Postgraduate Diploma
Reproductive Biotechnologies in Domestic Mammals

tech technological university

Postgraduate Diploma
Reproductive Biotechnologies in Domestic Mammals

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Website: **www.techtitute.com/pk/veterinary-medicine/postgraduate-diploma/postgraduate-diploma-reproductive-biotechnologies-domestic-mammals**

Index

01
Introduction

Specialize in Reproductive Biotechnologies in Domestic Mammals with this program provided by industry professionals with extensive experience in the field. Throughout the program, you will learn to analyze the use of the latest reproductive technologies in genetic selection programs; to identify the importance of embryo transfer as a methodology for germplasm banking and genetic improvement, as well as to define the controls and sanitary regulations within the national and international legal framework.

This program is the best option you can find to specialize in Reproductive Biotechnologies in Domestic Mammals and make more accurate diagnoses"

From the earliest data on animal reproduction in Egyptian hieroglyphs, through the ancient veterinarians to the present day, humankind has always been interested in the study of animal reproduction to increase populations and obtain better yields.

Animal reproduction has evolved exponentially in recent decades and its current development means that technologies implemented a few years ago are now obsolete. Technique, science and human genius combine and bring, as a consequence, results identical to natural reproduction.

The objective of this program focuses on the mastery and control of all physiological, pathological and biotechnological aspects that affect the reproductive organ function of domestic animals. The species studied in this Postgraduate Diploma are: bovids, equidae, swine, sheep, goats and canids; selection made based on the importance and development of assisted reproduction at present.

This Postgraduate Diploma has been developed to expand upon the current knowledge of the specialization in the different techniques of Reproductive Biotechnologies in Domestic Mammals.

The group of professors teaching the Postgraduate Diploma is made up of specialists in animal reproduction with a work history of more than 30 years of experience, not only in the field of teaching, but also with practical activity, research and directly in livestock farms and animal reproduction centers. This Postgraduate Diploma has been developed to expand upon the current knowledge of the specialization in the different techniques of extraction, processing and preparation of seminal doses in domestic mammals.

The specialization will be based on the theoretical and scientific aspects, combining them with the practical and applicable professionalism of each of the subjects outlined herein. Continuous specialization after completing undergraduate studies is sometimes complicated and difficult to balance with work and family activities, so this TECH Postgraduate Diploma gives the possibility to continue ways and specializing online with a large amount of practical audiovisual support that will allow students to advance in reproductive techniques in their work environment.

This **Postgraduate Diploma in Reproductive Biotechnologies in Domestic Mammals**contains the most complete and up-to-date educational program on the market. The most important features of the program include:

- The development of case studies presented by experts in Reproductive Biotechnologies in Domestic Mammals
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional development.
- Latest development in Reproductive Biotechnologies in Domestic Mammals
- Practical exercises where self-assessment can be used to improve learning.
- Special emphasis on innovative methodologies in Reproductive Biotechnologies in Domestic Mammals
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

You will learn to analyze the use of the latest reproductive technologies in genetic selection programs from professionals in the sector"

"This Postgraduate Diploma is the best investment you can make in selecting a refresher program to update your knowledge in Reproductive Biotechnologies in Domestic Mammals"

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive learning programmed to train in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, the professional will be assisted by a novel interactive video system developed by renowned and experienced experts in Reproductive Biotechnologies in Domestic Mammals.

This program comes with the best educational material, providing you with a contextual approach that will facilitate your learning.

This 100% online program will allow you to combine your studies with your professional work while increasing your knowledge in this field.

02
Objectives

The program in Reproductive Biotechnologies in Domestic Mammals is oriented to facilitate the performance of the veterinary professional with the latest advances and most innovative treatments in the sector.

