

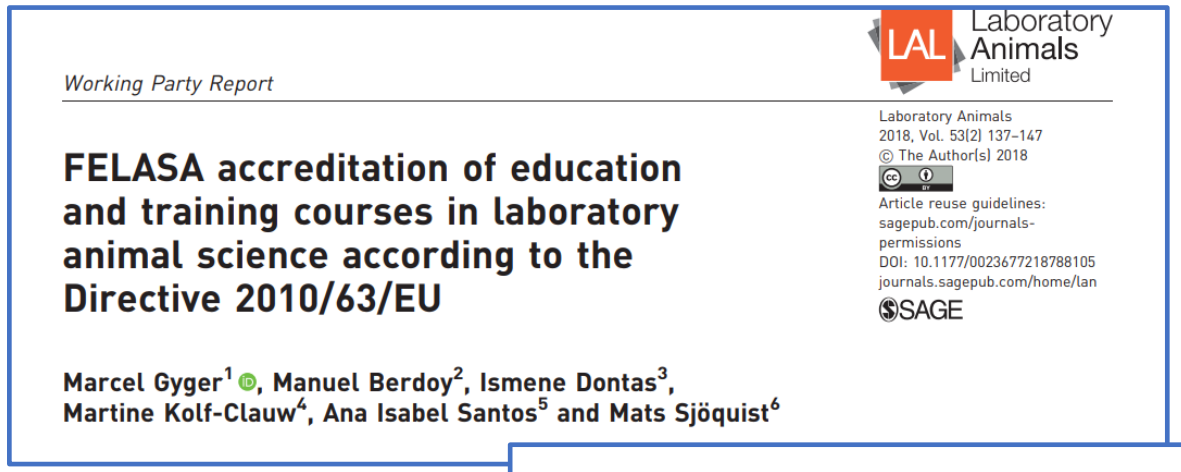
Documentation of training in Animal Experimentation (fish)

Ioannis Vatsos

Nord University

DR443F - Principles in Animal Experimentation

- The course is based (NOT accredited) on the FELASA recommendations for training course in laboratory animal science



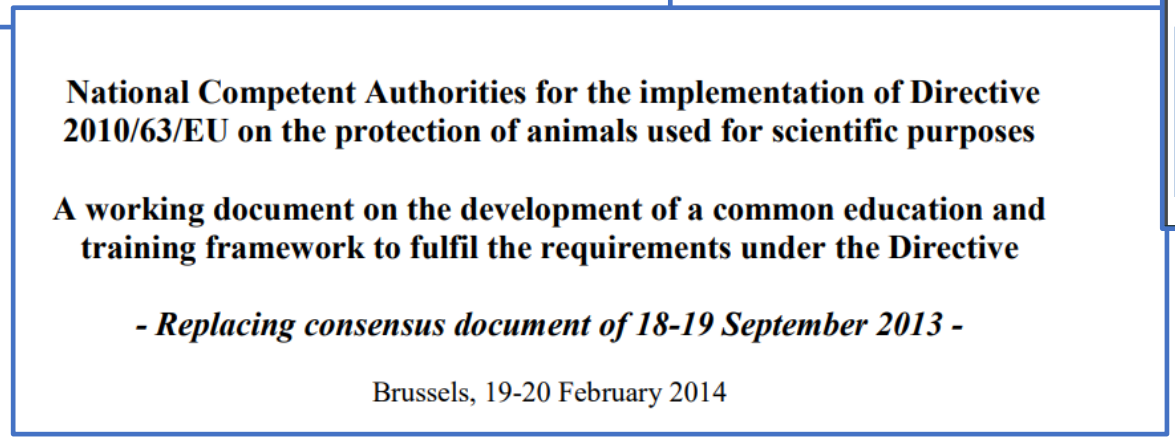
Working Party Report

FELASA accreditation of education and training courses in laboratory animal science according to the Directive 2010/63/EU

