

Postgraduate Diploma

Embryo Development and Cryobiology in Assisted Reproduction Laboratory

Endorsed by:



tech technological
university



Postgraduate Diploma Embryo Development and Cryobiology in Assisted Reproduction Laboratory

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-embryo-development-cryobiology-assisted-reproduction-laboratory

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Course Management

p. 12

04

Structure and Content

p. 18

05

Methodology

p. 22

06

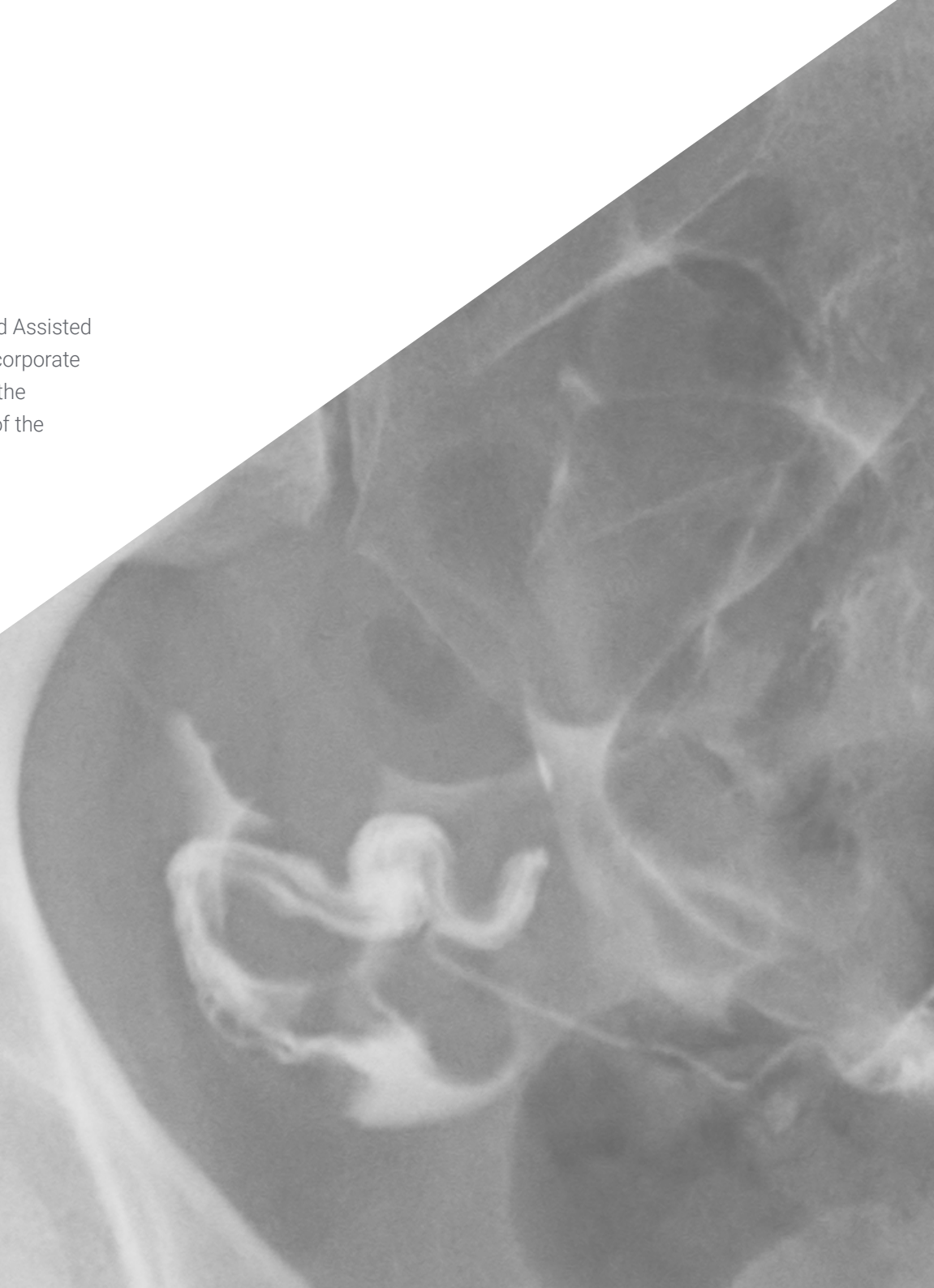
Certificate

p. 30

01

Introduction

Studies and research in the field of Cryobiology and Embryo Development have provided Assisted Reproduction with numerous resources that have boosted success in this sector. To incorporate these new techniques in all areas of interest, this program has been created to achieve the greatest educational efficiency in the teaching market. A study that will enable the use of the most advanced and interesting protocols in the sector.