This is the best option to learn about the latest advances in Reproductive Biotechnologies in Domestic Mammals"

General Objectives

- Define controls and sanitary regulations within the national and international legal framework

- Establish working protocols for sperm extraction, evaluation, processing and cryopreservation

- Specify practical methods for determining stallion fertility in clinics and farms (spermiograms)

- Examine artificial insemination methods and programs in different species of domestic mammals

- Identify the importance of embryo transfer as a methodology for germplasm banking and genetic improvement

- Examine the development of follicular puncture (OPU), in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI) as application techniques in embryo implantation and genetic improvement programs

- Analyze the use of the latest reproductive technologies in genetic selection programs

- Develop a comprehensive study of new reproductive technologies and their effectiveness in their technical application

- Specify the epigenetic alterations in animal reproduction and the bioethical aspects of their application in animals
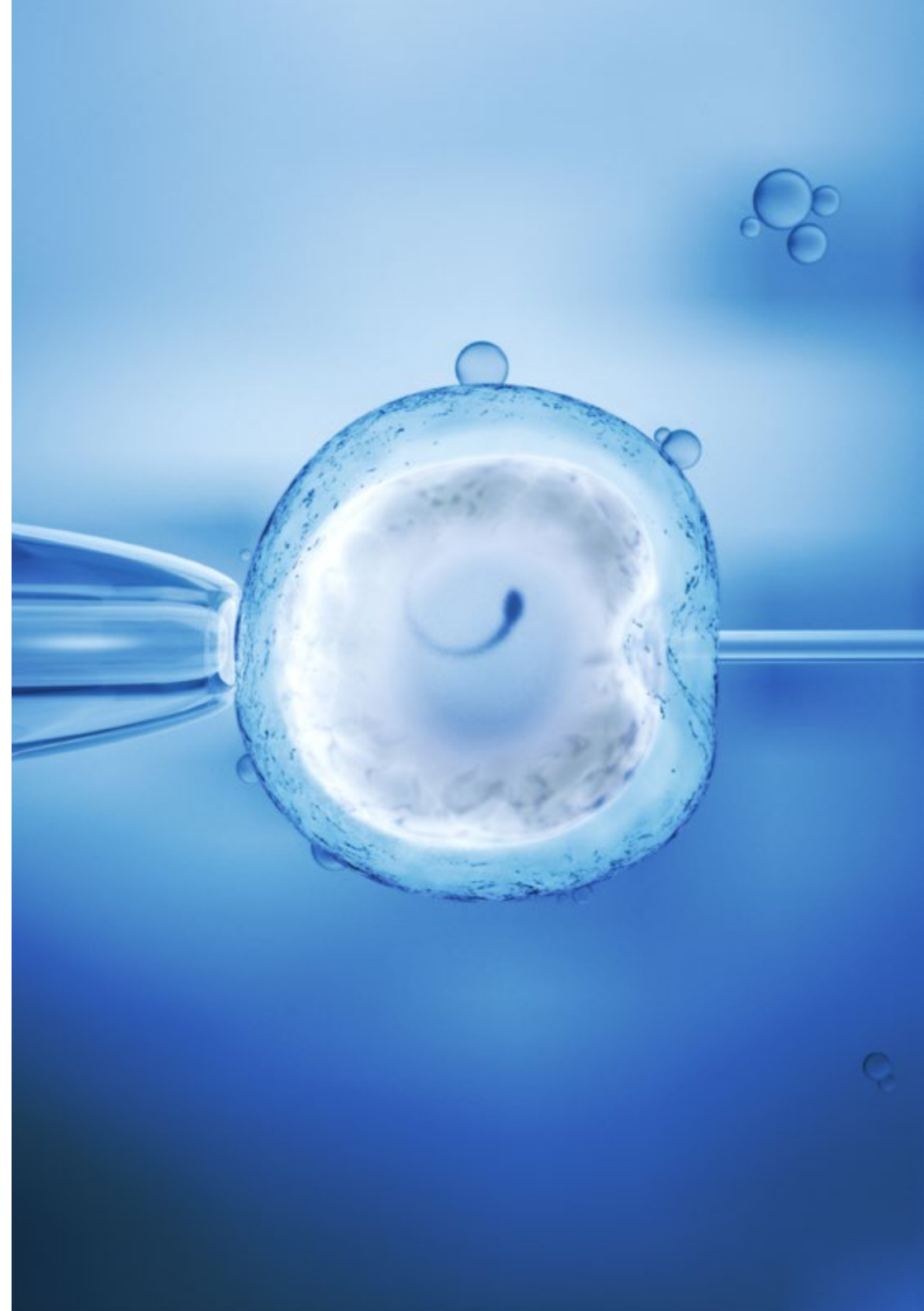
Specific Objectives