Marcel Gyger[1], Manuel Berdoy[2], Ismene Dontas[3], Martine Kolf-Clauw[4], Ana Isabel Santos[5] and Mats Sjöquist[6]

Laboratory Animals

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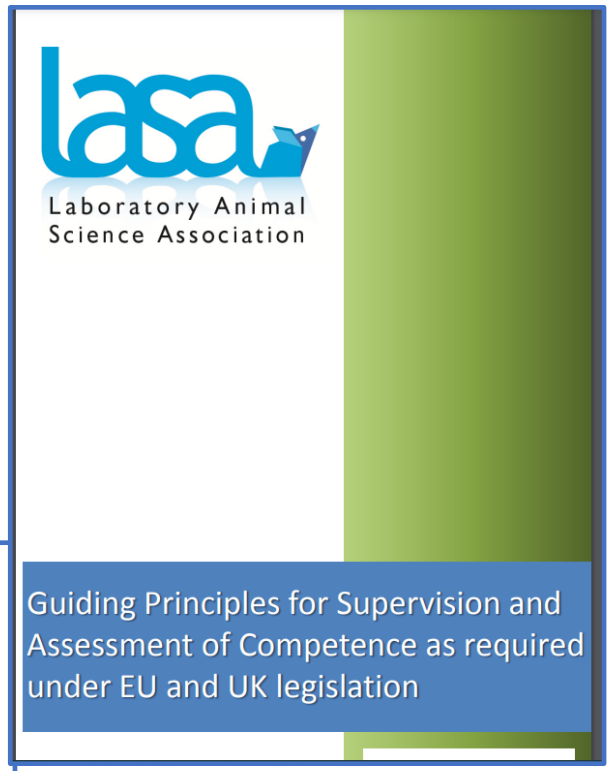


National Competent Authorities for the implementation of Directive 2010/63/EU on the protection of animals used for scientific purposes

A working document on the development of a common education and training framework to fulfil the requirements under the Directive

- Replacing consensus document of 18-19 September 2013 -

Brussels, 19-20 February 2014



Recommendations for practical modules – 1 *Initial considerations*

A tiered approach from nonanimal alternatives to cadavers and live animals, depending on the procedure. The severity of the procedures should be non-recovery or mild. The approach should demonstrate the effective implementation of the 3Rs.