“

Incorporate the advanced management of the latest research in the area of Cryobiology and Embryonic Development to your intervention skills"

Oogenesis and spermatogenesis are the beginning of the reproductive process. From this point on, the fertilization of the egg by the sperm will depend to a great extent on the anatomical integrity of the male and female reproductive system, so its study also helps to understand possible reproductive dysfunctions.

Once the anatomy and physiology have been introduced, we will explain, in-detail, the basic study that is requested to couples consulting for infertility, and the moment of its indication. On the other hand, we will delve into tubal patency and endometrial assessment, outside of the classic evaluation of the endometrial pattern and endometrial thickness by ultrasound.

All this knowledge will be addressed during the course of this program, so professionals will be able to update their knowledge regarding what is considered one of the most frustrating situations in the field of reproductive medicine, both for patients and clinicians.

This is a 100% online program, with audiovisual material, graphic pieces, complementary readings and self-knowledge exercises. It should be noted that it is a summary of relevant topics that seek to facilitate the process within the laboratory.

“*With a methodological design based on proven teaching techniques, this Postgraduate Diploma will take you through different teaching approaches to allow you to learn in a dynamic and effective way*”

This **Postgraduate Diploma in Embryo Development and Cryobiology in Assisted Reproduction Laboratory** contains the most complete and up-to-date scientific program on the market. Its most outstanding features are:

- ♦ The latest technology in online teaching software
- ♦ A highly visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- ♦ Practical cases presented by practicing experts
- ♦ State-of-the-art interactive video systems.
- ♦ Teaching supported by telepractice
- ♦ Continuous updating and recycling systems
- ♦ Autonomous learning: full compatibility with other occupations
- ♦ Practical exercises for self-assessment and learning verification
- ♦ Support groups and educational synergies: questions to the expert, debate and knowledge forums.
- ♦ Communication with the teacher and individual reflection work
- ♦ Content that is accessible from any fixed or portable device with an Internet connection
- ♦ Supplementary documentation databases are permanently available, even after the course

“

Our innovative telepractice concept will give you the opportunity to learn through an immersive experience, which will provide you with a faster integration and a much more realistic view of the contents: learning from an expert”

Our teaching staff is composed of medical professionals, practising specialists. In this way we ensure that we deliver the educational update we are aiming for. A multidisciplinary team of professors with specialised experience in different environments, who will develop theoretical knowledge in an efficient way, but, above all, will bring their practical knowledge derived from their own experience to the program: one of the differential qualities of this Postgraduate Diploma.

The efficiency of the methodological design of this master's degree, enhances the student's understanding of the subject. Developed by a multidisciplinary team of *e-Learning* experts, it integrates the latest advances in educational technology. In this way, you will be able to study with a range of comfortable and versatile multimedia tools that will give you the operability you need for your training.

The design of this program is based on Problem-Based Learning: an approach that conceives learning as a highly practical process. To achieve this remotely, we will use *telepractice* learning: with the help of an innovative interactive video system, and *learning from an expert*, you will be able to acquire the knowledge as if you were actually dealing with the scenario you are learning about. A concept that will allow you to integrate and fix learning in a more realistic and permanent way.

An academic precision study, directed by leading professionals in the sector, that will allow you to improve your intervention skills.

Update your anatomical knowledge to perform correct laboratory procedures for embryo development in Assisted Reproduction.



02 Objectives

This main objective of this Postgraduate Diploma is to bring the students' knowledge up to date in all areas surrounding decision-making during the evaluation of the patient and their partner. This includes the diagnosis, prognosis and the subsequent treatments. A structured approach in all fields related to assisted reproduction that will allow you to increase quality.





