

Hybrid Master's Degree

Clinical Genetics



Hybrid Master's Degree

Clinical Genetics

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 créditos ECTS

Website: www.techtitude.com/us/medicine/hybrid-master-degree/hybrid-master-degree-clinical-genetics

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01

Introduction

Oncology, Reproductive Medicine, Cardiology and the diagnosis of rare diseases have been the major areas that have benefited in recent years from the advances achieved by genetic studies. A whole field still in exploration that has allowed for the improvement in the detection of pathologies and to apply the most effective treatments to diseases that seemed incurable. A reality where the up-to-date knowledge of the medical professional plays an important role in the progression of the patient. For this reason, TECH has created this program that delves through a 100% online syllabus into the advances obtained by genetic studies, hereditary predisposition, as well as the different endocrine, neurological or pediatric diseases associated with genetic factors.





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This Hybrid Master's Degree provides you with the most recent developments in Clinical Genetics through a complete and up-to-date syllabus, the guidance of an experienced teaching team and an intensive internship in a prestigious clinical center”

The constant advance of treatments in the knowledge of human genetics seems unstoppable. This is attested to by the results obtained with patients who have undergone therapies for sickle cell anemia, Tay-Sachs disease, epidermolysis bullosa, hereditary angioedema or night blindness.

Advances that directly affect both the genetic diagnostic techniques employed and the devices used, as well as the wide variety of cardiovascular, pediatric, endocrine and sensory diseases. A promising reality that is of great interest to medical professionals. For this reason, TECH has created this program that provides the specialist with the most recent and advanced knowledge in Clinical Genetics, through 100% online multimedia content and a 100% on-site clinical internship.

In this way, students will learn through video summaries of each topic, videos in focus, essential readings and case studies in the genetics of endocrine diseases, hereditary cancer or Wilson's disease, Fabry's disease or Rendu-Osler-Weber's disease. All this, in addition, with access to the content at any time of the day and from an electronic device with an Internet connection.

In addition, the professional will obtain a much more complete vision, thanks to an internship in a first-class hospital center, which will provide a real and direct knowledge of Clinical Genetics. A period of 3 weeks, where they will be tutored by an expert with extensive experience in this field and who will show them the study techniques, diagnosis and the most innovative treatments used at present.

An excellent opportunity provided by this academic institution to all those physicians who wish to update their knowledge through a quality program, in accordance with the current academic times and compatible with the most demanding professional responsibilities.

This **Hybrid Master's Degree in Clinical Genetics** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ More than 100 clinical cases presented by experts in Biomedicine, Human Genetics and Clinical Genetics
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Assessment of the latest international recommendations on the use of innovative treatments
- ♦ Comprehensive systematized action plans for the main pathologies
- ♦ Presentation of practical workshops on procedures, diagnosis, and treatment techniques in patients with hereditary diseases
- ♦ An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- ♦ Practical clinical guides on approaching different pathologies
- ♦ With a special emphasis on evidence-based medicine and research methodologies in human genetics
- ♦ All of this will be complemented by 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
- ♦ Furthermore, you will be able to carry out a clinical internship in one of the best hospitals

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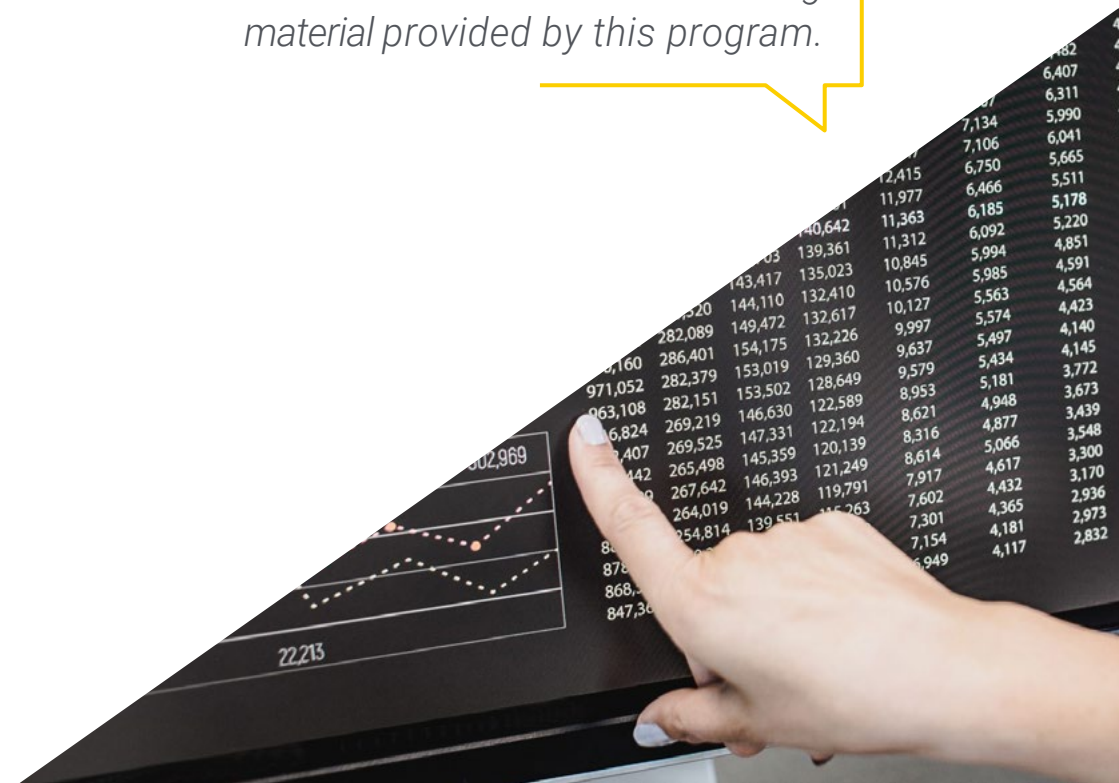
You are just one step away from obtaining a theoretical and practical update on Clinical Genetics thanks to TECH”

This Hybrid Master’s Degree program is aimed at updating medical professionals who develop their healthcare activity around diabetic patients. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge in daily medical practice and promote better decision making in the approach to patients.

