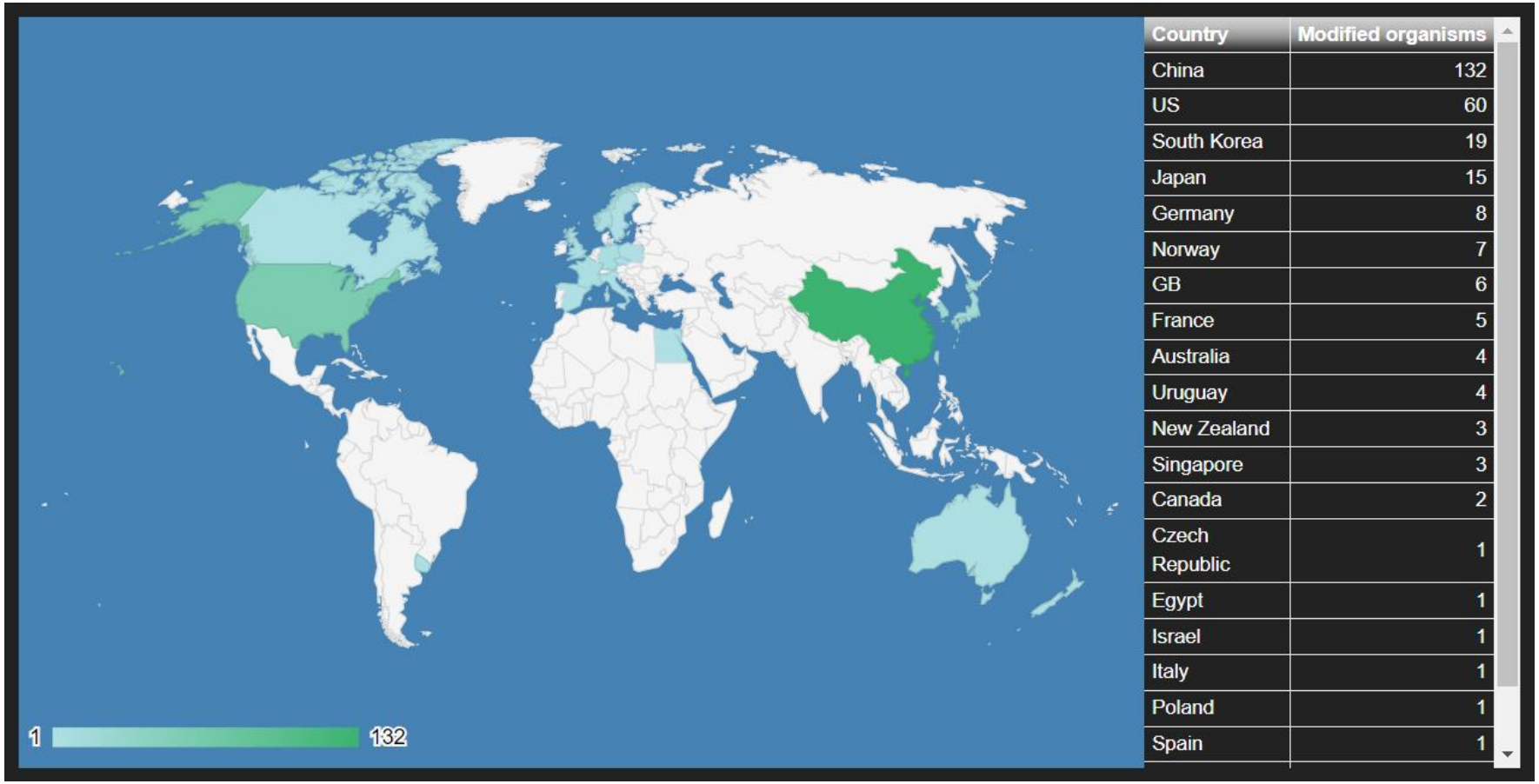


Funded by the European Union

GE animals – Current situation

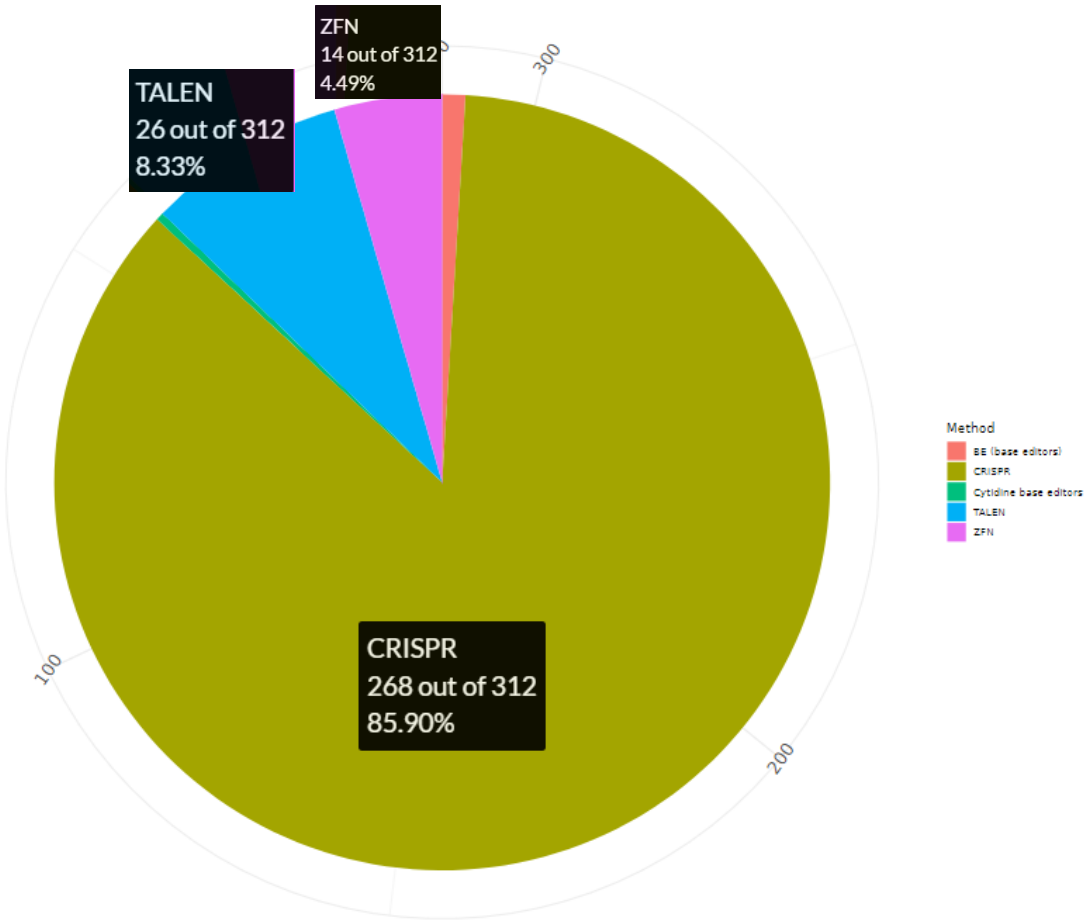


WP4: GE animals – countries (research papers)



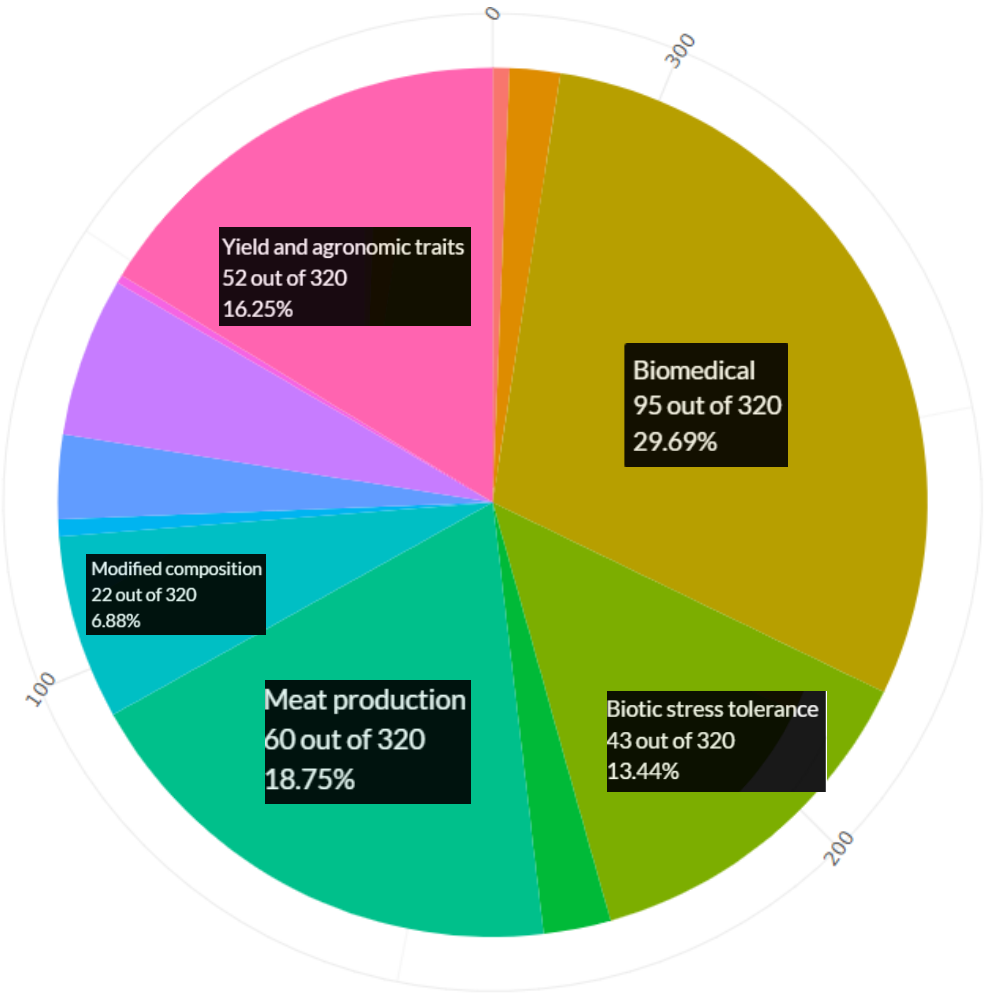
Country	Modified organisms
China	132
US	60
South Korea	19
Japan	15
Germany	8
Norway	7
GB	6
France	5
Australia	4
Uruguay	4
New Zealand	3
Singapore	3
Canada	2
Czech Republic	1
Egypt	1
Israel	1
Italy	1
Poland	1
Spain	1