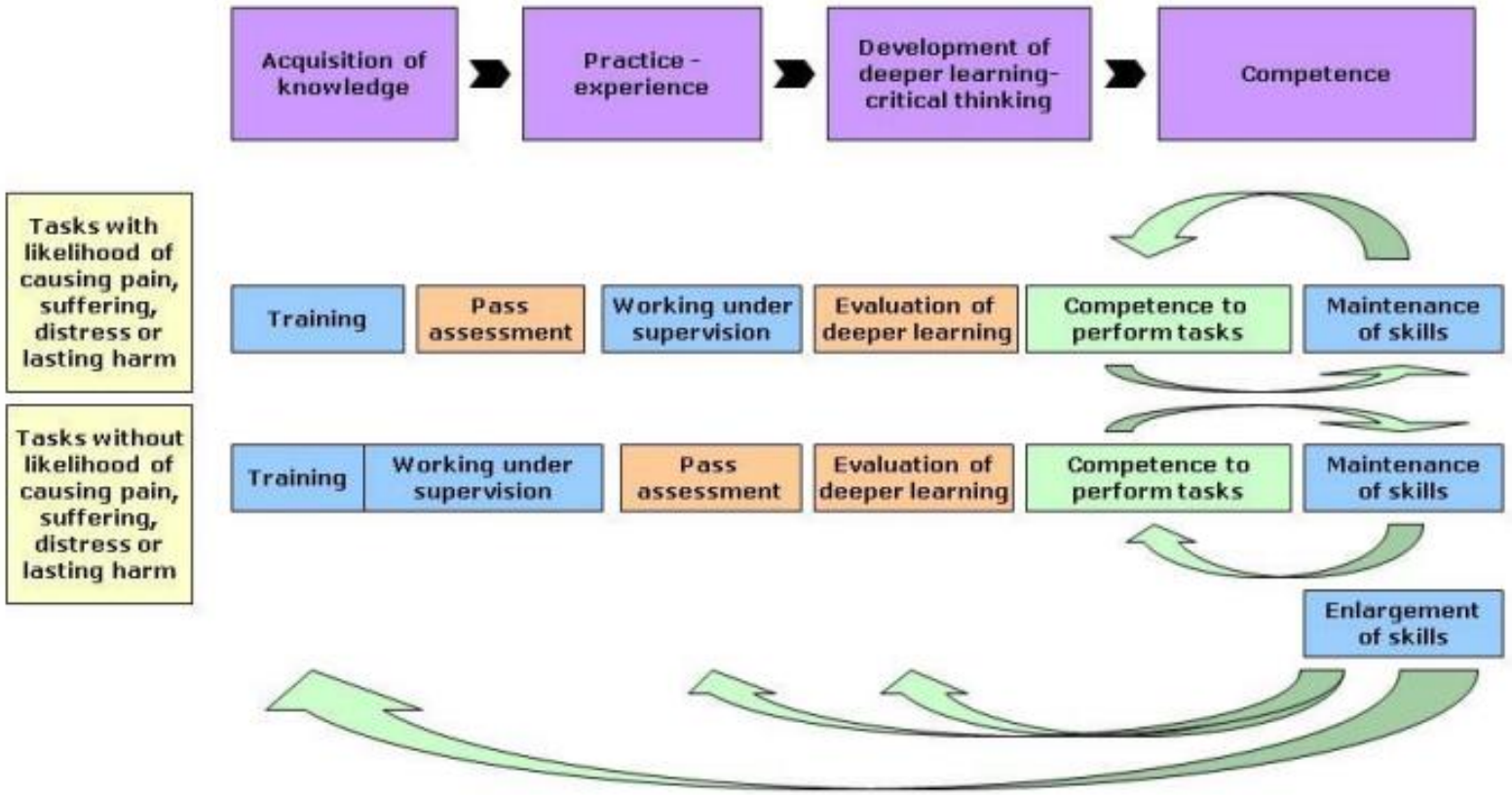
The training of manual skills should address housing and basic care of animals, include handling and restraint of conscious animals and some minimally invasive procedures on anesthetized animals.

The animals to be used for skill training should come whenever possible from surplus stocks or from the reuse of animals.

Recommendations for practical modules – 2

Initial considerations

- Training alone does not deliver full competence - a period of supervision is necessary (this is also stressed in the European and Norwegian legislation).



Quality criteria for a training module

Sufficiently detailed learning outcomes

- Theoretical knowledge to be gained
- Practical skills to be obtained

Defined assessment

Pass-fail criteria

Practical Modules - Functions A & D

Function A

- Basic and appropriate biology – species specific
- Minimally invasive procedures without anaesthesia – species specific

Function D

- Basic and appropriate biology – species specific
- Humane methods of killing

Additional Task Specific Modules

- Anaesthesia for minor procedures
- Advanced anaesthesia for surgical or prolonged procedures
- Principles of surgery

DR443F - Principles in Animal Experimentation

The course has a modular structure

(course website https://www.nord.no/en/Student/study-plans/2022h/2/Pages/DR443Fv1.aspx)

THEORETICAL MODULES

1) **General modules**

Module 1: National & International legislation on the use of animals in research,
Module 2: Ethics, animal welfare and the 3Rs (Level 1 + 2),
Module 3: Humane methods of killing experimental animals
Module 4: Design of procedures and projects (Level 1 + 2).