Thanks to the multimedia content, developed with the latest educational technology, medical professionals will benefit from 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 students will be assisted by an innovative interactive video system created by renowned and experienced experts.

In just 12 months you will be up-to-date with the progress in Clinical Genetics and its direct application in patients with rare diseases.

You will delve dynamically into the genetics of autoimmune diseases with the multimedia teaching material provided by this program.



02

Why Study this Hybrid Master's Degree?

Advances in Genetics and Genomics translate into new recommendations and the incorporation of new treatments, where the knowledge of the medical professional, ethics and legality play a transcendental role for the patient. In the field of Clinical Genetics it is therefore necessary to have highly qualified specialists with a solid theoretical basis and relevant clinical experience. For this reason, TECH has created this program that addresses the most innovative and accurate genetic diagnostic techniques, the different diseases directly affected by genetic inheritance and the latest scientific studies. All this, in addition, complemented with a clinical internship in which the student will be integrated for 3 weeks in a team of experts in this field.



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TECH takes you into first-class clinical environments, where you will be able to update your knowledge in Clinical Genetics with renowned specialists in the field”

1. Updating from the latest technology available

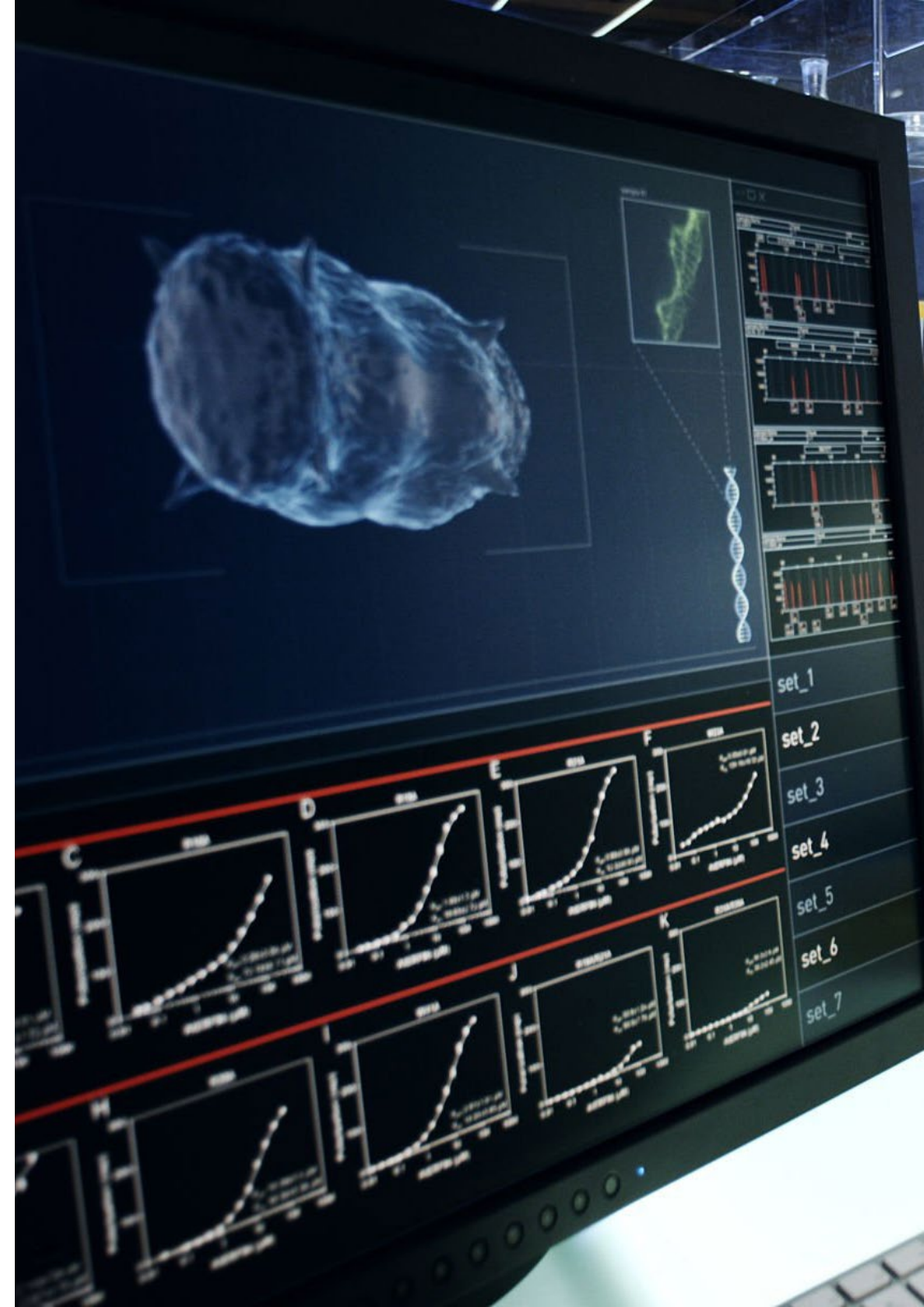
The area of Clinical Genetics has achieved important results thanks to the use of new technological devices, which have made it possible to obtain tools of great value for the identification of DNA and the creation of treatments for rare diseases. Therefore, this TECH program brings the professional closer to the latest technology applied in this field.

2. Gaining In-Depth Knowledge from the Experience of Top Specialists

Students who take this program will have a large team of professionals who will accompany them throughout the 12 months of this Hybrid Master's Degree. A first-class teaching staff will first guide them through the theoretical framework and then a specialist from the center where the internship will be carried out will be in charge of tutoring the graduate so that they can obtain a complete and direct update on the advances in Clinical Genetics.

