

[6674] IVM AND IVF

Module of [\[6674\] - BIOLOGY OF GAMETES, IVM AND IVF TECHNIQUES](#)

General information

Course	REPRODUCTIVE BIOTECHNOLOGIES
Course type	Master's Degree
Academic year	2024/2025
Year	1
Training activity type	Compulsory subjects, characteristic of the class
Scope	Veterinary Studies and Animal Reproduction
Language	INGLESE
CFU	6 CFU
Didactic Activity Type	Lezione
Exam type	Oral exam
Evaluation	Voto Finale
Teaching period	Primo Semestre (from 01/10/2024 to 03/01/2025)
Teaching type	Obbligatorio
Holders	GIOIA LUISA (Main teacher)
Length	48 hours (48 hours Lezione)
Frequency	Not mandatory
Subject area	VET/02
Location	TERAMO

Module's Goals

The IVM and IVF course aims to provide the students with a theoretical knowledge and practical skills on the main protocols applied to IVM and IVF techniques in animal reproduction that the students become able to perform at the end of the course with a high degree of autonomy.

The in-depth theoretical knowledge combined with the specific technological skills enable students to face with an open mind and a reinforced problem solve approach the full research and innovation chain of reproductive biomedical sector in line with the dynamic requirements of society at large.

The major aim of this program, indeed, is to build up a new generation of creative, and innovative master degree students, which have skills to face the complex domain of reproductive research and service.

The educational objectives of IVM and IVF course are strictly integrated with those of the Biology of Gametes course, therefore they are provided in detail according to the Dublin descriptors in the section of the integrated course.

Module's Required skills

None

The course does not recognize any mandatory prerequisites.

However, a basic theoretical knowledge and practical skills on Cytology, Cell Physiology, and Cell Culture are recommended to face on it. For this reason, an entry test on these subjects is organized before the beginning of the curricular lessons to evaluate the student's background.

Module's Subjects

In detail the theoretical and practical contents of course UNIT related to IVM and IVF module are the following:

UNIT I

-Setting up a laboratory: basic equipment and facilities required for a laboratory of IVM and IVF, and their correct use.

-Preliminary methods applied to oocyte manipulation for domestic animals in vitro reproduction

- Solutions for oocyte manipulation and media for IVM;
- Selection of follicles for IVM purposes using animal ovaries retrieved from local slaughterhouses;
- Morphological evaluation of ovarian follicles;
- Selection and isolation of healthy cumulus-oocytes complexes (COCs);
- Microscopic evaluation of oocyte meiotic stage after nuclear staining

UNIT II

- IVM protocols using sheep and/or swine oocytes;
- Assessment of IVM/morphological evaluation of cumulus expansion;
- Semen preparation and evaluation (boar and/or ram);
- Preparation of culture media for sperm capacitation and oocyte IVF;
- Protocols for sperm capacitation and IVF;
- Morphological and nuclear staining evaluation of IVF oocytes

UNIT III

Focus on the main aspects related to FIVET procedures:

- Culture media for oocyte retrieval (ovum pick-up);
- Criteria for morphological evaluation of COCs collected by ovum pick-up;
- Preparation of microdroplets under mineral oil;
- Protocols for sperm capacitation and IVF in the human model.

Module's Books

Protocols on the IVM and IVF techniques are provided during the laboratory activities.

IN-DEPTH BOOKS:

Kay Elder and Brian Dale, "In vitro fertilization", Cambridge University Press, Cambridge, 2011, Online ISBN:9780511984761, Paperback ISBN:9780521730723, eBook ISBN: 0511990480, Print ISBN: 0521730724, Book DOI: <http://dx.doi.org/10.1017/CBO9780511984761>

Zsolt Peter Nagy, Alex C. Varghese, Ashok Agarwal, "Practical Manual of in Vitro Fertilization: Advanced Methods and Novel Devices", Springer, New York, 2012, e-ISBN 978-1-4419-1780-5, www.springer.com