

# Postgraduate Certificate Clinical Genetics of Pediatric Diseases





## Postgraduate Certificate Clinical Genetics of Pediatric Diseases

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/medicine/posgraduate-certificate/clinical-genetics-pediatric-diseases](http://www.techtute.com/us/medicine/posgraduate-certificate/clinical-genetics-pediatric-diseases)

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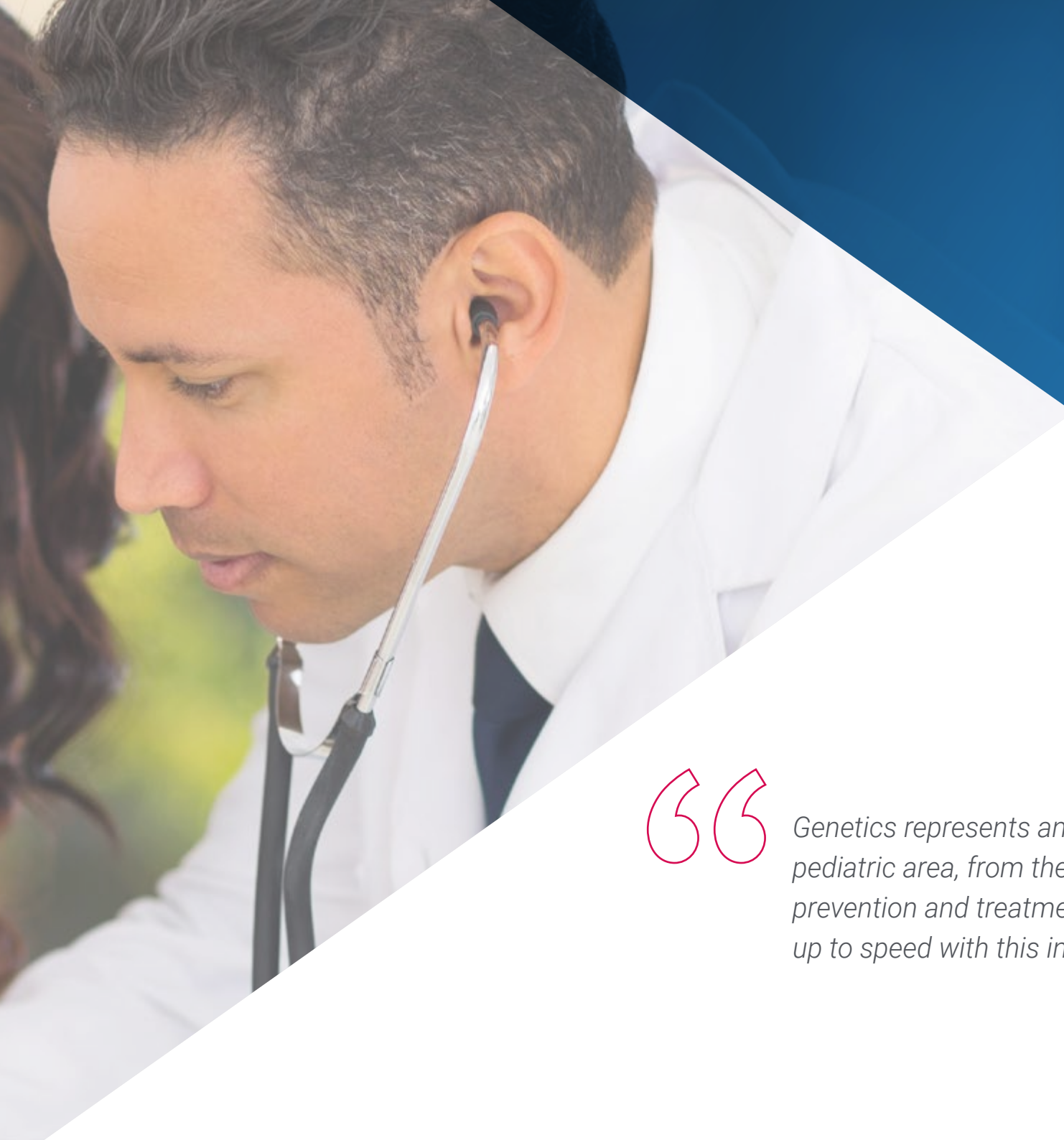
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# 01

# Introduction

In the reproductive area, the incorporation of genetics has provided numerous tools to address and prevent many of the problems that can usually be found in the office. From repeated miscarriages to hereditary diseases, knowledge of genetics can significantly modify the prognosis of the professional's interventions and their success for the patient. This course offers you an intensive training course in this area of work.