3. Entering First-Class Clinical Environments

In order for the physician to achieve an unprecedented update in Clinical Genetics, TECH makes a thorough selection process of all teaching professionals, as well as of the hospital centers where the clinical internships will be carried out. In this way, they will be able to obtain the most relevant information from the best and in a prestigious clinical space in this area of great projection in the field of research and health practice.





4. Combining the Best Theory with State-of-the-Art Practice

In the current academic market there are many programs that are not very pedagogical and far from the real needs of medical professionals. That is why TECH has created a program with a theoretical framework 100% online, advanced and flexible, combined with a clinical internship in a hospital center, which has first-class professionals in Clinical Genetics.

5. Expanding the Boundaries of Knowledge

This institution provides students with a unique academic and practical experience, which allows them access to first-class health environments, with national and international scope. It is also a place where professionals with extensive experience in the study of Clinical Genetics are working. An unparalleled opportunity that only TECH can offer.

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*You will have full practical immersion
at the center of your choice”*

03 Objectives

The design of the program of this Hybrid Master's Degree will allow the professional to carry out an intensive update on Clinical Genetics, which will take them on a journey through the historical evolution of this specialty and to delve into the main diseases marked by genetic inheritance. This will be possible thanks to the pedagogical tools provided by TECH and by the team of specialized teachers that make up this program.



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The clinical case studies will provide you with a much more recent vision of progress in Cardiogenetics”



General Objective

- The general objective of this program is to obtain advanced knowledge on genetic analysis for diagnostic purposes that will allow, among other things, to bring students closer to Cardiogenetics, the affectation of genetic diseases to the sense organs or nephrourological genetic diseases. All this, in addition to applying new techniques and procedures for the management of these types of pathologies



This program will enhance your skills to identify and manage diseases such as Wilson, Fabry or Rendu-Osler-Weber disease"





Specific Objectives

Module 1. Introduction to Genetics

- ♦ Update on the history and evolution of knowledge in Clinical Genetics
- ♦ Knowledge of fundamental concepts about the structure and organization of the human genome
- ♦ Delve into the different models of inheritance of hereditary diseases
- ♦ Genetic counseling in clinical practice
- ♦ Recurrence risk calculation
- ♦ Prenatal, preimplantational and preconceptional genetic counseling
- ♦ Ethical and legal aspects in Genetics/Genomics
- ♦ Resolution of practical cases

Module 2. Genetic Diagnostic Techniques

- ♦ Update on currently available techniques for cytogenetic and molecular diagnostics
- ♦ Request optimization strategies and diagnostic interpretation in genetics Resolution of practical cases

Module 3. Cardiovascular Diseases

- ♦ Acquire knowledge about the importance of familial heart disease in the context of cardiovascular diseases
- ♦ Delve into the aspects of familial heart disease: basic genetics, relevant aspects on diagnosis and prognosis of the different hereditary cardiomyopathies: hypertrophic, dilated, noncompaction and arrhythmogenic
- ♦ Delve into relevant aspects of aortic syndromes

Module 4. Hereditary Cancer

- ♦ Provide the student with the necessary tools for the acquisition of knowledge of the criteria for the identification of families with susceptibility to the different hereditary cancer syndromes
- ♦ Identification of individuals at risk
- ♦ Planning protocols with early prevention programs, as well as the different risk-reducing surgery techniques and areas of application
- ♦ Specialize in the risk of transmission to offspring
- ♦ Development of preimplantation genetic diagnosis in cancer

Module 5. Genetics of Sensory Organ Diseases

- ♦ Comprehensive and up-to-date learning on retinal dystrophies and sensorineural hearing loss
- ♦ In-depth understanding of the genetic causes and inheritance models
- ♦ Develop information about diagnosis and prognosis, as well as the risk of disease transmission

Module 6. Genetics of Endocrine Diseases

- ♦ Update and learn about the characteristics of endocrine diseases, both in adults and children, associated with hereditary patterns
- ♦ Use of clinical and analytical data to establish the differential diagnosis, from the point of view of genetics, before making the decision on the study to be performed





Module 7. Genetics of Neurological Diseases

- ♦ Provide strategies for a global approach to the patient with neurological pathology of genetic origin, to guide a clinical diagnosis considering previous explorations, both analytical, immunohistochemical and electrophysiological studies already performed and well as other complementary explorations

Module 8. Genetics of Nephrourological Diseases

- ♦ Provide global information on the most common nephrological and urological pathologies
- ♦ Comprehensive approach for its identification and clinical diagnosis considering previous explorations, both analytical and anatomo-pathological studies already performed and other complementary explorations

Module 9. Genetics of Pediatric Diseases

- ♦ Understand in depth the concepts in dysmorphology
- ♦ Delve into a dysmorphological exploration
- ♦ In-depth understanding of congenital malformations
- ♦ Study the main pediatric syndromes
- ♦ Detect inherited disorders of metabolism

Module 10. Miscellaneous

- ♦ Provide theoretical information and practical cases of other pathologies that motivate a significant number of patients in Clinical Genetics services
- ♦ Achieve greater knowledge and skill in their identification and handling

04 Skills

This Hybrid Master's Degree in Clinical Genetics will allow students to enhance their competencies and diagnostic capabilities in diseases associated with genetic modifications or affectations. In order to achieve these goals, the graduate will have first-class professionals in this field, who will guide them at all times.



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You will obtain the latest scientific evidence on the involvement of MLH1 and PMS2 genes in hereditary cancer”



General Skills

- Perform duties as a clinical geneticist
- Develop the necessary processes for the genetic diagnosis of different diseases
- Work in multidisciplinary teams in the study and approach of genetic diseases



A program that will allow you to delve into amyotrophic lateral Sclerosis and genetic studies in an attractive and visual way"





Specific Skills

- ♦ Explain the fundamental concepts of the human genome
- ♦ Use existing techniques on genetic diagnosis
- ♦ Intervene in cardiovascular diseases considering genetic inheritance
- ♦ Identify families at genetic risk for cancer
- ♦ Develop diagnosis and prognosis in diseases involving the sensory organs
- ♦ Perform a differential diagnosis from a genetic point of view
- ♦ Provide a comprehensive approach to neurological disorders of genetic origin
- ♦ Perform a comprehensive approach to nephrourological diseases considering their genetic origin
- ♦ Act diagnostically in the approach of pediatric genetic diseases
- ♦ Be familiar with other genetic pathologies and be skilled in their diagnosis and management

05

Course Management

TECH has selected in this program a first-class management and teaching staff, whose professional career is linked to Biomedicine, Molecular Biology and Clinical Genetics. An excellent background that provides students with the guarantee of obtaining the most relevant and innovative information in this field from the best specialists. In addition, thanks to its human quality and proximity, the graduate will be able to resolve any questions that may arise during the course of this Hybrid Master's Degree.