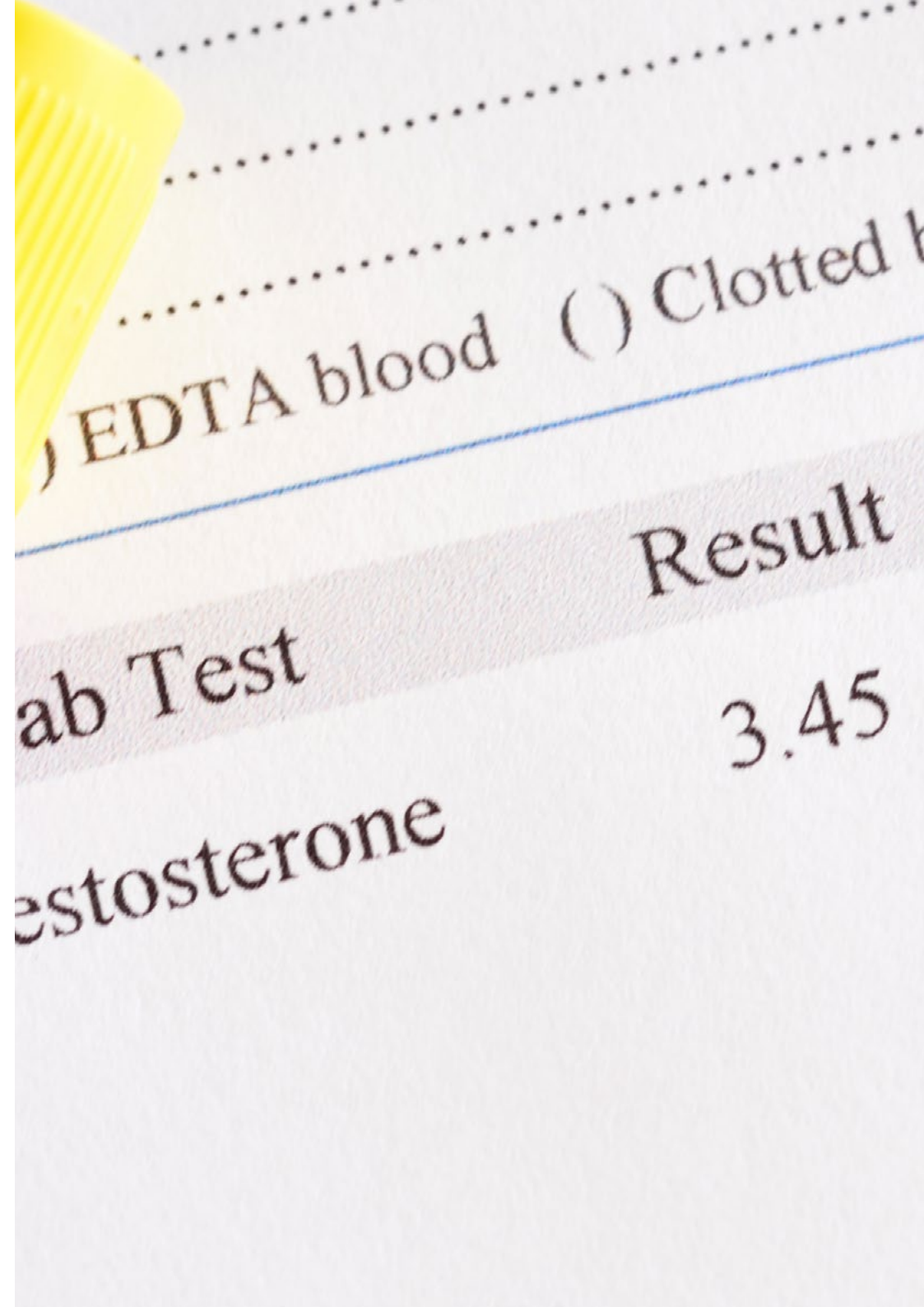
“

With an objective of advanced qualification, this Postgraduate Diploma will allow you to learn efficiently and apply what you have learned with the security of a practical learning process”



General Objectives

- Acquire up-to-date concepts in anatomy, physiology, embryology and genetics, which will help to understand reproductive diagnostics and treatments.
- Understand in detail the aspects related to the initial assessment of a sterile couple. Study criteria and referral to Reproduction Units. Basic clinical examination, request and interpretation of the results of complementary tests
- Perform an appropriate assessment and clinical orientation of the couple. Indication of request for specific tests based on the above findings
- Have an exhaustive knowledge of the different types of medical treatment, indications and their choice according to the profile of the patient and their partner
- Know the indications and surgical techniques that could improve the reproductive results of our patients. Alterations in uterine morphology (congenital or acquired). Endometriosis. Tubal Surgery
- Know the techniques used in the Andrology, IVF and cryobiology laboratories. Diagnostic techniques and sperm selection techniques. Oocyte evaluation. Embryonic Development
- Describe the types of genetic embryonic studies that are available, know their possible indications and be able to interpret the results
- Know the current legal situation of Assisted Reproduction treatments in the country
- Know the main scientific and patient societies in the field of Reproductive Medicine





Specific Objectives

Module 1. Introduction. Anatomy. Physiology. Cellular Cycle

- ♦ Study the developments and advances throughout the history of Reproductive Medicine
- ♦ Examine the aspects related to female and male anatomy, in addition to those related to gametogenesis and oocyte fertilization by the spermatozoon
- ♦ Delve into the anatomy and embryology related to embryonic genesis and embryo implantation

Module 2. Gamete Interaction Fertilization Embryonic Development

- ♦ Differentiate the different reproductive techniques: ovulation stimulation, artificial insemination and In Vitro Fertilization with or without sperm microinjection
- ♦ Detail the indication of the different reproductive techniques
- ♦ Understand the possibility of using reproductive techniques with donor gametes
- ♦ Know the different adjuvant treatments that could be used in patients diagnosed with low ovarian reserve
- ♦ Manage the different types of ovulation induction according to the patient's profile

