

## **COWHOLIC**

### **Breeding for a resilient COW: integration of genomic and pHenomic tools for the early detection of metabOLIC distress in dairy cattle**

In the coming decades, the livestock sector has to face the challenge of producing a greater quantity of food necessary to feed a growing number of people, ensuring animal health and welfare and meets consumers' expectations. In this perspective, preventive management decisions are crucial to handle animal welfare issues, and ready-to-use and noninvasive tools for the evaluation of subclinical disease are increasingly required at farm level. The COWHOLIC project is a multi-disciplinary project that aims to develop methods that can efficiently exploit longitudinal data from different omic layers (phenomics, genomics and metagenomics) for the early detection of subclinical metabolic disorders in modern Italian dairy farms for a more precise and effective management. Databases generated by previous research projects (including 1,400 cows) will be exploited in order to maximize the statistical power and an independent (and external) validation will be performed on two new commercial farms. Specifically, in the COWHOLIC project, around 200 Holstein cows will be enrolled and followed around the transition phase of lactation as a longitudinal projection of animal resilience (three sampling times, 600 records in total) aiming to identify innovative and robust markers for the early detection of metabolic disorders. This information could help breeders' associations and dairy industries to develop precision livestock tools able to support the farmers in implementing corrective actions, thus improving the overall welfare of dairy farm.

**Ente finanziatore:** MUR

**Bando:** D.D. 104 del 02/02/2022

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