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Authentic experts in Clinical Genetics will guide you in this updating process so that you can achieve your success, your goals in this field”

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

- 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. Swafiri Swafiri, Saoud Tahsin

- ♦ Specialist in Clinical Genetics
- ♦ Attending Physician at the Infanta Elena University Hospital, Madrid
- ♦ Clinical Genetics Physician at the Rey Juan Carlos I University Hospital, Mostoles
- ♦ Specialist of the Institute of Health Research at the Jiménez Díaz Foundation University Hospital, Madrid
- ♦ Medical Specialist at Villalba General Hospital
- ♦ Master's Degree in Rare Diseases from the University of Valencia

Professors

Dr. Fernández San José, Patricia

- ♦ Specialist in the Genetics Service Unit at the Ramón y Cajal University Hospital in Madrid
- ♦ Specialist Pharmacist in Clinical Biochemistry at the University Hospital of Getafe
- ♦ Specialist in the Genetics Service Unit at the Jiménez Díaz Foundation University Hospital
- ♦ Collaborator of unit U728 of CIBERER
- ♦ Graduate in Pharmacy from the Complutense University of Madrid

Dr. Cortón, Marta

- ♦ Specialist in Human Biomedicine and Genetics
- ♦ Head of the Ocular Developmental Pathologies Group at the IIS-Fundación Jiménez Díaz
- ♦ Doctor in Biomedicine by the Autonomous University of Madrid
- ♦ Certified in Human Genetics by the Spanish Association of Human Genetics

Dr. Blanco Kelly, Fiona

- ♦ Researcher and Consultant in Clinical Genetics
- ♦ Attending Physician of the Genetics Service at the Jiménez Díaz Foundation University Hospital
- ♦ Specialist in the Clinical Biochemistry Area at San Carlos Clinical Hospital
- ♦ Honorary Research Associate at the Institute of Ophthalmology (IoO), University College London (UCL), UK
- ♦ Locum Consultant in Clinical Genetics at the NHS Foundation Trust, Oxford University Hospitals
- ♦ Honorary Consultant at Moorfields Eye Hospital, London
- ♦ Secretary of the Training and Dissemination Commission of the Spanish Association of Human Genetics
- ♦ Degree in Medicine and Surgery from the Faculty of Medicine of the Complutense University of Madrid
- ♦ Specialist in the Clinical Biochemistry Area at the San Carlos Clinical Hospital, Madrid
- ♦ Doctor of Medicine
- ♦ Master's Degree in Rare Diseases from the University of Valencia
- ♦ Postgraduate Diploma in Clinical Genetics, University of Alcalá de Henares
- ♦ Evaluator of scientific articles in journals with impact index such as Molecular Vision
- ♦ Member of: Illustrious Official College of Physicians of the Community of Madrid (ICOMEM), Spanish Association of Human Genetics (AEGH), European Society of Human Genetics (ESHG), Spanish Society of Clinical Chemistry (SEQC) and Spanish Association of Medical Biopathology (AEBM)

Dr. Almoguera Castillo, Berta

- ♦ Researcher Specializing in Clinical Genetics and Cell Biology
- ♦ Juan Rodés Researcher at the Genetics Service of the Jiménez Díaz Foundation University Hospital, Madrid
- ♦ Research Scientist at Center for Applied Genomics, The Children's Hospital of Philadelphia, US A
- ♦ Postdoctoral Internship at the Center for Applied Genomics, The Children's Hospital of Philadelphia, US A
- ♦ Contracted Río Hortega of the Carlos III Health Institute of the Genetics Service of the Jiménez Díaz Foundation University Hospital, Madrid
- ♦ Pharmacist Resident Intern (FIR) in Clinical Biochemistry, Clinical Biochemistry Service, Puerta de Hierro Majadahonda University Hospital
- ♦ Doctor in Genetics and Cell Biology from the Autonomous University of Madrid
- ♦ Graduate in Pharmacy from the Complutense University of Madrid
- ♦ Specialized Health Training (FSE) in Clinical Biochemistry at the Puerta de Hierro Majadahonda University Hospital
- ♦ Diploma of Advanced Studies with the title: Molecular Characterization of Mitochondrial Diseases with predominant phenotypic expression in cardiac muscle, Complutense University of Madrid

06

Educational Plan

The multiple advances obtained in recent years thanks to the study of Genetics and its direct application make up a large part of the content of this Hybrid Master's Degree, which delves into the different pathologies through an exhaustive syllabus. Therefore, the professional will have access to the latest information on genetics, ethical and legal aspects, genetic diagnostic techniques and diseases with a high hereditary component. In addition, thanks to the Relearning method, students will progressively advance through the syllabus, reducing the long hours of memorization. A program that will conclude with a clinical internship in a first-class hospital center, guided at all times by real experts in Clinical Genetics.