Module 1. Reproductive Biotechnologies in Males

- Develop national, European and international sanitary requirements for the trade of germplasmic material
- Present the methods of macroscopic, microscopic and seminal quality assessment
- Evaluate the compositions and functionality of the different diluents, as well as the methodology for the calculation of seminal doses
- Examine the critical points in the processing, maintenance and cryopreservation of spermatozoa
- Establish quality management systems in semen freezing centers
- Compile the design of a stallion assessment system
- Identify all genetic diseases transmissible by spermatozoa
- Propose the creation of germplasm banks for the conservation of animal genetic resources

Module 2. Reproductive Biotechnologies in Females

- Analyze synchronization protocols for fixed-time artificial insemination (FTAI)
- Substantiate the effects of hormones in the IATF programs
- Evaluate the issues involved in an embryo transfer program
- Present superovulation and synchronization protocols in embryo donors
- Establish systems for handling and valuation of embryos at commercial level
- Compile the different methods of embryo and oocyte preservation
- Develop OPU programs as an alternative methodology to embryo transfer
- Analyze the assessment criteria for embryo implantation in recipients

Module 3. Latest Advances in Reproductive Technologies

- Examine MOET, BLUP and Genomics methods for their implementation in selection programs
- Establish the technique of oocyte collection in impuberant females and its effective application as a shortening of the generation interval
- Determine the methods of animal cloning and their technical application
- Propose the different embryo biopsy techniques for preimplantational genetic diagnosis
- Establish the characteristics of transgenic animals
- Application of primordial embryonic cells in animal production
- Substantiate the mechanism of action in the application of the CRISPR technique

"

A path to achieve training and professional growth that will propel you towards a greater level of competitiveness in the employment market".

03
Course Management

The program includes in its teaching staff leading experts in Reproductive Biotechnologies in Domestic Mammals who contribute their work experience to this program. They are world-renowned doctors from different countries with proven theoretical and practical professional experience.

Our teaching team, experts in Reproductive Biotechnologies in Domestic Mammals, will help you achieve success in your profession"

Management

Dr. Gomez Peinado, Antonio

- Coordinator of Obstetrics and Reproduction at Alfonso X El Sabio University, Faculty of Veterinary Medicine
- Degree in Veterinary Medicine
- Doctorate in Alfonso X El Sabio University Faculty of Veterinary Medicine - Professor of Animal Production

Dr. Gómez Rodríguez, Elisa

- Professor of Veterinary Medicine at the Alfonso X El Sabio University
- Work development of assisted reproduction techniques at the " Spanish Institute of Animal Genetics and Reproduction" (IEGRA) in Talavera de la Reina, Toledo
- Degree in Veterinary Medicine, Complutense University Madrid
- Postgraduate course "Assisted Reproduction in Cattle Taught by IEGRA, UAX and HUMECO, Talavera de la Reina
- Course on "Bovine Reproductive Ultrasound" Taught by Dr. Giovanni Gnemmi (HUMECO), Talavera de la Reina

Professors

Mr. Pinto González, Agustín

- Veterinarian of the Spanish Institute of Animal Genetics and Reproduction
- Sani Lidia's Veterinarian
- Degree in Veterinary Medicine
- Specialization in Animal Reproduction at IEGRA
- IEGRA's Diploma in Artificial Insemination in Cattle