- ♦ Know the usual artificial insemination and vitro fertilization cycles

Module 3. Gamete and Embryo Cryopreservation

- ♦ Study the Indications of the "Freeze All"
- ♦ Know and manage the possible complications derived from assisted reproduction treatments
- ♦ Analyze the drugs used for the endometrial preparation of substituted embryo cryotransfer cycles
- ♦ Update the different luteal phase support protocols
- ♦ Develop gamete handling in the laboratory
- ♦ Know the embryo biopsy techniques according to the stage of embryo division
- ♦ Know the embryo biopsy techniques according to the technology used and the existing means in each laboratory
- ♦ Analyze the indications for fertility preservation in the male
- ♦ Study the techniques used in sperm cryopreservation and their efficiency
- ♦ Deepen the indications for fertility preservation in women
- ♦ Know the techniques used in oocyte cryopreservation and their efficiency
- ♦ Know the techniques used in ovarian tissue cryopreservation and their efficiency



A program designed to allow professionals to study in a comfortable and efficient way, optimizing their efforts"

03

Course Management

Within the concept of total quality of our program, we are proud to offer you a teaching staff of the highest level, chosen for their proven experience in the educational field. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.



“

An impressive teaching staff, made up of specialized professionals from different areas of expertise, will be your professors throughout the program: A unique opportunity not to be missed”

Management



Dr. Iniesta Pérez, Silvia

- ◆ Coordinator of the Reproduction Unit at La Paz University Hospital.
- ◆ Degree in Medicine and Surgery from the University of Alcalá, Madrid
- ◆ Specialist in Obstetrics and Gynecology, via MIR. Santa Cristina University Hospital, Madrid
- ◆ Doctorate Courses at the Autonomous University of Madrid
- ◆ Research Sufficiency in the Department of Obstetrics and Gynecology, Universidad Autónoma de Madrid, Qualification: Outstanding.
- ◆ Doctoral Thesis, Obstetrics and Gynecology Department, Autonomous University of Madrid Outstanding- Cum Laude
- ◆ Levels I, II, III and IV obstetric-gynecological ultrasound (SESEGO accreditation)
- ◆ Professional Master's Degree in Human Reproduction IVI
- ◆ Professional Master's Degree in Genomics and Medical Genetics 2nd edition, Granada University
- ◆ Online Professional Master's Degree in Minimally Invasive Surgery in Gynecology. CEU Cardenal Herrera University
- ◆ Masterclass Patient-Centered Clinical Management. Deusto Business School, Madrid
- ◆ Area Specialist Doctor at the Santa Cristina University Hospital, Madrid
- ◆ Interim Labor Doctor, Hospital Infanta Sofía, Madrid
- ◆ Physician on Secondment at the Hospital Universitario La Paz



Dr. Franco Iriarte, Yosu

- ♦ Laboratory and scientific director, International Ruber Hospital
- ♦ Head of the Assisted Reproduction Laboratory of the Virgen del Pilar Health Centre in San Sebastián
- ♦ Head of the Assisted Reproduction Laboratory of Policlínica Guipúzcoa, including the laboratory of Clínica del Pilar
- ♦ Collaboration with the Assisted Reproduction Center, Navarro Medical Center
- ♦ Senior Embryologist at Cornell University Hospitals of New York and RMA of New Jersey
- ♦ Creation of the company Donostia Basque Institute of Fertility located in Onkologikoa. Managing Director.
- ♦ Managing Director of the Donostia Basque Institute of Fertility.
- ♦ Graduate in Biology, University of Navarra (Fundamental and Health Specialty)
- ♦ CAP Qualification (Certificate of Pedagogical Competency)
- ♦ PhD in Science from the University of Navarra. Thesis Title: "Genetic risk factors for venous thrombosis"
- ♦ University Specialist in Assisted Reproduction: Psychological and Legal Aspects from the Complutense University of Madrid.
- ♦ Discussion Table Moderator of the North Forum Reproduction Units on embryonic and oocyte morphological criteria and embryo freezing.
- ♦ University Diploma in Nursing. UPV-EHU "Donostia School of Nursing" Donostia- San Sebastián
- ♦ Professional Master's Degree in "Genetic Counseling". San Pablo University CEU in Madrid

Professors

Dr. Álvarez Álvarez, Pilar

- ♦ Gynecology and Obstetrics Area Specialist at Infanta Sofia University Hospital
- ♦ PhD in Gynecology and Obstetrics from the Autonomous University of Madrid
- ♦ Professor of Health Sciences at the European University of Madrid
- ♦ Professional Master's Degree in Human Reproduction from Rey Juan Carlos University