2) **Species-specific modules**

Module 5: Basic biology of aquatic species,
Module 6: Animal care and health management of aquatic species,
Module 7: Recognition of pain, suffering and distress in laboratory animals -emphasis on aquatic species,
Module 8: Minimally invasive procedures in aquatic species, with or without use of anaesthesia.

PRACTICAL MODULES

Module 10: Basic biology of fish - minimally invasive procedures with and without anaesthesia

Module 10: Basic biology of fish - minimally invasive procedures with and without anaesthesia

Practical training for DR443F, Principles in Animal Experimentation

(EU Functions: A - carrying out procedures on animals, B - designing procedures and projects and D - killing animals)

Species/Group of species: Fish

Module: Basic and appropriate biology of fish – minimally invasive procedures with and without anaesthesia.

Learning outcomes

Upon completion of the practical training, the participant should:

- Know the safety measures in fish rearing facilities.
- Know the daily routines in fish rearing facilities (e.g. cleaning, sanitation, feeding observation and registering of observations).
- Recognize normal and abnormal behavior of the most commonly fish species used in research.
- Know how to handle, collect, tag and anaesthetize fish (know the most commonly used anaesthetics, calculation of doses and method of application).
- Know how to weigh and calculate the basic morphometric indices in fish.
- Know how to collect blood in a proper manner.
- Know how to deliver substances to fish by injection and intubation.
- Know how to dissect and collect samples from dead fish.

Name of candidate:	
E-mail address:	
Person responsible for the practical training	
E-mail address:	
Place of training:	Mørkvedbukta Research Station, NORD University, Bodø
Date:	
Fish species involved in the practical training:	

Assignment 1. General housing and care of fish
Species:

Task	Demonstrated	Name of trainer
Daily routines and registering records	X	
Safety rules in fish research facilities	X	
Sanitary procedures	X	
Observation of normal behavior and registering observations	X	
Total assessment (Passed Yes – No)		

Assignment 2. Anaesthesia
Species:

Task	Demonstrated	Performed	Name of trainer
Preparation of workplace	X	X	
Preparation of appropriate solutions	X	X	
Safe handling of substances	X	X	
Preparation of additional equipment/tanks	X	X	
Handling of fish in a proper manner	X	X	
Recognition of the different stages of anaesthesia.	X	X	
Assessment of induction and recover time	X	X	
Recognition of abnormal behavior and emergency measures	X	X	
Total assessment (Passed Yes – No)			

Assignment 3. Tagging
Species:

Task	Demonstrated	Performed	Name of trainer
Preparation of workplace and appropriate equipment	X	X	
Safe handling of fish	X	X	
Proper use of tools	X	X	
Total assessment (Passed Yes – No)			

Assignment 4. Collection of blood
Species:

Task	Demonstrated	Performed	Name of trainer
Preparation of workplace and use of appropriate equipment (syringes and needles)	X	X	
Safe handling of fish	X	X	
Knowledge of maximum volumes of blood samples, according to species and size	X	X	
Collection of blood for different purposes	X	X	
Total assessment (Passed Yes – No)			

Assignment 5. Injection of substances
Species:

Task	Demonstrated	Performed	Name of trainer
Preparation of workplace and use of appropriate equipment.	X	X	
Safe handling of fish	X	X	
Proper use of equipment (syringes and needles)	X	X	
Calculation of desired concentrations	X	X	
Knowledge of maximum volumes of substances that can be injected	X	X	
Total assessment (Passed Yes – No)			

Assignment 6. Intubation
Species:

Task	Demonstrated	Performed	Name of trainer
Preparation of workplace and use of appropriate equipment.	X	X	
Safe handling of fish	X	X	
Proper use of equipment (syringes and catheters)	X	X	
Calculation of desired concentrations	X	X	
Knowledge of maximum volumes of substances that can be injected	X	X	
Total assessment (Passed Yes – No)			

Assignment 7. Weighing and somatometric measurements
Species:

Task	Demonstrated	Performed	Name of trainer
Preparation of workplace and use of appropriate equipment	X	X	
Safe handling of fish	X	X	
Assessment of the main somatometric indices - condition factor	X	X	
Total assessment (Passed Yes – No)			

Assignment 8. Dissection and collection of samples
Species:

Task	Demonstrated	Performed	Name of trainer
Use of proper techniques for euthanasia in fish	X	X	
Preparation of workplace and use of appropriate equipment	X	X	
Recognition of normal appearance and abnormal appearance of the various organs	X	X	
Collection of fresh preparations for parasitological examination	X	X	
Collection of tissues for histological examination	X	X	
Collection of tissues for other analyses	X	X	
Total assessment (Passed Yes – No)			

Written report from the practical training	
Submitted:	

Responsible for the practical training

Course coordinator

Ioannis Vatsos

Day 1. Zebrafish

Give a brief description of the practical training on zebrafish (max 500 words). Discuss how we sex the fish, how we feed them (the normal feeds used) and focus more on the measurements of the water parameters. Mention the preferred ranges for these parameters.

Day 2. A. Anaesthesia and sedation

1. Give 3 examples when the use of anesthesia on fish is recommended

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2. Give a short description of the practical training/activity on anaesthesia (max 100 words).

3. Present the results from your group and compare with the results from the other groups.

B. Necropsy and morphometric indicators

1. Describe briefly how you conduct a fish necropsy and what samples you can collect for the various tests (max 300 words).

2. Present the results from the practical exercise on morphometric indicators (length, weight, condition factor).

Day 3. A. Injection

Give a short description of the practical training on injection (max 60 words).

B. Tagging

Give a short description of the practical training on the methods demonstrated of fish tagging (max 100 words). Present advantages and disadvantages of these methods.

C. Sampling procedures

Give a short description of the practical training on sampling collection (mucus, blood) including the results of the measurements (max 100 words).

D. Intubation

Give a short description of the practical training on intubation (max 100 words).

Certificate - format and content

The certificate should include sufficient details, e.g. course ID, participant's details, modules completed and a course email address (in case complementary information is requested). Animals that have been handled as part of the practical parts of the course should be listed by the level **of the species** (e.g. rat, mouse, zebrafish, medaka) rather than as a group of species (e.g. rodents, fish) whenever possible. The teaching of the theoretical part, however, can cover either a single species or a group of species at the discretion of the course organizer as long as this is listed in the certificate.

has completed the DR443F course

PRINCIPLES IN ANIMAL EXPERIMENTATION

at

the Faculty of Biosciences and Aquaculture

The course corresponds to 5 ECTS and consists of theoretical modules and a practical module. It follows the FELASA guidelines on the training of persons responsible for: carrying out procedures on animals (Function A), designing procedures and projects (Function B) and killing animals (Function D).

Content of modules:

General theoretical modules:	Species-specific theoretical modules:
• National & International legislation on the use of animals in research • Ethics, animal welfare and the 3Rs (Level 1 & 2) • Humane methods of killing experimental animals • Design of procedures and projects (Level 1 & 2)	• Basic biology of aquatic species • Animal care and health management of aquatic species • Recognition of pain, suffering and distress in laboratory animals- emphasis on aquatic species • Minimally invasive procedures in aquatic species, with or without use of anaesthesia
Practical module:	
• General housing and care of fish • Anaesthesia • Tagging • Collection of blood	• Injection of substances • Intubation • Weighing and somatometric measurements • Dissection and collection of samples
Assessment of competence:	
Theoretical modules: Written exam Practical module: Verification of the ability to perform the demonstrated procedures independently Obligatory assignment	

Bodø, May 2022

Mette Sørensen

Mette Sørensen, MSc, PhD,
Dean

Ioannis Vatsos, MSc, PhD, DipECAAH
Course Coordinator

NORD University

www.nord.no