



# FROM DATA TO DISCOVERY: MEASURING & ANALYZING LIVESTOCK PHENOTYPES

## 2ND EU-LI-PHE TRAINING SCHOOL



LEUVEN 14/7/2025- 18/7/2025



HOGENHEUVELCOLLEGE NAAMSESTRAAT  
69, 3000, LEUVEN, BELGIUM

### OBJECTIVES

The 2nd EU-LI-PHE Training School will provide young researchers with the latest knowledge and practical skills in the measurement, monitoring, and analysis of livestock phenotypes. The training school will teach on important aspects of sensor technology, signal processing, computational modeling, and machine learning. Participants will learn how to extract meaningful insights from animal-derived data, with the focus to enhance animal health, welfare, and production efficiency.

#### Participants will:

- Understand the principles and practical application of sensor technologies for livestock monitoring.
- Learn how to analyse animal data with time-series and frequency-domain techniques.
- Explore modeling approaches for evaluating resilience and welfare in livestock.
- Acquire hands-on experience with mid-infrared spectral data analysis for predictive modeling in dairy production.
- Learn to apply sound analysis techniques to interpret animal vocalizations.
- Develop skills in computer vision techniques for monitoring animal behavior.
- Investigate imaging and computational strategies for phenotyping insects.

The program combines theoretical lectures with interactive workshops, practical exercises using real datasets, and group discussions, culminating in presentations of student-led projects to reinforce the acquired skills.

**Prerequisite:** Participating students are asked to submit a one-page description on their running project and data analysis needs. Selected participants will be asked to present this on the final day and engage in a discussion on the analysis of their data considering the methods taught during the training school.



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### SCHEDULE OVERVIEW

Date	Topics
Monday, 14 July 2025	<ul style="list-style-type: none"><li>• Sensors for livestock measurement and monitoring</li><li>• Time-series analysis of animal data</li></ul>
Tuesday, 15 July 2025	<ul style="list-style-type: none"><li>• Frequency-based signal processing</li><li>• Basics of learning and machine learning</li></ul>
Wednesday, 16 July 2025	<ul style="list-style-type: none"><li>• Modelling resilience of dairy cows with milk production data</li><li>• Mid-infrared spectral analysis of milk data</li></ul>
Thursday, 17 July 2025	<ul style="list-style-type: none"><li>• Analyzing animal vocalizations using sound analysis</li><li>• Analyzing animal metrics using computer vision</li></ul>
Friday, 18 July 2025	<ul style="list-style-type: none"><li>• Phenotyping insects: Imaging and computational approaches</li><li>• Discussion on selected student projects</li></ul>