Dr. Fernández Pascual, Esaú

- ♦ Member of the Spanish Association of Urology
- ♦ Andrology and Sexual Medicine at the La Paz University Hospital
- ♦ Degree in Medicine from the Autonomous University Madrid.
- ♦ Co-Editor-in-Chief of the International Journal of Andrology

Mr. Bescós Villa, Gonzalo

- ♦ Biologist at the Autonomous University of Madrid
- ♦ Professional Master's Degree in Genetics and Cell Biology , Interuniversity: Complutense University of Madrid, Autonomous University of Madrid and University of Alcalá de Henares
- ♦ Final thesis in luisa maria botella's group, Center for Biological Research of the Higher Council for Scientific Research.
- ♦ Internship in Maria Blasco's group, National Oncology Research Center, Spain.
- ♦ Extracurricular internship in the genetics department of the Ruber International Hospital

Ms. Villa Milla, Amelia

- ♦ Senior Embryologist in the Assisted Human Reproduction Laboratory at Hospital Ruber Internacional, Madrid.
- ♦ Degree in Biological Sciences and Specialist in Biochemistry and Molecular Biology. Autonomous University of Madrid
- ♦ Biologist Specialist in Clinical Analysis in the Area of Genetics. Official Biologists College

Ms. Fernández Díaz, María

- ♦ Director of Ergo Clinic and responsible for the Assisted Reproduction Department
- ♦ Degree in Biochemistry. Faculty of Medicine and Health Sciences, University of Oviedo.
- ♦ Degree in Chemistry. Faculty of Chemical Medicine, University of Oviedo
- ♦ PhD student in Molecular and Cellular Biology. University of Oviedo
- ♦ Official Master's Degree in Reproductive Biology and Technology University of Oviedo
- ♦ Professional Master's Degree in Cancer Research University of Oviedo
- ♦ Postgraduate Degree in Medical Genetics. University of Valencia

Dr. Gayo Lana, Abel

- ♦ Co-Director of the ERGO Clinic. Embryology Laboratory Director
- ♦ PhD in Biology (outstanding Cum Laudem), PhD Program in Biochemistry and Molecular Biology, Department of Functional Biology, University of Oviedo
- ♦ Professional Master's Degree in Human Reproduction, Spanish Fertility Society (SEF) and Complutense University of Madrid
- ♦ Degree in Biology. Faculty of Biology Medicine, University of Oviedo
- ♦ Official Degree: Senior Embryologist of ESHRE
- ♦ ASEBIR Certification in Assisted Human Reproduction. Clinical Embryology



Ms. Sotos Borrás, Florencia

- ♦ Graduate in Biological Sciences. Specialist in Biochemistry and Molecular Biology. Autonomous University of Madrid
- ♦ Radioactive Facilities Supervisor Certification, Specialty in Biomedicine and Research. Infocitec
- ♦ IVF-Genetics-Andrology at Hospital Ruber Internacional.

Dr. Cuevas Saiz, Irene

- ♦ Accredited by the ASEBIR as a Specialist in Assisted Human Reproduction Clinical Embryology.
- ♦ Official Master's Degree in Biotechnology of Assisted Human Reproduction, University of Valencia
- ♦ Professional Master's Degree in Human Reproduction
- ♦ Doctoral Candidate in Obstetrics, Gynecology and Regenerative Medicine, Research Plan Title: "Embryo selection by non-invasive techniques: combining morphology.

Dr. Cabezuelo Sánchez, Vega María

- ♦ Gynecologist and Obstetrician Expert in Assisted Reproduction
- ♦ Gynecologist and Obstetrician at the Ruber International Hospital
- ♦ Researcher in Human Reproduction at the Ruber Internacional Hospital
- ♦ Collaborator in several publications and scientific communications
- ♦ Member: Spanish Fertility Society (SEF), Spanish Society of Gynecology and Obstetrics (SEGO)

04

Structure and Content

The contents of this Postgraduate Diploma have been developed by the different professors on the program with a clear purpose: to ensure our students acquire each and every one of the necessary skills to become true experts in this field. Knowledge that will enable you to respond in an efficient way to each and every one of the needs in this area of medicine.