Dr. Peris Frau, Patricia

- Postdoctoral fellow in charge of the UCLM research project entitled: "Improvements in Sperm Conservation of Different Species" In the Animal Health and Biotechnology Research Group (SaBio, IREC, UCLM)
- Degree in Veterinary Medicine from the University of Murcia.
- D. in Agricultural and Environmental Sciences with international mention from the University of Castilla La Mancha
- Member of the research team of the National Project entitled: "Increased in vitro embryo procurement in small ruminants through modification in the in vitro fertilization protocol" (AGL2017-89017-R).
- Clinical Veterinarian at Animal Care Hospital Douglas, Cork, Ireland

04

Structure and Content

The structure of the contents has been designed by the best professionals in the field of Reproductive Biotechnologies in Domestic Mammals, with extensive experience and recognized prestige in the profession, backed by the volume of cases reviewed, studied and diagnosed, and with extensive knowledge of new technologies applied to veterinary medicine.
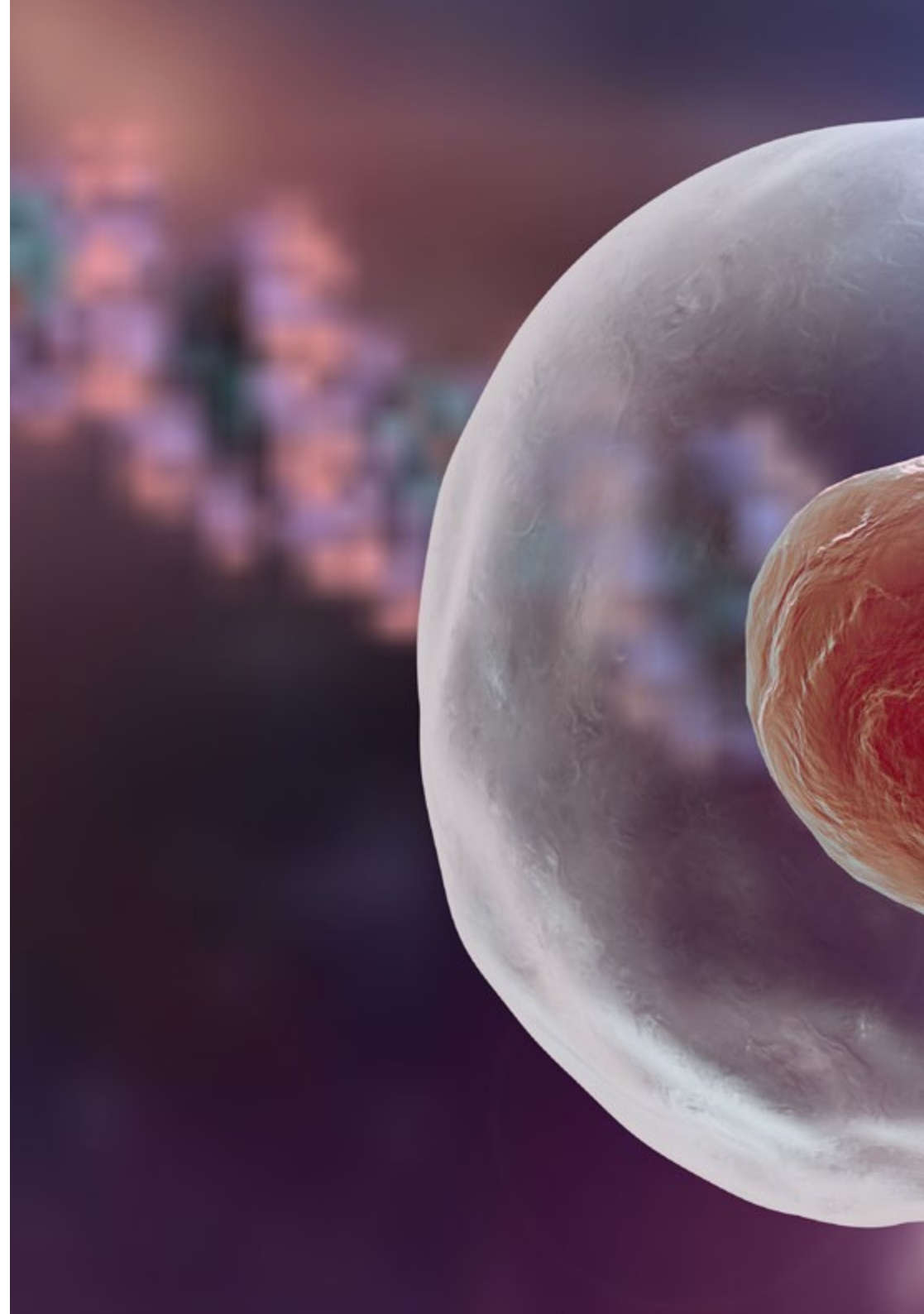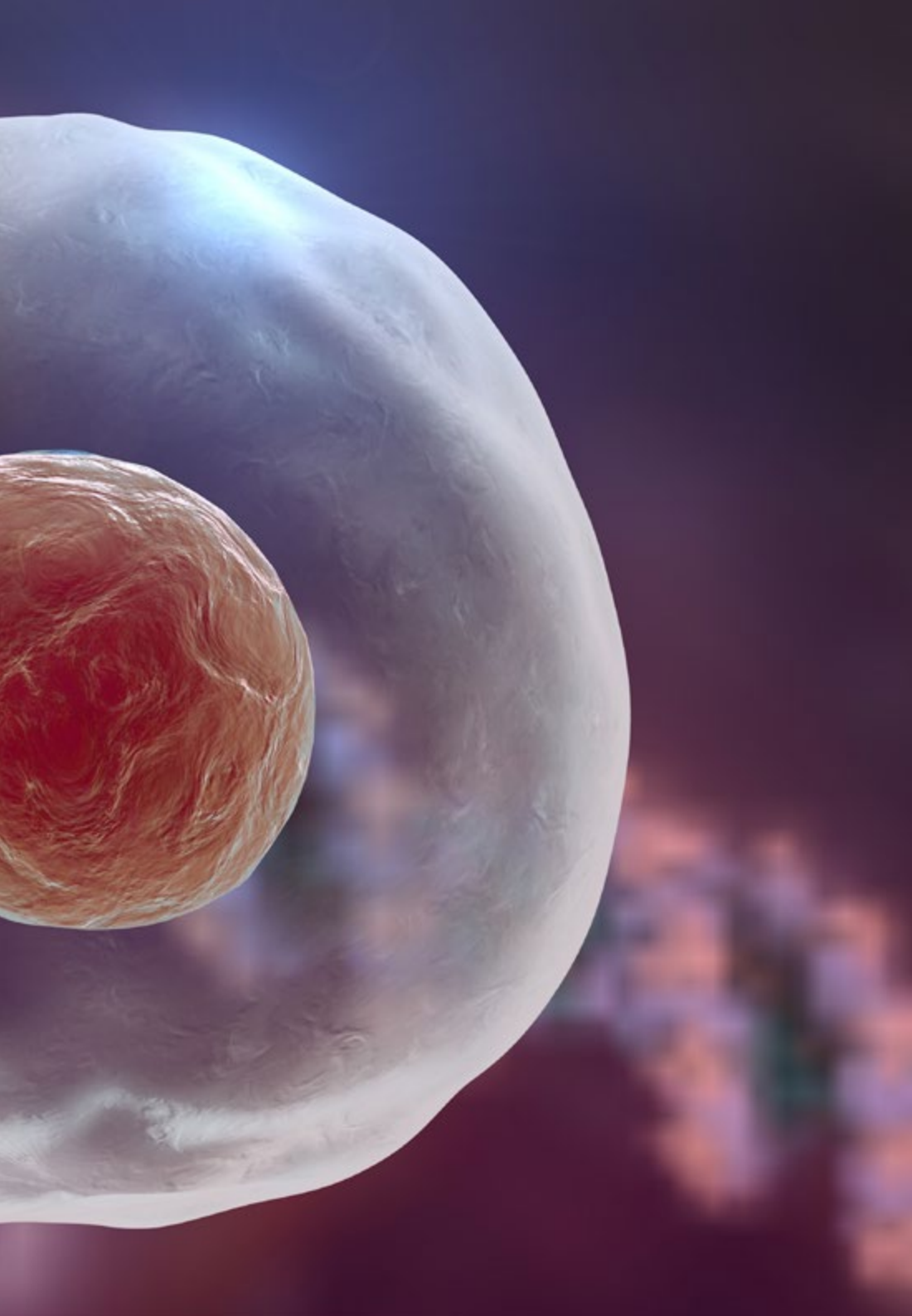
This Postgraduate Diploma in Reproductive Biotechnologies in Domestic Mammals contains the most complete and up-to-date scientific program on the market"