GE animals – Methods used for modifications



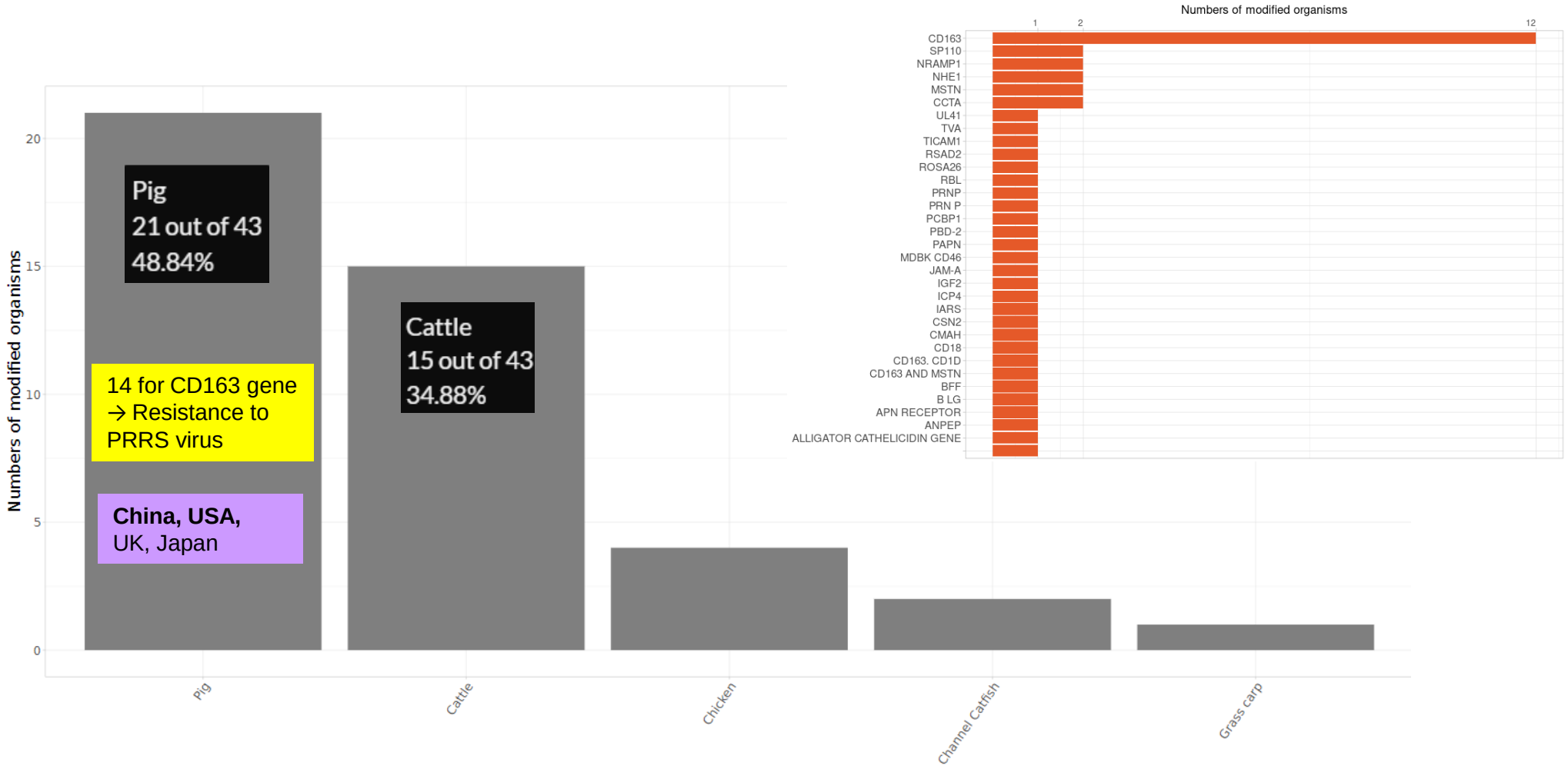
Funded by the European Union

GE animals – Main trait categories

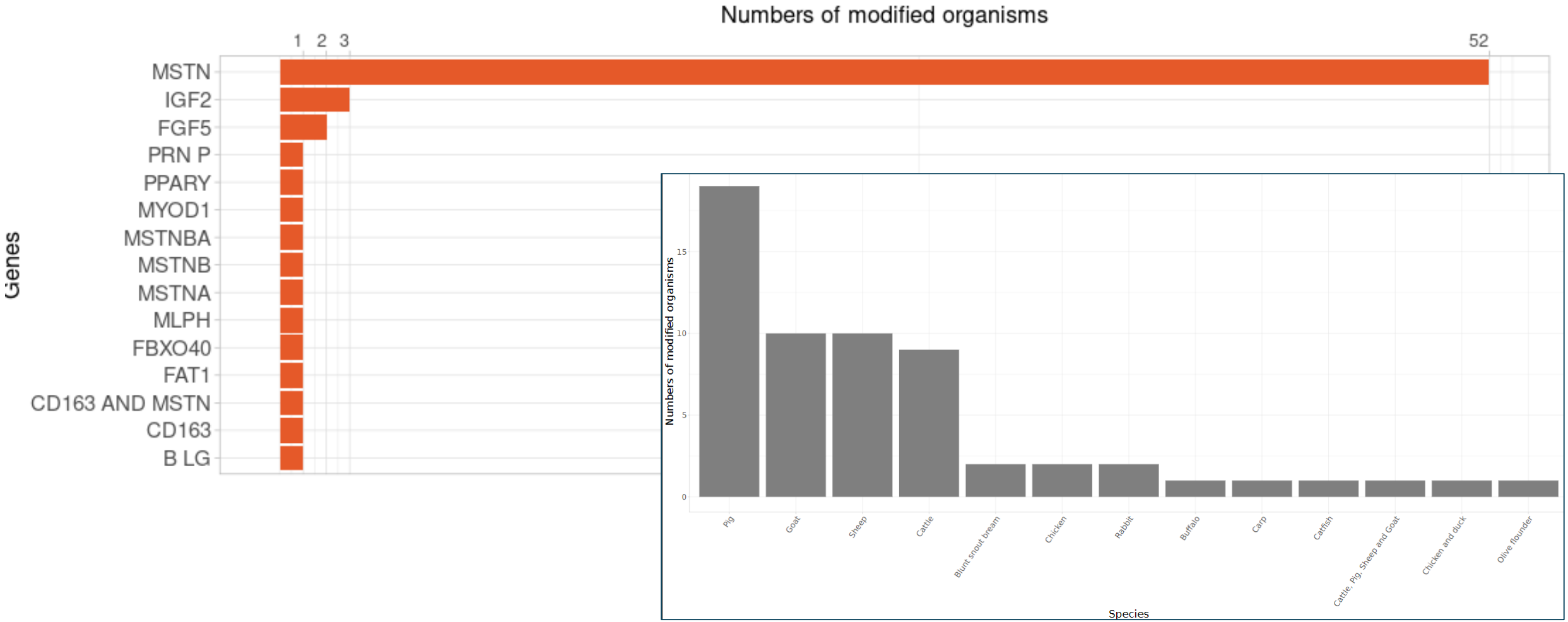


Numbers of modified organisms

GE animals – Biotic stress tolerance



GE animals – Meat production



www.detective-ngt.eu

@he-detective / @detective_he

DETECTIVE

Thank you for your attention !

Questions concerning this presentation: f.debode@cra.wallonie.be

Funded by
the European Union