

# Postgraduate Certificate Metabolomics





## Postgraduate Certificate Metabolomics

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

Website: [www.techtitute.com/us/pharmacy/postgraduate-certificate/metabolomics](http://www.techtitute.com/us/pharmacy/postgraduate-certificate/metabolomics)

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01

# Introduction

Nutrition plays a fundamental role in people's health, which is why it is important for professionals in this area to have a high level of specialization. On this occasion, TECH has designed a specific program for pharmacists with the highest quality content and scientific rigor.





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*Give your career a boost thanks to this program in Metabolomics and you will notice how you advance in your daily practice”*

This Postgraduate Certificate covers everything a pharmacist needs to know about Metabolomics. Therefore, the material is organized in the best possible way, allowing the professional to acquire all the knowledge needed, without leaving them with doubts or information gaps. It is the best program on the market because it offers students the opportunity to learn all the innovation in the field of Nutritional Genomics, 100% online.

The objective of this program is to understand and delve into the principles of Metabolomics and Proteomics. To this end, the key techniques and the main applications that Metabolomics and Proteomics could have in the field of nutrition are explained.

Therefore, the Postgraduate Certificate presents state-of-the-art microbiota data for application and use in clinical practice towards a precise and more individualized patient treatment.

The program places special emphasis on the microbiota as a tool for preventive and more personalized nutrition. The main enterotypes, metabolomic profiles and how they associate with nutrition-related diseases are presented.

This Postgraduate Certificate provides students with specific tools and skills to successfully develop their professional work in Nutritional Genomics and Precision Nutrition.

As it is an online Postgraduate Certificate, the student is not conditioned by fixed schedules or the need to move to another physical location, but can access the contents at any time of the day, balancing their work or personal life with their academic life.

This **Postgraduate Certificate in Metabolomics** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ The development of case studies presented by experts in Nutritional Genomics and Precision Nutrition
- ◆ The graphic, schematic and eminently practical contents of the course are designed to provide all the essential information required for professional practice.
- ◆ Practical exercises where self-assessment can be used to improve learning
- ◆ Special emphasis on innovative methodologies in the field of Metabolomics
- ◆ 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



*Pharmacists are often the professionals in closest contact with patients. Therefore, they need to increase their knowledge in all areas related to Nutritional Genomics"*

“

*This Postgraduate Certificate is the best investment you can make when selecting a refresher program to update your knowledge in Metabolomics”*

Its teaching staff includes professionals from the field of nutrition, who contribute their work experience to this program, as well as renowned specialists from reference societies and prestigious universities.

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

The design of this program focuses on Problem-Based Learning, which means the student must try to solve the different real-life situations of that arise throughout the academic program. To do so, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts in Metabolomics.

*This program offers teaching in simulated environments, which provides an immersive learning experience designed to prepare for real-life situations*

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



02

# Objectives

The main objective of the program is the development of theoretical and practical learning, so that the pharmacist can master the study of Nutritional Genomics and Precision Nutrition in a practical and rigorous way.





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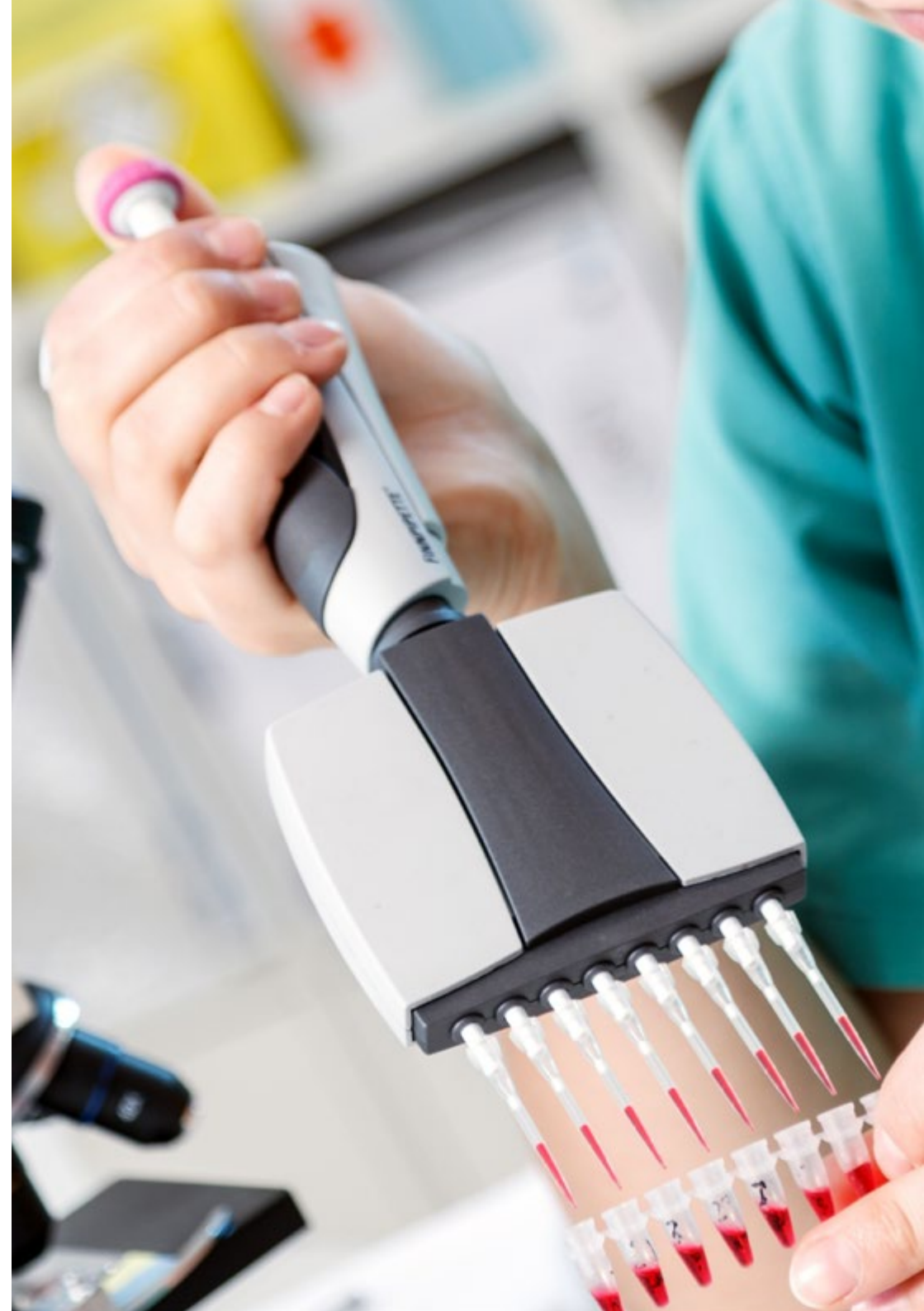
*This refresher program will provide you with a sense of confidence in your daily work, which will help you grow both personally and professionally”*



## General Objectives

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- ◆ Acquire theoretical knowledge of human population genetics
- ◆ Acquire knowledge of Genomic and Precision Nutrition to be able to apply it in clinical practice
- ◆ Learn about the trajectory of this innovative field and the key studies that contributed to its development
- ◆ Know in which pathologies and conditions of human life Nutritional Genomics and Precision Nutrition can be applied
- ◆ Be able to assess individual responses to nutrition and dietary patterns in order to promote health and disease prevention
- ◆ Learn how nutrition influences gene expression in humans
- ◆ Learn about new concepts and future trends in the field of Genomic and Precision Nutrition
- ◆ Adapt personalized dietary and lifestyle habits according to genetic polymorphisms
- ◆ Provide health professionals with all the up-to-date knowledge in the field of Genomic and Precision Nutrition in order to know how to apply it in their professional activity
- ◆ Put all the up-to-date knowledge into perspective. Where we are now and where we are going so that the student can appreciate the ethical, economic and scientific implications in the field





## Specific Objectives

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- ◆ Know the principles of metabolomics and proteomics
- ◆ Delve into the microbiota as a tool for preventive and personalized nutrition

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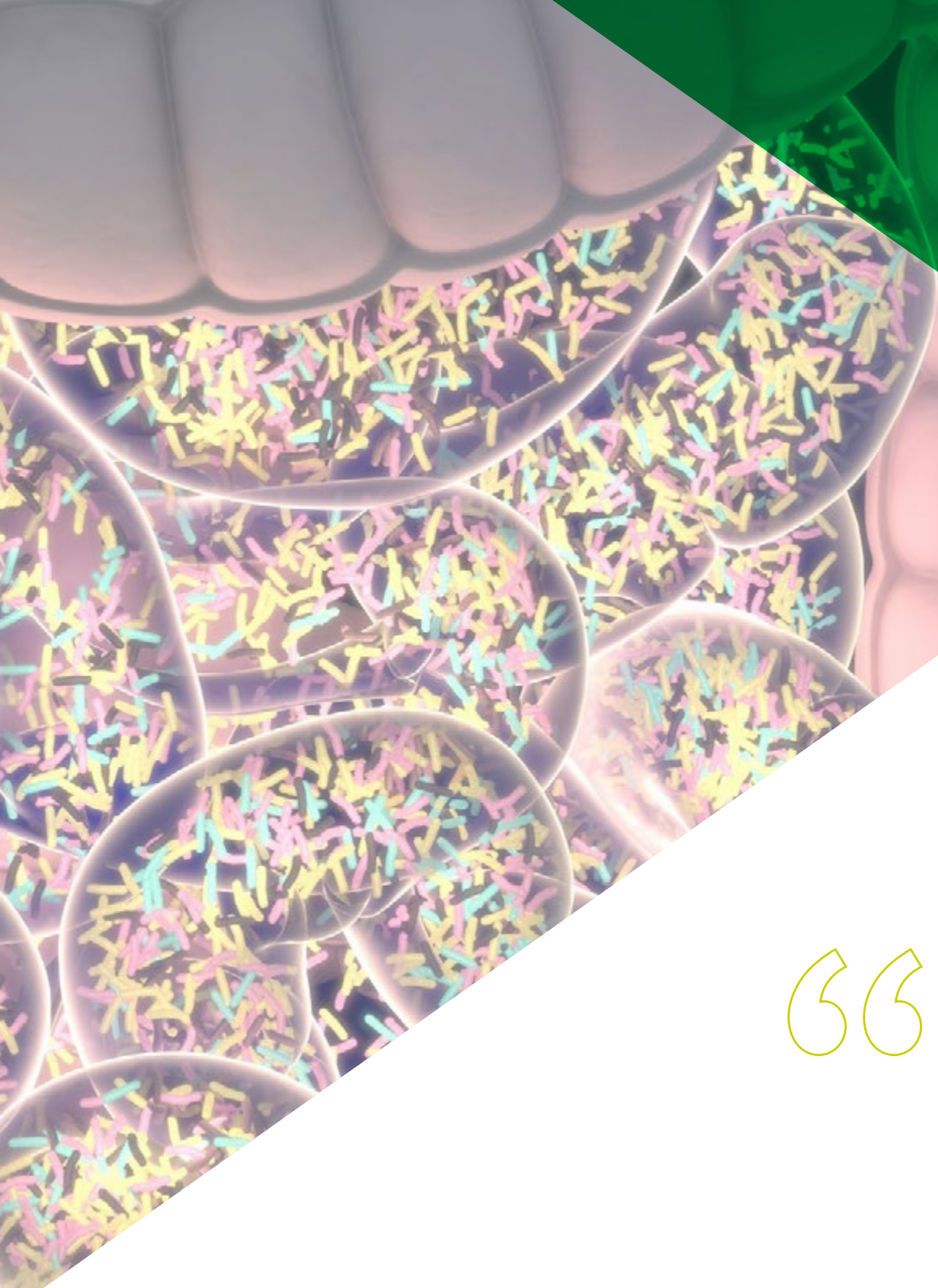
*Realistic goals that will  
turn into immediate  
job progression”*

03

# Course Management

The program's teaching staff includes experts in Metabolomics, who contribute their years of work experience to this program. Additionally, other recognized experts participate in its design and preparation, completing the program in an interdisciplinary manner.





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*Leading professionals in the field have come together to teach you the latest advances in Metabolomics”*

## International Guest Director

Dr. Caroline Stokes is a specialist in Psychology and Nutrition, with a doctorate and a habilitation in Medical Nutrition. After a distinguished career in this field, she leads the Food and Health Research group at the Humboldt University of Berlin. This team collaborates with the Department of Molecular Toxicology at the German Institute of Human Nutrition Potsdam-Rehbrücke. Previously, he has worked at the Medical School of Saarland University in Germany, the Cambridge Medical Research Council and the UK National Health Service.

One of her goals is to discover more about the fundamental role that Nutrition plays in improving the overall health of the population. To this end, he has focused on elucidating the effects of fat-soluble vitamins such as A, D, E and K, the amino acid methionine, lipids such as omega-3 fatty acids and probiotics for both the prevention and treatment of diseases, particularly those related to hepatology, neuropsychiatry and aging.

Her other lines of research have focused on plant-based diets for the prevention and treatment of diseases, including liver and psychiatric diseases. He has also studied the spectrum of vitamin D metabolites in health and disease. She has also participated in projects to analyze new sources of vitamin D in plants and to compare the luminal and mucosal microbiome.

In addition, Dr. Caroline Stokes has published a long list of scientific papers. Some of her areas of expertise are Weight Loss, Microbiota and Probiotics, among others. The outstanding results of her research and her constant commitment to her work have led her to win the National Health Service Journal Award for the Nutrition and Mental Health Program in the UK.



## Dra. Stokes, Caroline

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- Head of the Food and Health Research Group at the Humboldt University of Berlin, Germany
- Researcher at the German Institute of Human Nutrition Potsdam-Rehbruecke
- Professor of Food and Health at the Humboldt University of Berlin
- Scientist in Clinical Nutrition at the University of Saarland
- Nutrition Consultant at Pfizer
- PhD in Nutrition at the University of Saarland
- Postgraduate Diploma in Dietetics at King's College London, University of London
- Master's Degree in Human Nutrition from the University of Sheffield



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

## Management



### Dr. Konstantinidou, Valentini

- ♦ PhD in Biomedicine
- ♦ Lecturer in Nutrigenetics
- ♦ Founder of DNANUTRICOACH@
- ♦ Dietitian- Nutritionist
- ♦ Food Technologist

## Professors

### Dr. García Santamarina, Sarela

- ♦ Dr. in Biomedical Research, Pompeu Fabra University, Barcelona, Spain, 2008-2013.
- ♦ Master's Degree in Molecular Biology of Infectious Diseases, London School of Hygiene & Tropical Medicine, London, UK, 2006-2007
- ♦ Master's Degree in Biochemistry and Molecular Biology, Autonomous University of Barcelona, Spain, 2003-2004
- ♦ Degree in Chemistry, Major in Organic Chemistry, University of Santiago de Compostela, Spain, 1996-2001
- ♦ Postdoctoral Researcher EIPOD Marie Curie. Mentoring: Dr. Athanasios Typas, Dr. Peer Bork, and Dr. Kiran Patil. Project: "Effects of drugs on intestinal flora". European Molecular Biology Laboratory (EMBL), Heidelberg, Germany. Since 2018

### Mr. Anglada, Roger

- ♦ Graduate in Multimedia, Catalunya Open University (Universitat Oberta de Catalunya)
- ♦ Senior Technician in Analysis and Control, Institute of Secondary Education Narcís Monturiol, Barcelona
- ♦ Senior research support technician at the Genomics Service of the Pompeu Fabra University where he is responsible for the equipment and devices for sequencing and real-time PCR, providing support to users from different centers both in the design and interpretation of the results
- ♦ Co-author of several scientific publications since 2002. He combines his work with lectures and teaching both at Pompeu Fabra University and in different programs and courses





04

# Structure and Content

The structure of the contents has been designed by a team of professionals who know about the implications of education in daily practice, are aware of the current relevance of studying in Nutritional Genomics and Precision Nutrition, and who are committed to quality teaching through new educational technologies.





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*We have the most complete and up-to-date program on the market. We strive for excellence and for you to achieve it too”*

## Module 1. Metabolomics-Proteomics

- 1.1. Proteomics
  - 1.1.1. Principles of Proteomics
  - 1.1.2. The Flow of Proteomics Analysis
- 1.2. Metabolomics
  - 1.2.1. Principles of Metabolomics
  - 1.2.2. Targeted Metabolomics
  - 1.2.3. Non-Targeted Metabolomics
- 1.3. The Microbiome/Microbiota
  - 1.3.1. Microbiome Data
  - 1.3.2. Human Microbiota Composition
  - 1.3.3. Enterotypes and Diet
- 1.4. Main Metabolomic Profiles
  - 1.4.1. Application to Disease Diagnosis
  - 1.4.2. Microbiota and Metabolic Syndrome
  - 1.4.3. Microbiota and Cardiovascular Diseases Effect of the Oral and Intestinal Microbiota
- 1.5. Microbiota and Neurodegenerative Diseases
  - 1.5.1. Alzheimer's Disease
  - 1.5.2. Parkinson's Disease
  - 1.5.3. ALS
- 1.6. Microbiota and Neuropsychiatric Diseases
  - 1.6.1. Schizophrenia
  - 1.6.2. Anxiety, Depression, Autism
- 1.7. Microbiota and Obesity
  - 1.7.1. Enterotypes
  - 1.7.2. Current Studies and State of Knowledge





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

05

# 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 be confronted with multiple simulated clinical cases based on real patients, in which they will have to investigate, establish hypotheses and ultimately, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Pharmacists learn better, more quickly 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. Gervas, 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, attempting to recreate the actual conditions in a pharmacist'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. Pharmacists who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their 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 Harvard case method with the best 100% online teaching methodology available: Relearning.

Our 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, which represent a real revolution with respect to simply studying and analyzing cases.



*Pharmacists will learn through real cases and by solving 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 115,000 pharmacists have been trained with unprecedented success in all clinical specialties, regardless of the surgical load. This pedagogical methodology is developed in a highly demanding environment, with a university student body with a high socioeconomic profile and an average age of 43.5 years.

*Relearning will allow you to learn with less effort and better performance, involving you more in your 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 created specifically for the course by specialist pharmacists who will be teaching the course, so that the didactic development is highly specific and accurate.

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.



### Video Techniques and Procedures

TECH introduces students to the latest techniques, to the latest educational advances, to the forefront of current pharmaceutical care procedures. All of this, first hand, and explained and detailed with precision to contribute to assimilation and a better understanding. And best of all, you can watch them as many times as you want.



### Interactive Summaries

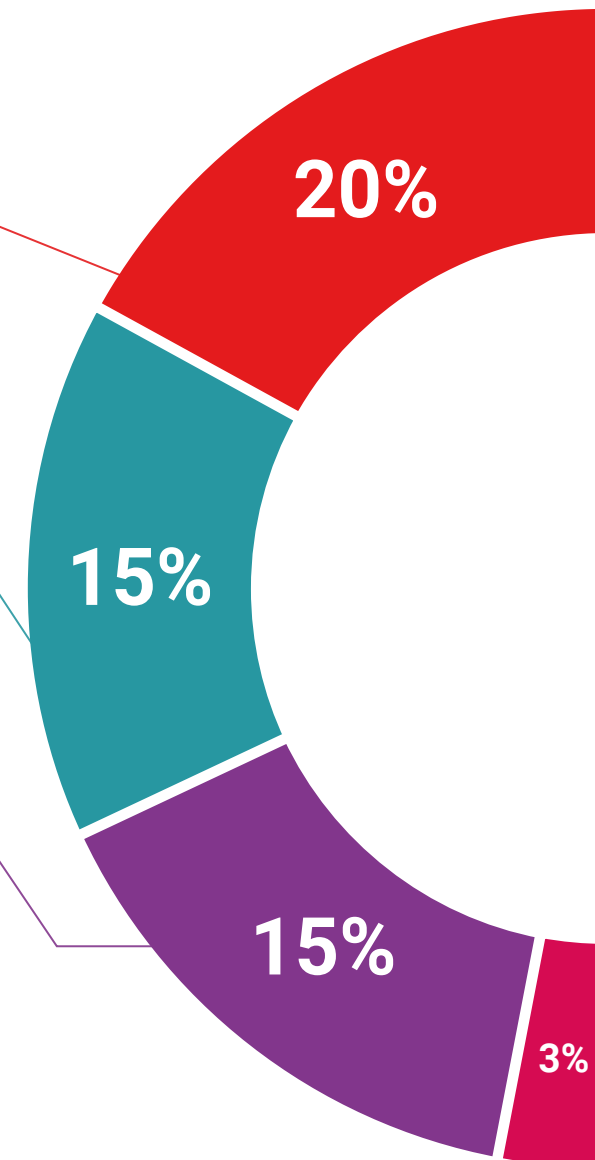
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

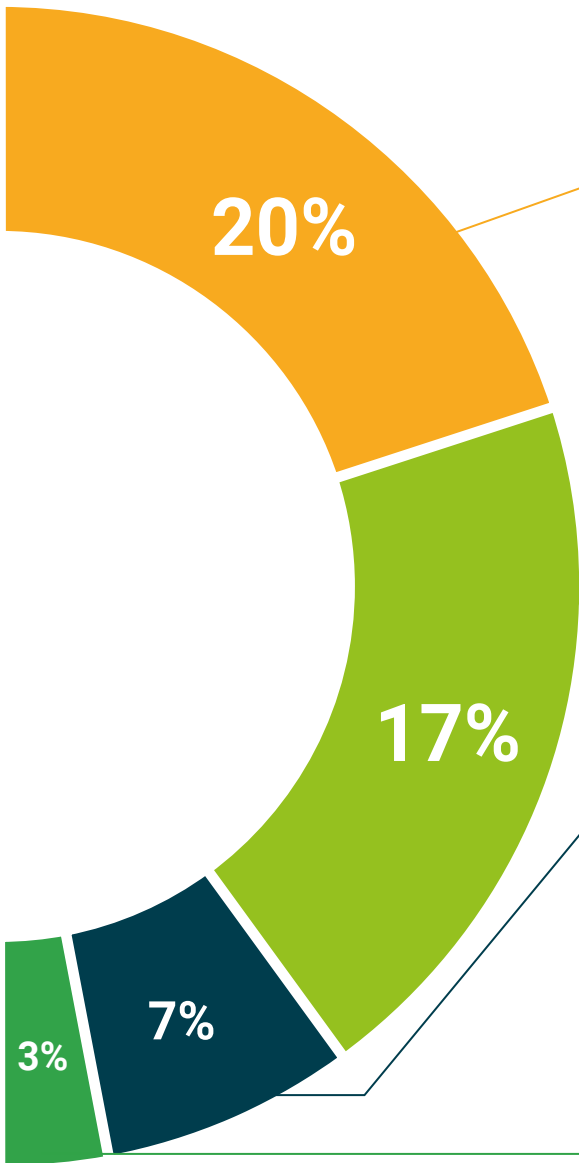
This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".



### 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, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



**Testing & Retesting**

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



**Classes**

There is scientific evidence 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

The Postgraduate Certificate in Metabolomics guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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*Successfully complete this program and receive your certificate without travel or laborious paperwork”*

This program will allow you to obtain your **Postgraduate Certificate in Metabolomics** 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 Metabolomics**

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.



future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present quality  
development language  
classroom



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