Module 2. Reproductive Biotechnologies in Females

2.1.   Artificial Insemination in Ruminant Females
  2.1.1.   Evolution of Artificial Insemination Methodologies in Females
  2.1.2.   Heat Detection Methods
  2.1.3.   Artificial Insemination in Cows
  2.1.4.   Artificial Insemination in Sheep
  2.1.5.   Artificial Insemination in Goats
2.2.   Artificial Insemination in Mare, Sows and Female Dogs
  2.2.1.   Artificial Insemination in Mares
  2.2.2.   Artificial Insemination in Sows
  2.2.3.   Artificial Insemination in Female Dogs
2.3.   Fixed-Time Artificial Insemination Programs (FTAI)
  2.3.1.   Functions, Advantages and Disadvantages of FTAI
  2.3.2.   FTAI Methods
  2.3.3.   Prostaglandin in Estrus Synchronization
  2.3.4.   Ovsynch, Cosynch and Presynch
  2.3.5.   Double-Ovsynch, G6G, Ovsynch-PMSG, and Resynchronization
  2.3.6.   Effect of Estrogens for Synchronization
  2.3.7.   Study of Progesterone in Synchronization Programs
2.4.   Embryo Transfer Donor and Recipient Selection and Management
  2.4.1.   Importance of Embryo Transfer in Different Species of Domestic Mammals
  2.4.2.   Reproductive Interest Criteria for Donor Selection
  2.4.3.   Criteria for the Selection of Recipients
  2.4.4.   Preparation and Handling of Donors and Recipients
2.5.   Embryo Transfer Superovulation and Embryo Collection Techniques
  2.5.1.   Superovulatory Treatments in Different Species of Domestic Mammals
  2.5.2.   Artificial Insemination During the Development of an E.T
  2.5.3.   Preparation of the Donor for E.T
  2.5.4.   Embryo Recovery Techniques in Different Species of Domestic Mammals

2.6.   Handling and Commercial Evaluation of Embryos
  2.6.1.   Isolation of Embryos
  2.6.2.   Embryo Search and Handling Means Used
  2.6.3.   Embryo Classification
  2.6.4.   Embryo Washing
  2.6.5.   Straw Preparation for Transfer or Transport
  2.6.6.   Physicochemical Conditions for Embryo Maintenance
  2.6.7.   Basic Equipment and Materials Used
2.7.   Follicular Puncture (OPU)
  2.7.1.   Principles of the Technique
  2.7.2.   Preparation of OPU Females for OPU: Stimulation or Nonstimulation
  2.7.3.   Methodology of the OPU Technique
2.8 In Vitro Fertilization and Intracytoplasmic Sperm Injection (ICSI)
  2.8.1.   Procurement and Selection of COCS
  2.8.2.   In Vitro Maturation (IVM)
  2.8.3.   Conventional in Vitro Fertilization (IVF)
  2.8.4.   Intracytoplasmic Sperm Injection (ICSI)
  2.8.5.   In Vitro Culture (IVC)
2.9.   Embryo Implantation in Recipients
  2.9.1.   Receiver Synchronization Protocols
  2.9.2.   Recipient Assessment Criteria Following Synchronization Protocols
  2.9.3.   Embryo Implantation Technique and Equipment Required
2.10.   Oocyte and Embryo Cryopreservation
  2.10.1.   Introduction
  2.10.2.   Embryo and Oocyte Preservation Methods
  2.10.3.   Cryopreservation Techniques
  2.10.4.   Comparison of Embryos Produced In Vitro and In Vivo Embryo Assessment for Freezing and Techniques of Choice