“

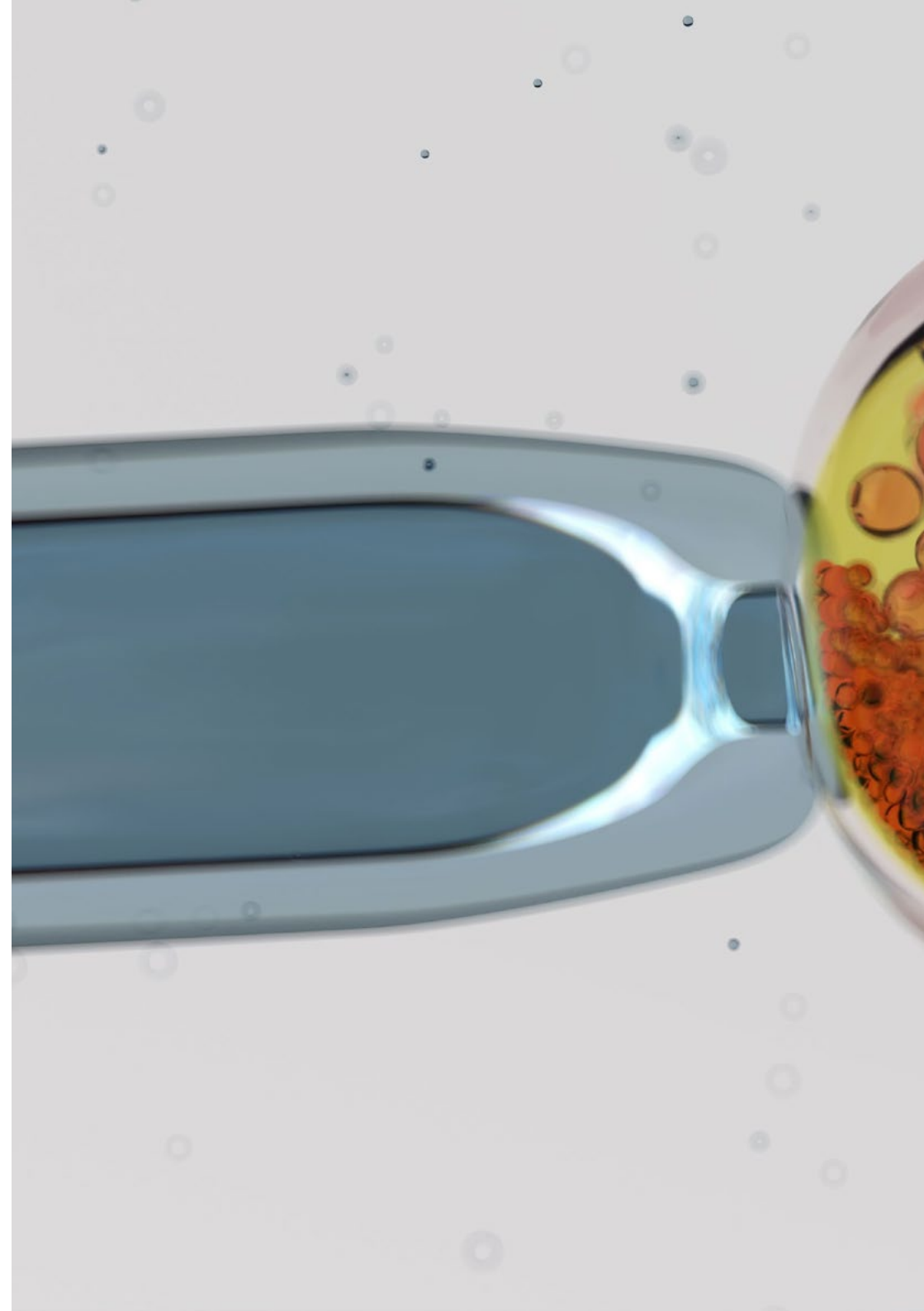
A comprehensive teaching program, structured in well-developed teaching units, oriented towards learning that is compatible with your personal and professional life"

Module 1. Introduction. Anatomy. Physiology. Cellular Cycle

- 1.1. Introduction to the Concepts of Assisted Reproduction Epidemiology Reproductive Problems
- 1.2. Concepts of Reproductive Medicine
- 1.3. Epidemiology
- 1.4. Female Anatomy and Physiology
- 1.5. Ovogenesis
- 1.6. Ovarian Cycle Follicular Recruitment Waves
- 1.7. Male Anatomy and Physiology
- 1.8. Spermatogenesis
- 1.9. Gametogenesis Meiotic Cycle
- 1.10. Ovogenesis Ovogenesis-Folliculogenesis Relationship
- 1.11. Oocyte Quality Markers
- 1.12. Factors Affecting Oocyte Quality
- 1.13. Spermatogenesis and Sperm Production
- 1.14. Semen Quality Markers
- 1.15. Factors which Affect Seminal Quality

