

SmartCow

An integrated infrastructure for increased research capability
and innovation in the European cattle sector

Catalogue of training courses

2020



Horizon 2020 Programme
INFRAIA-02-2017
Integrating Activities for
Starting Communities



Introduction

This catalogue presents the training courses that will be organized within the framework of the SmartCow project in 2020.

What is SmartCow?

SmartCow aims to promote coordinated use and development of key European cattle research infrastructure. It combines strong scientific and technical skills in animal nutrition (in vivo methods for nutrient utilization and emissions measurements), genetics (genotyped animals, phenotyping capabilities), health and welfare (sensors and automatic recordings of physiological and behavioral traits) and ethics in animal experimentation.

SmartCow receives funding from the European Union Horizon 2020 Research and Innovation Programme.

Partners of the SmartCow training program

INRA (Institut National de la Recherche Agronomique), France

SRUC (Scotland's Rural College), UK

Aarhus University, Denmark

FBN Leibniz (Leibniz Institute for Farm Animal Biology), Germany

Teagasc (Agriculture and Food Development Authority), Ireland

CRA-W (Centre Wallon de Recherche Agronomique), Belgium

IRTA (Institut de Recerca i Tecnologia Agroalimentàries), Spain

How can I participate in a course or study tour?

The training courses and study tours target scientists, technicians, stakeholders, students, etc.

Tuition fees are covered by the SmartCow project. Participants will have to organize and fund their own travel and accommodation expenses.

Please note that all these activities will take place in English.

Contact

If you are interested in participating in a training course or a study tour, or if you need any further information about this training program, please contact:

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Training courses 2020

	Dates	Organizing center	Location	Ref
Validation and use of sensor outputs for recording animal behavior	22-23 April 2020	Aarhus University	Aarhus (Denmark)	SENS
Using ontologies to improve animal science research	10-11 June 2020	INRA	Rennes (France)	ONTO
Ethics and welfare in animal experimentation	22-23 Sept 2020	INRA	Clermont-Ferrand (France)	WELF

Validation and use of sensor outputs for recording animal behavior

Organizing center: Aarhus University (Denmark)

Target participants

Scientists, RI technicians, Master students, PhD students, stakeholders

Training objectives

After the training course the participants will be able to

- Understand the protocol for validation of sensor output developed in SmartCow
- Develop a protocol for validation of a specific sensor for automatic recording of behaviour
- Understand the technical, biological and ethical limits and pitfalls in the use of sensor output to estimate cattle behaviour

Pre requisite skills

Trainees must have basic knowledge on cow behaviour and statistical methods for validation

Program

- Lectures and training sessions about validation and use of sensors to measure behaviour
- Overview of different types of sensors and different types of behaviour
- What does the sensor measure?
- Lectures on how to validate the output from sensors recording behaviour
- Data flow from cow (sensor) to database including pitfalls in data transfer, sensor-computer-database – pc for analysis
- Visit to facilities

Pedagogical approach: Lectures, study case and practical sessions in AU facilities

Duration: Two days with arrival the day before and a short welcome in the evening

Location: AU, Foulum, Denmark

Trainers: Emma Ternman, Guilherme A. Franchi and Lene Munksgaard (AU)

Date of course: 22-23 April 2020

Registration: before 1st March 2020, the number of participants is limited, places will be filled in order of application

Ref SENS

Using ontologies to improve animal science research

Organizing center: INRA (France)

Target participants

Scientists, RI technicians, Bachelor, Master or PhD students

Training objectives

After the training session, the trainee will be able to:

- Understand the usefulness of the ontologies to name experimental measures
- Use these ontologies and reference them in publications
- Use the ontologies adapted to SmartCow

Pre requisite skills and equipment

Trainees must have basic knowledge in biology and bring a laptop for the exercises

Program

What is an ontology?

- Definition
- History
- Examples of use of ontologies (application of ontologies)
- Exercise: building a small ontology, using ontologies to annotate data with the Protégé open-source editor, using ontologies to retrieve data with the Protégé open-source editor

Presentation of French ontologies from INRA:

- Animal Ontology for Livestock (ATOL)
- Environment Ontology for Livestock (EOL)
- Animal Health Ontology for Livestock (AHOL)

Example of application/use of an ontology AHOL for professional use

Text based annotation with ontologies

Exercise: how to find ontologies

Driving data integration at Agrimetrics through ontologies

Exercise: building of a small project with participants' own data

Optional: Visit of the INRA Méjusseaume experimental farm (dairy cows and goats)

Pedagogical approach: Lectures, practical sessions

Duration: 2 days

Location: Rennes Inra Center (France)

Trainers: Catherine Hurtaud, Marie-Christine Meunier-Salaün, Jérôme Bugeon, Linh Chi Nguyen, Sophie Aubin and Claire Nédellec (INRA, France), Olivier Dameron (University of Rennes 1, France), Monika Solanki (Agrimetrics, UK)

Date of course: 10-11 June 2020

Registration: before 20 May 2020, the number of participants is limited, places will be filled in order of application

Ref ONTO

Ethics and welfare in animal experimentation

Organizing center: INRA (France)

Target participants

Scientists, RI technicians, Master students, PhD students, stakeholders

Training objectives

After the training session, the trainee will be able to:

- Balance issues between the scientific expectations from an experiment and the potential constraints imposed on animals
- Run an ethical evaluation of an experimental protocol
- Better design their own experiments taking into account ethical requirements

Pre requisite skills

Trainees must have conducted or participated in experiments on alive animals. They will be asked to provide an example of an experiment they run to be used as a case study.

Program

- Concepts related to balancing ethical issues (expected benefits of results, probability of obtaining results, constraints on animals); 3 R's (Replace, Reduce, Refine); animal welfare, stress, and pain will be presented and discussed; cut-off points
- A focus will be made on ways to adjust the number of animals used in experiments, habituation to handling (and good practices for handling) and on enrichment of animal living conditions.
- Trainees will have to evaluate experimental protocols and they will discuss their own evaluation with other trainees.

Pedagogical approach: Lectures, supervised work on case studies, group discussion

Duration: 1 or 2 days

Location: Clermont-Ferrand INRA Center (France)

Trainers: Veronique Deiss and Isabelle Veissier (INRA) + short talks by scientists from INRA, VetAgro Sup or Université Clermont Auvergne

Date of course: 22-23 September 2020

Registration: before 20 July 2020, the number of participants is limited, places will be filled in order of application

Ref WELF