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*Genetics represents an invaluable working tool in the pediatric area, from the moment of conception to the prevention and treatment of hereditary diseases. Get up to speed with this intensive course"*

If we were to quantify the impact of genetic diseases at all ages of life we would see that: in 50% of first trimester abortions a chromosomal alteration is found; 2-3% of newborns have a congenital anomaly and, of these, at least 50% have a genetic origin; in developed countries, they are responsible for 20-30% of pediatric hospital admissions and 40-50% of infant mortality. Genetics in pediatrics plays a fundamental role and, therefore, we have proposed in this module to offer a detailed and comprehensive approach to the most common diseases in this area, as well as to teach the different tools that currently exist to provide diagnostic assistance, such as dysmorphology, its management, usefulness and limitations. Besides, we will deepen in the different existing and developing algorithms for the selection of diagnostic techniques in pediatrics at the genetic level.



*Learn to work with the most advanced genetic tools, and take a step ahead of the needs that the labor market will increasingly demand from medical professionals"*

This Postgraduate Certificate offers you the characteristics of a high level scientific, teaching and technological course. These are some of its most notable features:

- ◆ Latest technology in online teaching software
- ◆ Highly visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- ◆ Practical cases presented by practising experts
- ◆ State-of-the-art interactive video systems.
- ◆ Teaching supported by telepractice
- ◆ Continuous updating and recycling systems
- ◆ Self-regulating learning: full compatibility with other occupations
- ◆ Practical exercises for self-evaluation 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



*It incorporates the answers of Clinical Genetics to the intervention of all the moments of the work in the pediatric field"*

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*A knowledge of high interest to the medical professional that will enable you to use diagnostic techniques and interpret genetic results in the care of pediatric patients"*

This program has been developed by professionals from different Clinical Genetics offices in which they contribute their experience in daily practice, in the care of patients and families with a variety of hereditary disorders, both in genetic counseling and in prevention programs and prenatal and preconception counseling. The faculty involved in the course also carries out important research tasks relevant to the field of Genetics.

The course program addresses in its different modules the basic and necessary knowledge for the management of patients and their diseases in a Clinical Genetics practice. It offers a practical approach to the different techniques most commonly used for the diagnosis of hereditary diseases, as well as the interpretation of their results. It also , offers an approach to the diseases that motivate the largest number of consultations in daily practice in the field of Clinical Genetics.

The course contains a theoretical text of the subject to be addressed, practical examples extracted from clinical cases that will help the understanding and deepening of knowledge.

*A high intensity course that will lead you to achieve the competencies you need to intervene in this area.*

*A training that masterfully combines intensity and flexibility, making its objectives easily and comfortably achievable by the professional.*



02

# Objectives

Currently not all hospitals have genetics units and it is foreseeable that all healthcare centers will have genetics units in the coming years. Students in this program will deepen the knowledge required to work as clinical geneticists both in the field of diagnosis and counseling in these units, or to be part of multidisciplinary groups of medical services, where patients with hereditary diseases are treated.







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*The objective of this training is to provide medical professionals with a complete, high quality and high impact training in Clinical Genetics in the pediatric field"*



## General Objectives

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- ◆ Knowledge of the historical evolution of knowledge in the area of genetics.
- ◆ Learn the use of genetic analysis for diagnostic purposes
- ◆ Approaching cardiogenetics
- ◆ Learn about all known hereditary cancer syndromes
- ◆ Recognize genetic diseases affecting the sensory organs and know how to manage them
- ◆ Detail the molecular basis and mechanisms for the diagnosis of endocrine diseases
- ◆ Know the genetic diseases affecting the central and peripheral nervous system
- ◆ Learn about genetic nephrourological diseases, such as Fabry disease or Alport Syndrome.
- ◆ Addressing the different major pediatric diseases
- ◆ Review hematological, metabolic and deposit, cerebral and small vessel diseases.