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You have a library of multimedia resources accessible 24 hours a day from any device with an Internet connection”

Module 1. Introduction to Genetics

- 1.1. Introduction
- 1.2. Basic Structure of DNA
 - 1.2.1. The Gene
 - 1.2.2. Transcription and Translation
 - 1.2.3. Regulation of Gene Expression
- 1.3. Chromosomopathies
- 1.4. Numerical Alterations
- 1.5. Structural Alterations
 - 1.5.1. Phases of Mendelian Genetics
- 1.6. Autosomal Dominant Inheritance
- 1.7. Recessive Autosomal Inheritance
- 1.8. X-linked Inheritance
 - 1.8.1. Mitochondrial Genetics
 - 1.8.2. Epigenetics
 - 1.8.3. Genetic Imprinting
 - 1.8.4. Genetic Variability and Disease
- 1.9. Counseling
 - 1.9.1. Genetic Counseling Pre-test
 - 1.9.2. Genetic Counseling Post-test
 - 1.9.3. Preconception Genetic Counseling
 - 1.9.4. Prenatal Genetic Counseling
 - 1.9.5. Preimplantation Genetic Counseling
- 1.10. Ethical and Legal Aspects

Module 2. Genetic Diagnostic Techniques

- 2.1. Fluorescence In Situ Hybridization (FISH)
- 2.2. Quantitative Fluorescent Polymerase Chain Reaction (QF-PCR)
- 2.3. Comparative Genomic Hybridization (CGH Array)
- 2.4. Sanger Sequencing
 - 2.4.1. Digital PCR
- 2.5. Massive Next-Generation Sequencing (NGS)
- 2.6. Multiplex Ligation-Dependent Probe Amplification (MLPA)
- 2.7. Microsatellites and TP-PCR in DNA Repeat Expansion Diseases
- 2.8. Fetal DNA Study in Maternal Blood

Module 3. Cardiovascular Diseases

- 3.1. Familial Hypertrophic Cardiomyopathy
- 3.2. Arrhythmogenic Cardiomyopathy of the Right Ventricle
- 3.3. Familial Dilated Cardiomyopathy
- 3.4. Left Ventricular Non-Compaction Cardiomyopathy
- 3.5. Aortic Aneurysms
 - 3.5.1. Marfan Syndrome
 - 3.5.2. Loeys-Dietz Syndrome
- 3.6. Long QT Syndrome
- 3.7. Brugada Syndrome
- 3.8. Catecholaminergic Polymorphic Ventricular Tachycardia
 - 3.8.1. Idiopathic Ventricular Fibrillation
- 3.9. Short QT Syndrome
- 3.10. Genetics of Congenital Malformations in Cardiology

Module 4. Hereditary Cancer

- 4.1. Hereditary Breast and Ovarian Cancer Syndromes
 - 4.1.1. High-Predisposition Genes
 - 4.1.2. Intermediate Risk Genes
- 4.2. Nonpolyposis Colorectal Cancer Syndrome (Lynch Syndrome)
- 4.3. Immunohistochemical Study of DNA Repair Proteins
- 4.4. Microsatellite Instability Study
- 4.5. MLH1 and PMS2 Genes
- 4.6. MSH2 and MSH6 Genes
- 4.7. Lynch-Like Syndrome
- 4.8. Familial Adenomatous Polyposis Syndrome
- 4.9. APC Gene
- 4.10. MUTYH Gene
- 4.11. Other Polyposis
 - 4.11.1. Cowden Syndrome
 - 4.11.2. Li-Fraumeni Syndrome
 - 4.11.3. Multiple Endocrine Neoplasms
 - 4.11.4. Neurofibromatosis
 - 4.11.5. Tuberous sclerosis complex
 - 4.11.6. Familial Melanoma
 - 4.11.7. Von Hippel-Lindau Disease

Module 5. Genetics of Sensory Organ Diseases

- 5.1. Peripheral Retinal Dystrophies
- 5.2. Central Retinal Dystrophies
- 5.3. Syndromic Retinal Dystrophies
- 5.4. Optic Atrophy
- 5.5. Corneal Dystrophies
- 5.6. Ocular Albinism
- 5.7. Ocular Malformations
- 5.8. Sensorineural Hearing Loss due to Autosomal Dominant Recessive Inheritance
- 5.9. Sensorineural Hearing Loss due to Mitochondrial Inheritance
- 5.10. Syndromic Hearing Loss

Module 6. Genetics of Endocrine Diseases

- 6.1. Monogenic Diabetes
- 6.2. Primary Hypoparathyroidism
- 6.3. Familial Short Stature and Achondroplasia
- 6.4. Acromegaly
- 6.5. Hypogonadism
 - 6.5.1. Kallmann Syndrome
- 6.6. Congenital Adrenal Hyperplasia
- 6.7. Genetics of Phosphocalcium Metabolism
- 6.8. Familial Hypcholesterolemia
- 6.9. Paraganglioma and Pheochromocytoma
- 6.10. Medullary Thyroid Carcinoma

Module 7. Genetics of Neurological Diseases

- 7.1. Hereditary Peripheral Neuropathies
- 7.2. Hereditary Ataxias
- 7.3. Huntington's Disease
- 7.4. Hereditary Dystonia
- 7.5. Hereditary Paraparesis
- 7.6. Muscular Dystrophies
 - 7.6.1. Dystrophinopathies
 - 7.6.2. Facioscapulohumeral Dystrophy
 - 7.6.3. Steinert's Disease
- 7.7. Myotonia Congenita
- 7.8. Dementia
 - 7.8.1. Alzheimer's Disease
 - 7.8.2. Frontotemporal Dementia
- 7.9. Amyotrophic Lateral Sclerosis
- 7.10. CADASIL Disease

Module 8. Genetics of Nephrourological Diseases

- 8.1. Polycystic Kidney Disease
- 8.2. Hereditary Tubulopathies
- 8.3. Hereditary Glomerulopathies
- 8.4. Atypical Hemolytic Uremic Syndrome
- 8.5. Congenital Renal and Urothelial System Congenital Malformations
- 8.6. Malformation Syndromes with Associated Renoureteral Malformation
- 8.7. Gonadal Dysgenesis
- 8.8. Hereditary Kidney Cancer