Module 3. Latest Advances in Reproductive Technologies

3.1.   Assistance of the Latest Reproductive Technologies in Breeding Programs
    3.1.1.   Genetic Manipulation Concept and Historical Introduction
    3.1.2.   Promoters and Gene Expression
    3.1.3.   Mammalian Cell Transformation Systems
    3.1.4.   Application Methods in Genetic Improvement: MOET, BLUP and Genomics
3.2.   Oocyte Collection in Impuberant Females
    3.2.1.   Donor Selection and Preparation
    3.2.2.   Ovarian Stimulation Protocols
    3.2.3.   OPU Technique
    3.2.4.   Differences between Prepubertal and Adult Females in the Results of Oocyte Retrieval and In Vitro Embryo Production (IVP)
3.3.   Cloning of Animals of Zootechnical Interest
    3.3.1.   Introduction and Phases of the Cell Cycle
    3.3.2.   Methodology of Cloning by Means of Nuclear Transfer
    3.3.3.   Cloning Application and Effectiveness
3.4.   Preimplantational Genetic Diagnosis
    3.4.1.   Introduction
    3.4.2.   Assisted Hatching
    3.4.3.   Embryo Biopsy
    3.4.4.   Applications and Methods of Preimplantational Genetic Diagnosis in Domestic Mammals
3.5.   Applied Genomics and Proteomics in Genetic Programs
    3.5.1.   Introduction and Application of Genomics and Proteomics in Veterinary Medicine
    3.5.2.   Genetic Polymorphisms
    3.5.3.   Construction of Genetic Maps
    3.5.4.   Genome Projects and Manipulation
3.6.   Transgenesis
    3.6.1.   Introduction
    3.6.2.   Transgenesis Applications in Domestic Mammals
    3.6.3.   Gene Transfer Techniques
    3.6.4.   Characteristics of Transgenic Animals

3.7.   Primordial Embryonic Cells
    3.7.1.   Introduction
    3.7.2.   Pluripotent Embryonic Cell Lines
    3.7.3.   Embryonic Primordial Cells and Genetic Modification
    3.7.4.   Application of Primordial Embryonic Cells in Animal Production
3.8.   Epigenetic Alterations in Animal Reproduction
    3.8.1.   Introduction and Main Types of Epigenetic Information
    3.8.2.   Genomic Imprinting Disorders and Assisted Reproduction
    3.8.3.   Epigenetic Alterations
    3.8.4.   Epigenetics and Its Intergenerational Responses
    3.8.5.   Alterations in Normal Oocyte Physiology and Etiology of Imprinting Alterations in Assisted Reproductive Techniques
3.9.   CRISPR/CAS
    3.9.1.   Introduction
    3.9.2.   Structure and Mechanism of Action
    3.9.3.   Application of the CRISPR/CAS Technique in Animal and Human Models Clinical Trials
    3.9.4.   The Present and Future of Gene Editing
3.10.   Bioethics in Mammalian Reproduction
    3.10.1. What Is Bioethics?
    3.10.2. Ethical and Moral Aspects in the Manipulation of Animal Embryos
    3.10.3. Interferences in Genetic Manipulation and Benefits to the Human Species
    3. 10.4. Biotechnologies: New Horizons

This specialization will allow you to comfortably advance in your career "