Module 2. Gamete Interaction Fertilization Embryonic Development

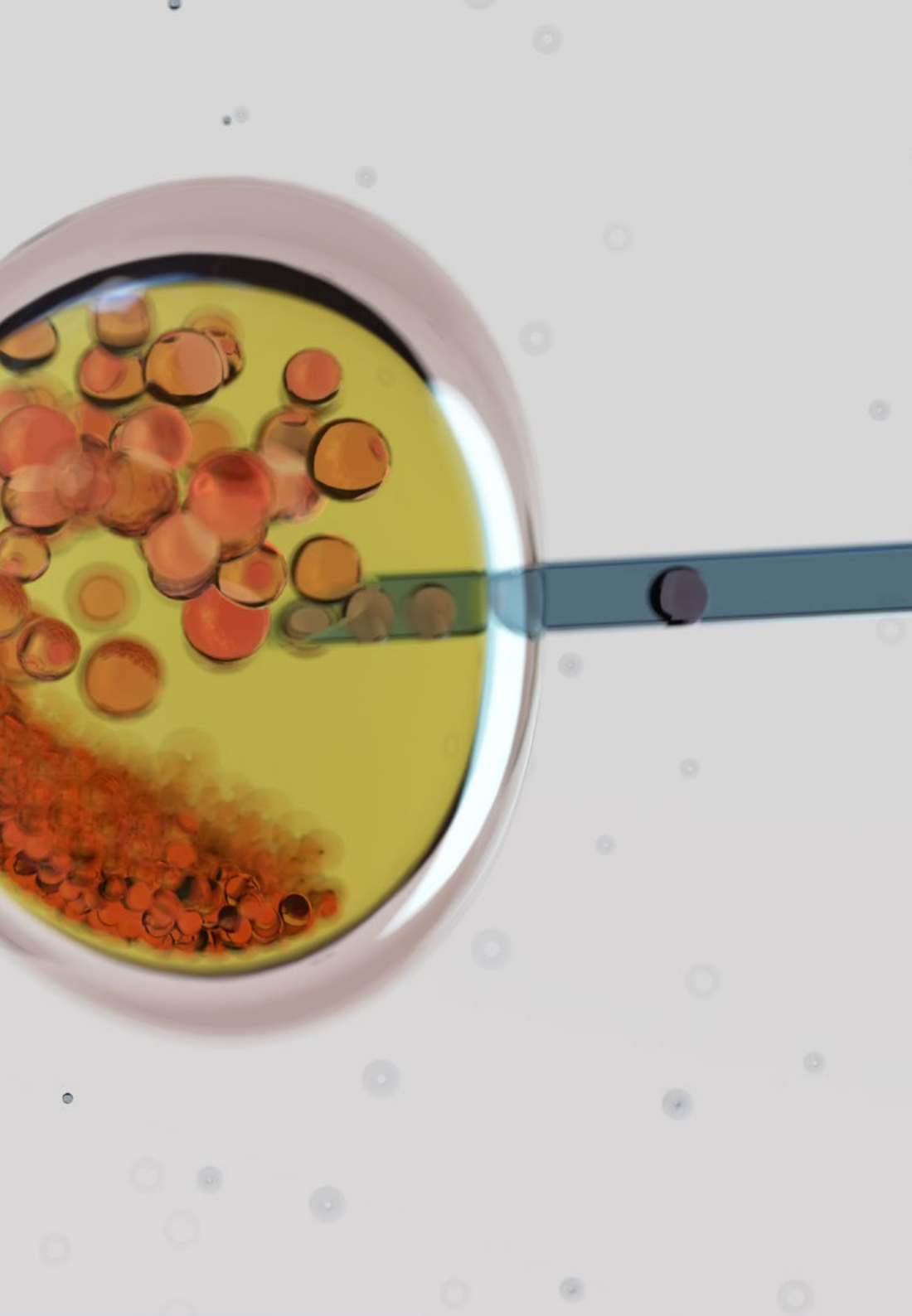
- 2.1. Interaction of Gametes in the Female Tract
- 2.2. Acrosomal Reaction and Hyperactivation
- 2.3. Sperm-Oocyte Interaction
- 2.4. Sperm-oocyte Fusion Oocyte Activation
- 2.5. Embryonic Development
- 2.6. Main Features in Pre-implantational Development
- 2.7. Implantation. Embryo-Endometrium Interaction
- 2.8. Pathology of Fertilization and Embryo Classification
- 2.9. Embryo Culture In Vitro Embryo Culture Systems Culture Media Environmental Conditions and Supplements. One Step and Sequential Cultures Renewal of Culture Media and Needs of the Embryo
- 2.10. In Vitro Embryonic Development Evaluation: Morphology and Morphokinetics
Classical Embryonic Morphology Time-lapse Systems Embryonic Morphokinetics
Embryonic Classification