## Specific Objectives

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### Module 1. Genetics of Pediatric Diseases

- ◆ To understand in depth the concepts in Dymorphology
- ◆ To deepen in a dysmorphological exploration
- ◆ In-depth understanding of congenital malformations
- ◆ Study the main pediatric syndromes
- ◆ To detect inherited disorders of metabolism



*Advance in your profession  
by making your way in a  
field that is shaping up  
to be one of the most  
exciting in present and  
future medicine"*

03

# Course Management

For our course to be of the highest quality, we are proud to work with a teaching staff of the highest level, chosen for their proven track record. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.





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*A course created and directed by experts in Clinical Genetics who will take you through the most updated and complete knowledge and give you the real and contextual vision of this area of work"*

## International Guest Director

With an outstanding scientific career in the field of Molecular Genetics and Genomics, Dr. Deborah Morris-Rosendahl has devoted herself to the analysis and diagnosis of specific pathologies. Based on her excellent results and prestige, she has taken on professional challenges such as directing the NHS South East Genomic Laboratory Hub in London.

The research of this world-class expert has focused on the identification of novel disease-causing genes for both single-gene disorders and complex neuropsychiatric conditions. Her particular interest in neuroevolutionary processes has led her to determine genotype-phenotype associations, various cortical developmental conditions, and to refine genotype-phenotype correlations for Lissencephaly, Primary Microcephaly and Microcephaly Syndromes.

She has also turned her attention to inherited cardiac and respiratory conditions, areas in which her laboratory is charged with specialized testing. On the other hand, her team has been dedicated to designing cutting-edge methodologies to offer innovative genomic diagnostics, consolidating her reputation as a leader in this field globally.

Dr. Morris-Rosendahl began her education in science at the University of Cape Town, where she obtained an honors degree in Zoology. To continue her studies, she joined the Mammalian Research Institute at the University of Pretoria. With the advent of recombinant DNA technology, she immediately redirected her efforts to Human Genetics, completing her PhD in that field at the South African Institute of Medical Research and the University of the Witwatersrand.

However, she has carried out postdoctoral research in South Africa, the United States and Germany. In Germany, she became Director of the Diagnostic Laboratory of Molecular Genetics at the Institute of Human Genetics, University Medical Center Freiburg. Recently, she has been collaborating with several multidisciplinary teams in the UK.



## Dra. Morris-Rosendahl, Deborah

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- ♦ Scientific Director of the NHSE South East Genomic Laboratory Hub, London, UK
- ♦ Asmarley Principal Investigator in the Molecular Genetics and Genomics
- ♦ Group at the British Heart and Lung Institute
- ♦ Scientific Director, Genomic Innovation Unit, Guy's and St. Thomas' NHS Foundation Trust, UK
- ♦ Head of Clinical Genetics and Genomics Laboratory, Royal Brompton and Harefield Hospitals Clinical Group, UK
- ♦ Head of the Molecular Genetics Diagnostic Laboratory at the Institute of Human Genetics, University Medical Center Freiburg, Germany
- ♦ Research Fellow at the Institute of Mammalian Research, University of Pretoria
- ♦ Postdoctoral Fellow at Baylor College of Medicine, Houston, Texas, United States
- ♦ Postdoctoral stay awarded the Alexander von Humboldt Research Fellowship
- ♦ Doctorate in Human Genetics at the South African Institute of Medical Research and the University of the Witwatersrand
- ♦ B.Sc. in Zoology at the University of Cape Town



*Thanks to TECH, you will be able to learn with the best professionals in the world"*

## Management



### Dr. S. Tahsin Swafiri Swafiri, M.D.

- ◆ Degree in Medicine and General Surgery (University of Extremadura - Badajoz)
- ◆ Specialist in Clinical Biochemistry and Molecular Pathology (Puerta de Hierro University Hospital, Majadahonda).
- ◆ Master's Degree in Rare Diseases (University of Valencia)
- ◆ Positions
- ◆ Attending physician in Clinical Genetics at the University Hospitals of Infanta Elena, Rey Juan Carlos I, Fundación Jiménez Díaz and General de Villalba
- ◆ Associate Professor of Genetics at the Francisco de Vitoria University School of Medicine (Pozuelo de Alarcón- Madrid)
- ◆ Health Research Institute - Jiménez Diaz Foundation University Hospital

## Professors

### Dr. Lorda Sánchez, Isabel María

- ◆ Degree in Medicine and Surgery from the University of Zaragoza. 1988
- ◆ Doctor of Medicine from the University of Zurich. 1991
- ◆ Validated in 1993
- ◆ Personal Professional Accreditation in Human Genetics (AEGH)
- ◆ Certifications
- ◆ Member of the Spanish Association of Human Genetics (AEGH)
- ◆ Member of the European Cytogenetics Association (ECA)

### Dr. Fernández San José, Patricia

- ◆ Pharmacist Specialized in Clinical Biochemistry
- ◆ Specialist in the Genetics Department of the Ramón y Cajal University Hospital in Madrid.
- ◆ Specialized in the diagnosis of diseases of genetic origin highlighting familial heart disease, erythropathology and autoinflammatory syndromes
- ◆ As a collaborator, she belongs to CIBERER unit U728, to the RareGenomics Network and has her own line of research in Autoinflammatory Diseases within the framework of the Ramón y Cajal Institute of Health Research (IRYCIS)



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### Dr. Lorda Sánchez, Isabel María

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- ◆ Personal Professional Accreditation in Human Genetics (AEGH)
- ◆ Member of the Spanish Association of Human Genetics (AEGH).
- ◆ Member of the European Cytogenetics Association (ECA)
- ◆ Hospital Coordinator of Familial Hereditary Cancer for the Community of Madrid

### Dr. Almoguera Castillo, Berta

- ◆ D. in Genetics and Cell Biology. Autonomous University of Madrid. Thesis Title: "Utility of pharmacogenetics to predict the efficacy and safety of risperidone in the treatment of schizophrenia." Directors: Dr. Carmen Ayuso and Dr. Rafael Dal-Ré. 2011
- ◆ Specialized Health Training (FSE) in Clinical Biochemistry. Puerta de Hierro University Hospital, Madrid. 2009
- ◆ Diploma of Advanced Studies with the title "Molecular characterization of mitochondrial diseases with predominant phenotypic expression in cardiac muscle" directed by the Dr. Belén Bornstein Sánchez. Complutense University of Madrid. 2007
- ◆ Juan Rodés Researcher (JR17/00020; ISCIII) at the Genetics Service of the Jiménez Díaz Foundation. Madrid. 2018-Present
- ◆ Research Scientist at the Center for Applied Genomics, The Children's Hospital of Philadelphia (USA). 2015-2018
- ◆ Research Scientist at the Center for Applied Genomics, The Children's Hospital of Philadelphia (USA). 2013-2015

### Dr. Rodríguez Pinilla, Elvira

- ◆ Degree in Medicine and General Surgery from the Complutense University of Madrid (1972-1979)
- ◆ Doctor of Medicine and Surgery, Complutense University of Madrid (1992)
- ◆ Diploma: "Epidemiology in Action: a course for public health professional" U.S. Department of Health and Human Services. Public Health Service. Centers for Disease Control. Atlanta, Georgia (USA) (1988)
- ◆ Accredited in Human Genetics by the Spanish Association of Human Genetics. (2005)
- ◆ Puericulturist Medical Doctor. Diploma in Puericulture and Preventive Pediatrics. School of Puericulture of the Spanish Society of Puericulture: Course XXVII (87th Promotion). Course 2011- 2012

### Dr. Blanco Kelly, Fiona

- ◆ Adjunct Physician (Area Specialist) of the Genetics Service of the Jiménez Díaz Foundation University Hospital.
- ◆ Degree in Medicine and Surgery from the Faculty of Medicine of the Complutense University of Madrid (2004)
- ◆ Area Specialist in Clinical Biochemistry since 2009..
- ◆ Doctorate in Medicine in 2012
- ◆ Professional Master's Degree in Rare Diseases, University of Valencia, Valencia, Spain 2017.
- ◆ Postdoctoral Course: University Expert in Clinical Genetics of the University of Alcalá de Henares, Madrid, Spain 2009
- ◆ Honorary Research Associate at the Institute of Ophthalmology (IoO), University College London (UCL), London, UK (01/2016-31/12/2020)
- ◆ Secretary of the Training and Dissemination Commission of the Spanish Association of Human Genetics

# 04

# Structure and Content

The contents of this training have been developed by the different experts of this course, with a clear purpose: to ensure that our students acquire each and every one of the necessary skills to become true experts in this field.

A complete and well-structured program that will take you to the highest standards of quality and success. Expert patients participate in the preparation of the program, which adds a very original and close perspective, with real cases and situations that are not only clinical but also social. It has a holistic perspective, not just a medical one, making it of interest to healthcare professionals of any kind.



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*A complete syllabus that includes the essential aspects and new developments in the intervention in Clinical Genetics in pediatric diseases with hereditary factor”*

## Module 1. Genetics of Pediatric Diseases

- 1.1. Dysmorphology and Syndromology
- 1.2. Intellectual Disability
  - 1.2.1. Fragile X Syndrome
- 1.3. Epilepsy and Epileptic Encephalopathies
- 1.4. Genetics of Neurodevelopment
  - 1.4.1. Maturation Delays.
  - 1.4.2. Autism Spectrum Disorder
  - 1.4.3. General Developmental Delay
- 1.5. Lysosomal Storage Disorders
- 1.6. Congenital Metabolopathies.
- 1.7. Rasopathies
  - 1.7.1. Noonan Syndrome
- 1.8. Osteogenesis imperfecta
- 1.9. Leukodystrophies.
- 1.10. Cystic fibrosis





“ *A very complete teaching program, structured in didactic units organized to achieve fast and effective learning, with a focus on practical application*”

05

# Methodology

This training program provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.

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 Re-learning, 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 abundant 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, trying to recreate the real conditions in the physician's professional practice.



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*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 evaluate 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.



## Re-Learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

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.



*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.*

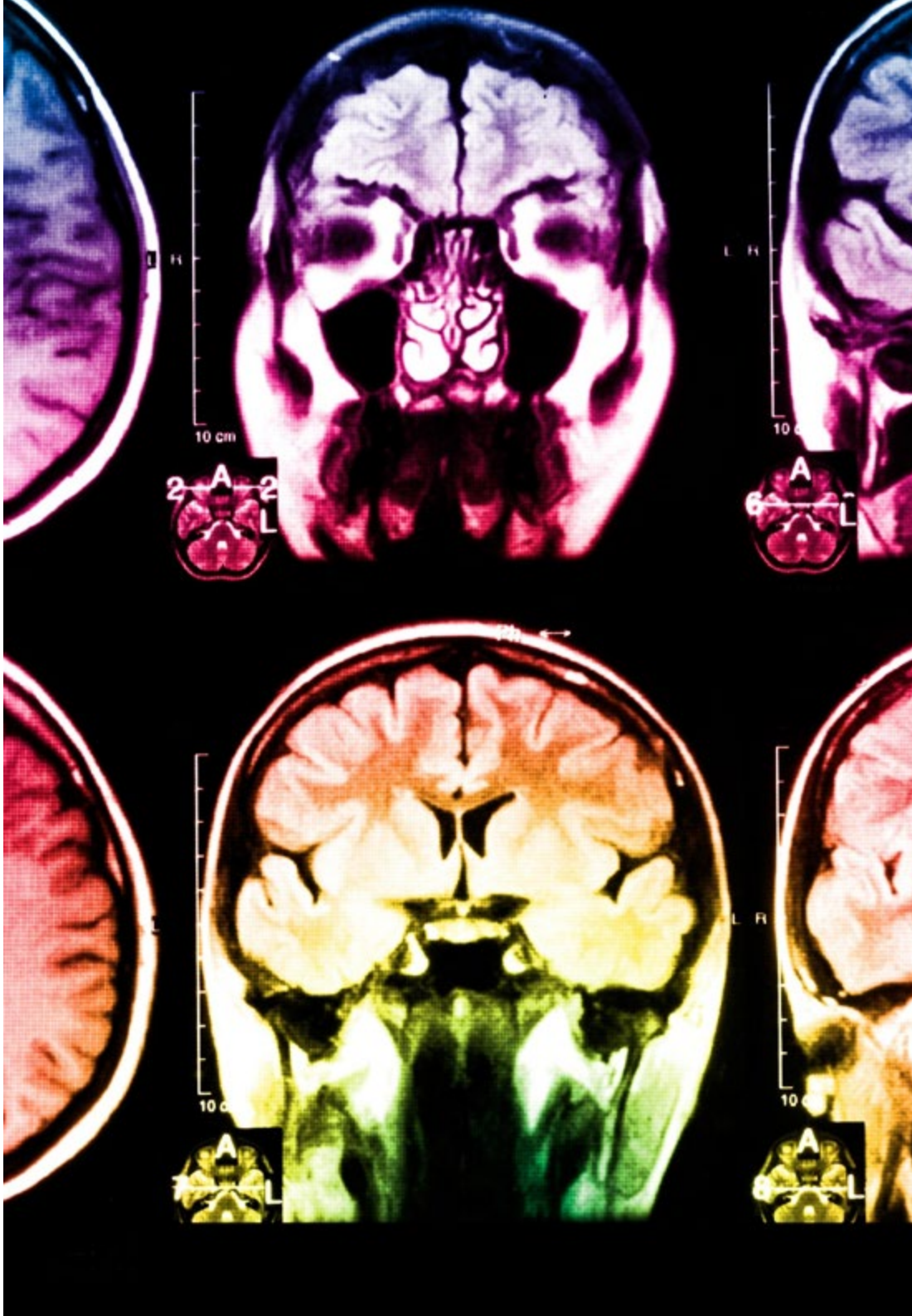
At the forefront of world teaching, the Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a high socioeconomic profile and an average age of 43.5 years old.

*Re-learning 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 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.



#### 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 multimedia content presentation training Exclusive system 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 & Re-testing

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 your goals.



#### Classes

There is scientific evidence on the usefulness of learning by observing experts: The system termed Learning from an Expert strengthens knowledge and recall capacity, and generates confidence in the face of difficult decisions in the future.



#### 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

Through a different and stimulating learning experience, you will be able to acquire the necessary skills to take a big step in your training. An opportunity to progress, with the support and monitoring of a modern and specialized university, which will propel you to another professional level.





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*Add to your CV a degree in  
Clinical Genetics of Paediatric  
Diseases and become a highly  
competitive professional”*

This program will allow you to obtain your **Postgraduate Certificate in Clinical Genetics of Paediatric Diseases** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

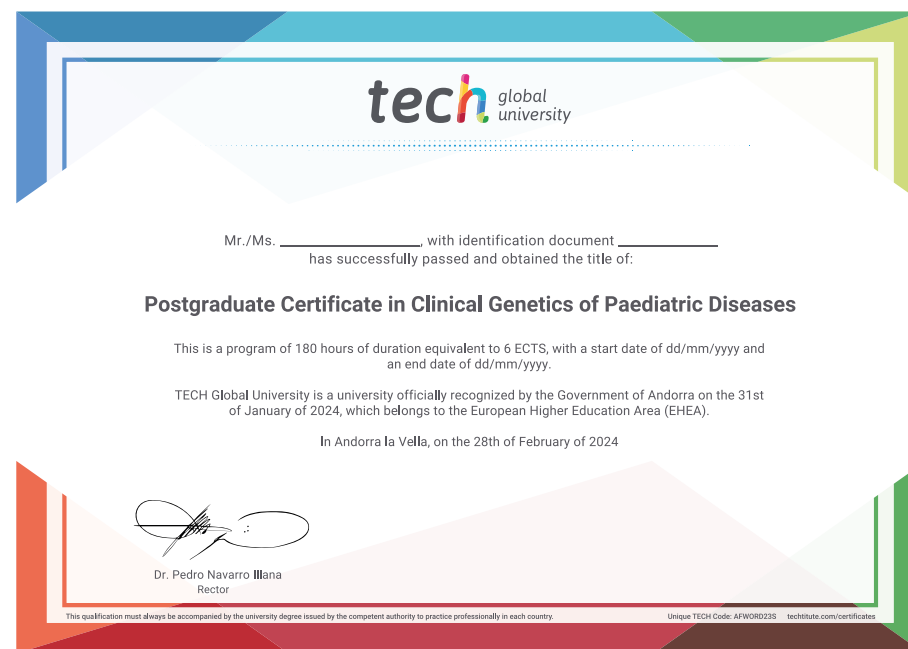
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Clinical Genetics of Paediatric Diseases**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



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





## Postgraduate Certificate Clinical Genetics of Pediatric Diseases

- » Modality: online
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