0?
Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.
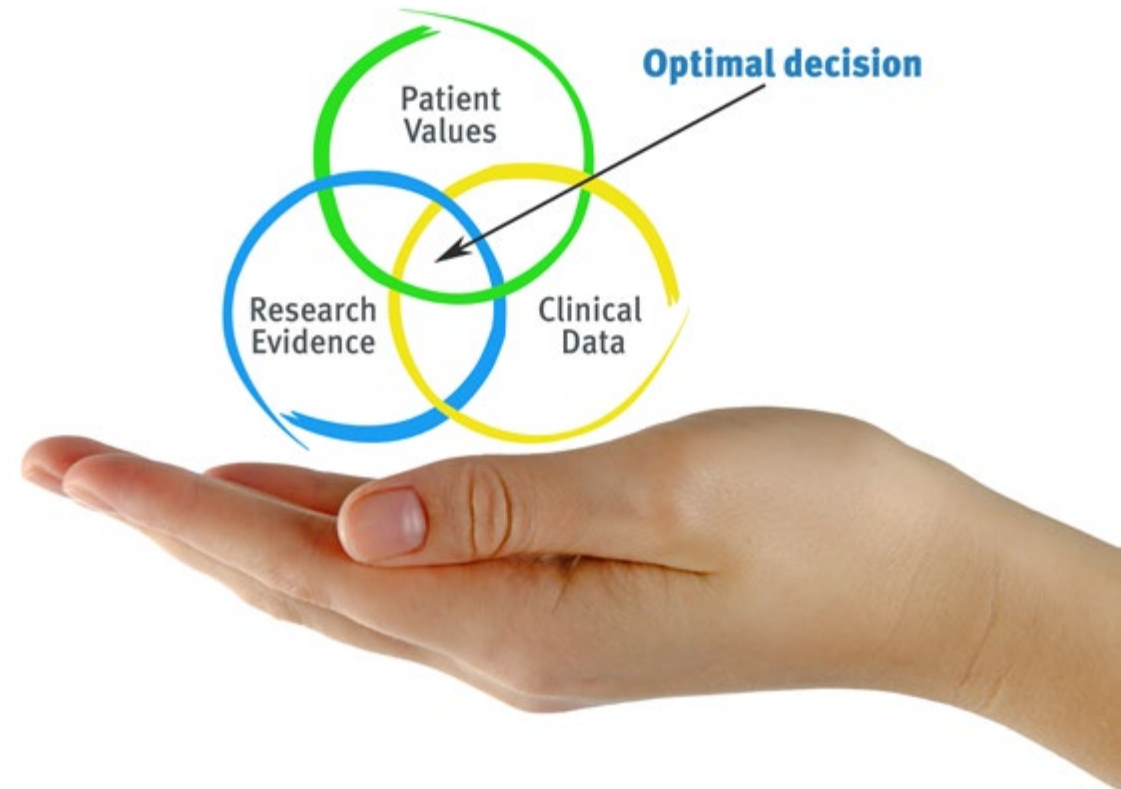
According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, in an attempt to recreate the actual conditions in a veterinarian's professional practice.

Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method"

The effectiveness of the method is justified by four fundamental achievements:

1. Veterinarians who follow this method not only manage to assimilate concepts, but also develop their mental capacity through exercises to evaluate real situations and knowledge application

2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.

3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.

4. The feeling that the effort invested is effective becomes a very important motivation for veterinarians, which translates into a greater interest in learning and an increase in the time dedicated to working on the course.

Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

Veterinarians will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology more than 65,000 veterinarians have been trained with unprecedented success in all clinical specialties, regardless of the surgical load. Our teaching method is developed in a highly demanding environment, where the students have a high socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.

This program offers the best educational material, prepared with professionals in mind:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.

Latest Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current and procedures of veterinary techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.

Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.

20%

15%

15%

3%

20%

17%

7%

3%

Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.

Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.

Certificate

The Postgraduate Diploma in Reproductive Biotechnologies in Domestic Mammals guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This **Postgraduate Diploma in Reproductive Biotechnologies in Domestic Mammals** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma** issued by **TECH Technological University** via tracked delivery*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Reproductive Biotechnologies in Domestic Mammals**

Official Nº of Hours: **450 h.**

tech technological university

Awards the following
CERTIFICATE
to

Mr./Ms. _____, with identification number _____.
For having passed and accredited the following program

POSTGRADUATE DIPLOMA
in
Reproductive Biotechnologies
in Domestic Mammals

This is a qualification awarded by this University, equivalent to 450 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country.   Unique TECH Code: AFWORD23S   techtitute.com/certificates

*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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