Module 9. Genetics of Pediatric Diseases

- 9.1. Dysmorphology and Syndromology
- 9.2. Intellectual Disability
 - 9.2.1. Fragile X Syndrome
- 9.3. Epilepsy and Epileptic Encephalopathies
- 9.4. Genetics of Neurodevelopment
 - 9.4.1. Maturation Delays
 - 9.4.2. Autism Spectrum Disorder
 - 9.4.3. General Developmental Delay
- 9.5. Lysosomal Storage Disorders
- 9.6. Congenital Metabolopathies
- 9.7. Rasopathies
 - 9.7.1. Noonan Syndrome
- 9.8. Osteogenesis Imperfecta
- 9.9. Leukodystrophies
- 9.10. Cystic Fibrosis



Module 10. Miscellaneous

- 10.1. Hemophilia
- 10.2. Thalassemias
- 10.3. Hemochromatosis
- 10.4. Porphyrias
- 10.5. Variable Primary Immunodeficiency
- 10.6. Genetics of Autoimmune Diseases
- 10.7. Cavernomatosis
- 10.8. Wilson's Disease
- 10.9. Fabry Disease
- 10.10. Hereditary Hemorrhagic Telangiectasia
 - 10.10.1. Rendu-Osler-Weber Disease

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You are in front of a program that will allow you to be up-to-date in Hemophilias, Porphyrias and genetic diseases and compatible with your daily clinical activity”

07

Clinical Internship

This program includes a practical period in a hospital center with highly qualified professionals in the study of Clinical Genetics. A phase that will allow students to complete their knowledge update through direct experience with the best experts in this area.



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TECH has selected the best hospitals specialized in Clinical Genetics, so that you can obtain the most valuable and recent information in this field”

The clinical internship period of this Clinical Genetics program consists of a 3-week clinical stay, from Monday to Friday, with 8 consecutive hours of practical training with an attending specialist. This internship will allow students to get involved with an expert team in the important advances obtained in the diagnosis and treatment of diseases thanks to Clinical Genetics. A progress that will also allow them to integrate them into their daily clinical practice.

An eminently practical proposal, where the activities will be linked from the beginning to obtaining an update, through the most sophisticated techniques and the participation of students in the tasks of diagnosis and approach of diseases related to genetic inheritance. All this in a safe environment for the patient and with high professional performance.

TECH, therefore, offers a unique practical experience, in which the professional will be surrounded by the best and will improve their diagnostic skills and evaluation of patients who require the application of the latest advances to improve their quality of life or definitively recover their health. An ideal time to be able to enhance capabilities in a prestigious hospital.

The practical teaching will be carried out with the active participation of the student performing the activities and procedures of each area of knowledge (learning to learn and learning to do), with the accompaniment and guidance of teachers and other fellow trainees that facilitate teamwork and multidisciplinary integration as transversal competencies for the medical practice (learning to be and learning to relate).

The procedures described below will form the basis of the practical part of the training, and their implementation is subject to both the suitability of the patients and the availability of the center and its workload, with the proposed activities being as follows:



You will be able to perform your professional practice applying the latest scientific advances in Clinical Genetics"



Module	Practical Activity
Genetic Diagnostic Techniques	Take samples for fetal DNA studies in maternal blood
	Assess the results of genetic analysis
	Contribute to the study of complex clinical cases
	Interpret the data obtained through digital PCR for genetic diagnosis
Genetic Techniques Applied to Cardiovascular Diseases	Study clinical cases of familial heart disease
	Collaborate in the diagnosis and prognosis of patients with hereditary cardiomyopathies
	Assess possible treatment alternatives in patients with aortic syndromes
	Analyze the techniques available in the laboratory for genetic studies
Approach to Pediatric Diseases	Collaborate in the detection of inborn errors of metabolism
	Study the main pediatric syndromes
	Provide adequate information on prenatal, preimplantational and preconception clinical genetics
	Contribute to patient counseling on genetics and clinical practice
Management of Patients with Cancer	Identify families with susceptibility to different hereditary cancer syndromes
	Develop preimplantation genetic diagnosis in cancer
	Collaborate in the planning of protocols with early prevention programs
	Assist in the identification of patients at risk for cancer through genetic analysis techniques

Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.



General Conditions for Practical Training

The general terms and conditions of the internship agreement for the program are as follows:

1. TUTOR: During the Hybrid Master's Degree, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

2. DURATION: The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

3. ABSENCE: If the students does not show up on the start date of the Hybrid Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship.
Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

4. CERTIFICATION: Professionals who pass the Hybrid Master's Degree will receive a certificate accrediting their stay at the center.

5. EMPLOYMENT RELATIONSHIP: The Hybrid Master's Degree shall not constitute an employment relationship of any kind.

6. PRIOR EDUCATION: Some centers may require a certificate of prior education for the Hybrid Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

7. DOES NOT INCLUDE: The Hybrid Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

08

Where Can I Do the Clinical Internship?

In this Hybrid Master's Degree program, the best national and international hospitals are involved, in order to provide medical professionals with the most advanced practical and real knowledge. In this way, TECH offers the possibility of a high-level clinical internship in an innovative and avant-garde health space where they can strengthen their knowledge and increase their competences in Clinical Genetics.





“

Complete your knowledge update in diagnostics through Genetics with an unparalleled clinical internship on the academic market”



The student will be able to complete the internship of this Hybrid Master's Degree at the following centers:



Medicine

Hospital HM Montepíncipe

Country	City
Spain	Madrid

Address: Av. de Montepíncipe, 25, 28660,
Boadilla del Monte, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

Related internship programs:

- Palliative Care
- Aesthetic Medicine





Medicine

Hospital HM Torrelodones

Country	City
Spain	Madrid

Address: Av. Castillo Olivares, s/n, 28250, Torrelodones, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

Related internship programs:

- Anaesthesiology and Resuscitation
- Palliative Care



Medicine

Hospital HM Sanchinarro

Country	City
Spain	Madrid

Address: Calle de Oña, 10, 28050, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

Related internship programs:

- Anaesthesiology and Resuscitation
- Palliative Care



Medicine

Hospital HM Nuevo Belén

Country	City
Spain	Madrid

Address: Calle José Silva, 7, 28043, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

Related internship programs:

- General and Digestive System Surgery
- Clinical Nutrition in Medicine



Medicine

Hospital HM Puerta del Sur

Country	City
Spain	Madrid

Address: Av. Carlos V, 70, 28938, Móstoles, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

Related internship programs:

- Palliative Care
- Clinical Ophthalmology

09

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.



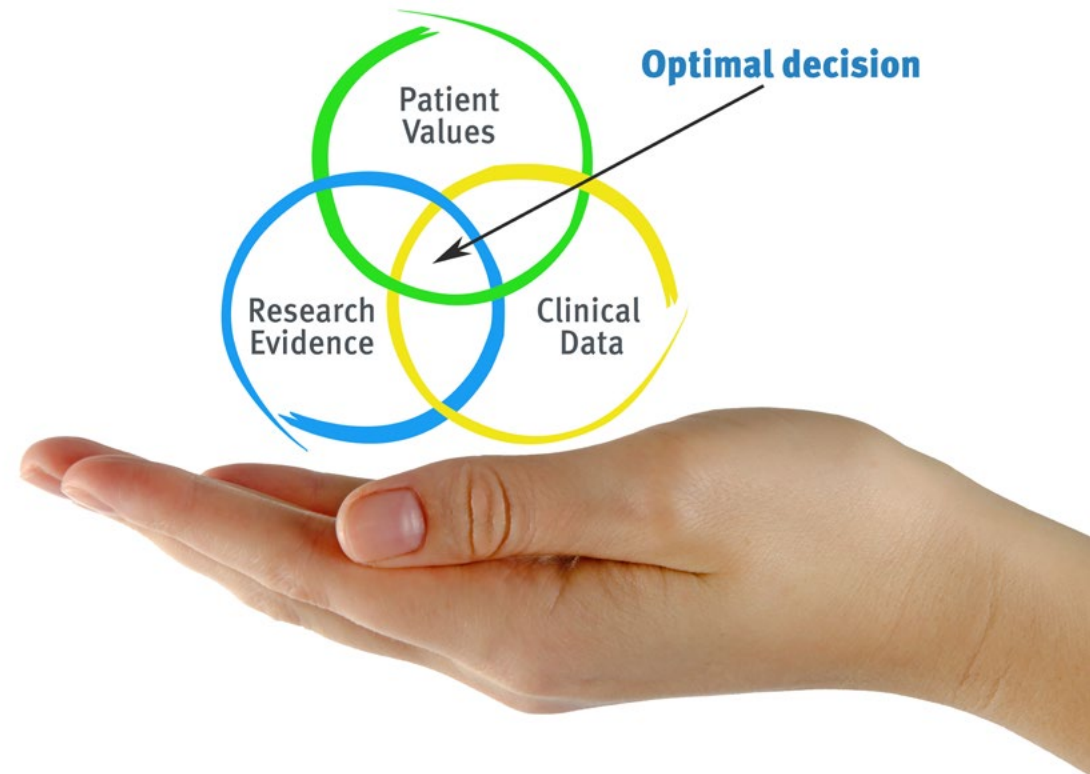
“

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, 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 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.



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.

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 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 strong socioeconomic profile and an average age of 43.5 years old.

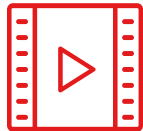
Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

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 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

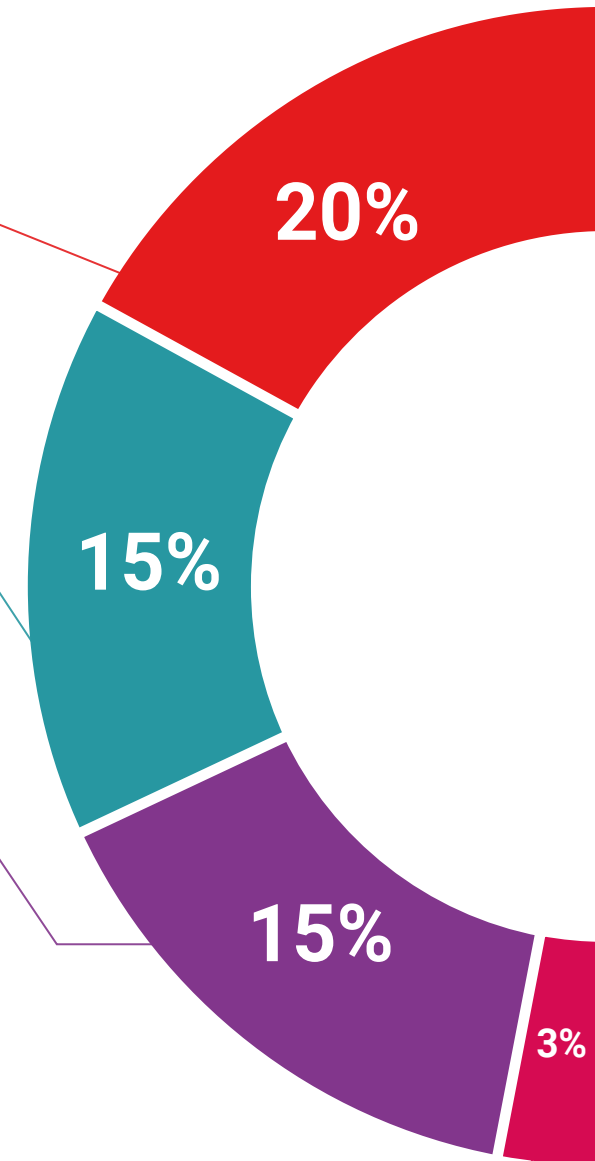
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

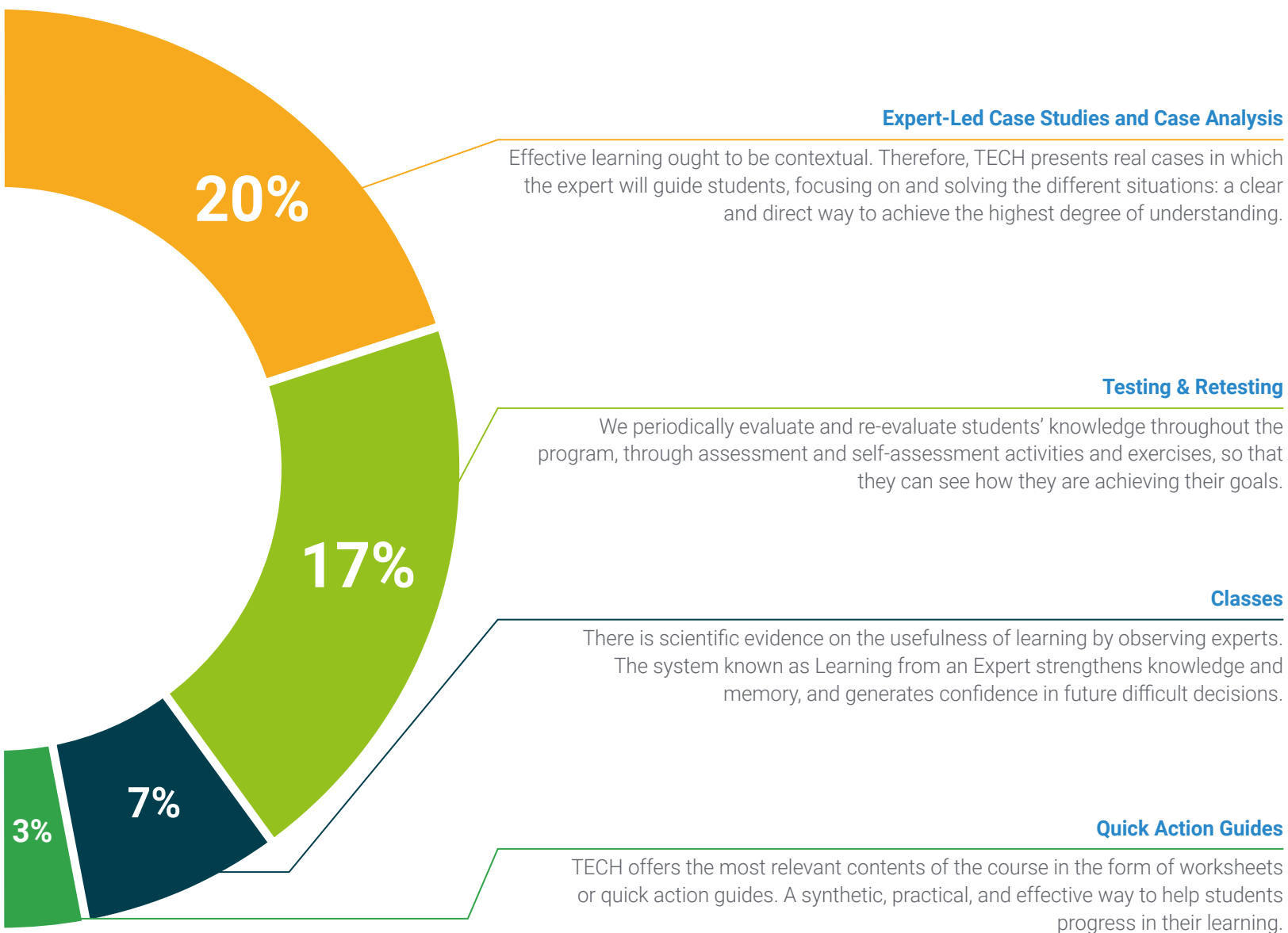
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



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.





10 Certificate

The Hybrid Master's Degree in Clinical Genetics guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid Master's Degree issued by TECH Global University.



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

This program will allow you to obtain your **Hybrid Master's Degree diploma in Clinical Genetics** 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.

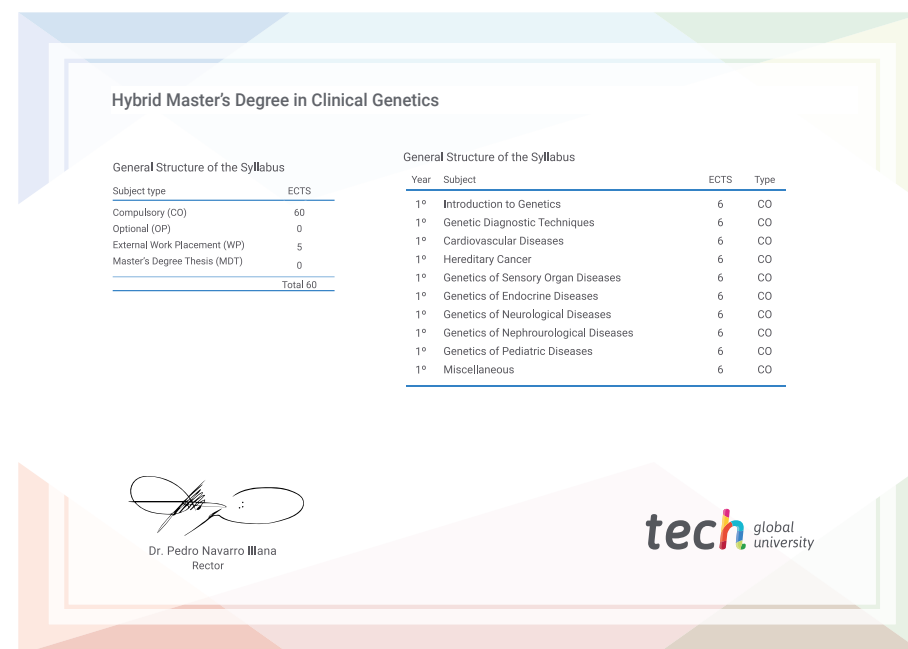
Title: **Hybrid Master's Degree in Clinical Genetics**

Course Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months**

Certificate: **TECH Global University**

Recognition: **60 + 5 ECTS Credits**





Hybrid Master's Degree Clinical Genetics

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 créditos ECTS

Hybrid Master's Degree

Clinical Genetics