Module 3. Gamete and Embryo Cryopreservation

- 3.1. Cryobiology Cryobiological Principles and Cryoprotective Agents Cryopreservation Systems. Factors Affecting the Freezing Process Additives and Application of Cryobiology
- 3.2. The Sperm Cell Structure and Functionality Physicochemical Processes that Induce Freezing in the Spermatozoon. Factors Determining Sperm Fertilization and Viability after Thawing
- 3.3. Cryopreservation of Semen Features. Regulations
- 3.4. The Oocyte Characteristics and Conditioning Factors in Cryopreservation Importance and Method of Selection. Ethical and Legal Aspects. BORRAR
- 3.5. Cryopreservation in Human Embryos Importance and Method of Selection Ethical and Legal Aspects BORRAR
- 3.6. Cryopreservation of Ovarian Tissue Laboratory Technique
- 3.7. Cryopreservation of Testicular Tissue Laboratory Technique
- 3.8. Factors Affecting Performance in a Cryopreservation Program
- 3.9. How to Manage and Organize a Biobank and its Safety?
- 3.10. Ethical and Legal Aspects of Cell and Tissue Cryopreservation

“*A unique, key, and decisive educational experience to boost your professional development*”



05

Methodology

This academic program offers students a different way of learning. Our methodology follows a cyclical learning process: **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.



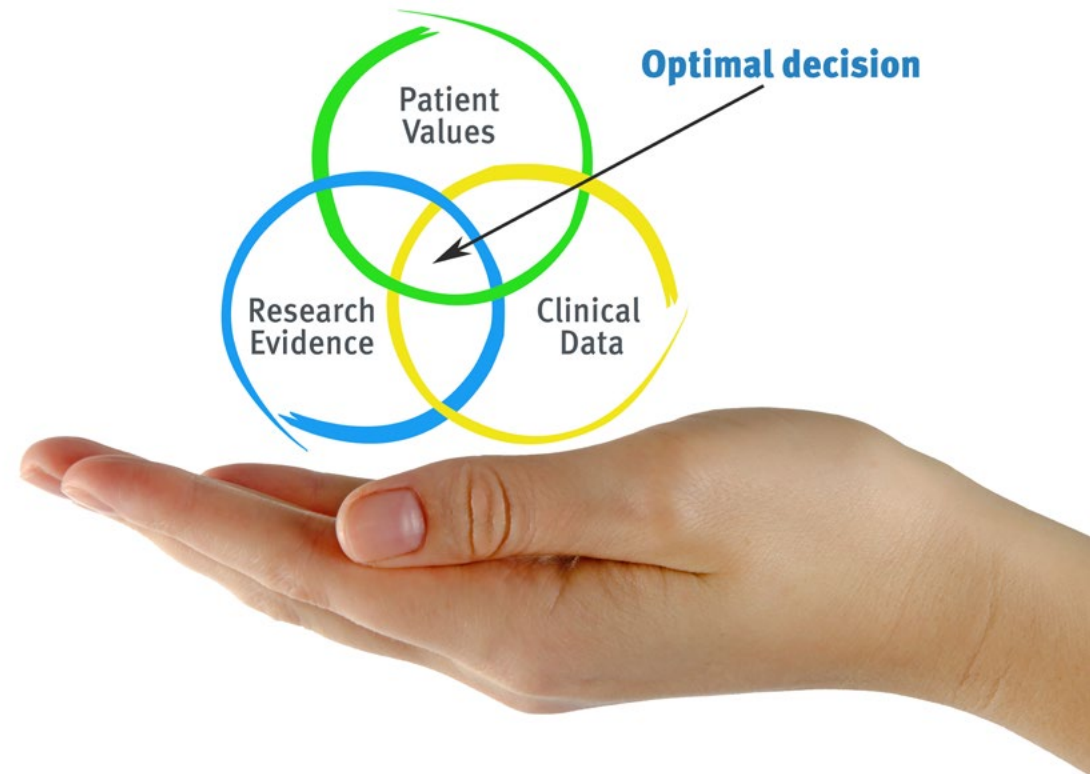
“

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, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainable 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, trying to recreate the real conditions in the physician’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. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
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. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

Professionals 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.



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 250,000 physicians have been prepared with unprecedented success in all clinical specialties regardless of surgical load. Our educational methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

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



Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical 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.





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 assess and re-assess 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 on the usefulness of learning by observing experts. The system known as 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.



06 Certificate

The Postgraduate Diploma in Embryo Development and Cryobiology in Assisted Reproduction Laboratory 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 Embryo Development and Cryobiology in Assisted Reproduction Laboratory** contains the most complete and up-to-date scientific 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 diploma 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 Embryo Development and Cryobiology in Assisted Reproduction Laboratory**

Official N° of Hours: **450 h.**

Endorsed by: Spanish Fertility Society



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

future
health confidence people
education information tutors
guarantee accreditation teaching
institutions technology learning
community commitment
personalized service innovation
knowledge present
online training
development languages
virtual classroom



Postgraduate Diploma
Embryo Development and
Cryobiology in Assisted
Reproduction Laboratory

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Schedule: at your own pace
- » Exams: online

Postgraduate Diploma

Embryo Development and Cryobiology in Assisted Reproduction Laboratory

Endorsed by:

