

# Postgraduate Certificate Metabolomics





## Postgraduate Certificate Metabolomics

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

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

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# 01

# Introduction

According to the most recent studies, Metabolomics is a discipline of useful alliance with the field of Medicine, given the facilities it offers for the diagnosis of diseases and for the study of the probability of developing certain conditions in the long term. The benefits provided in this area have highlighted the relevance of having extensive knowledge in this field on the part of physicians in order to ensure the health of patients. In view of this, TECH has created this program, through which the student will master the particularities of targeted and non-directed Metabolomics or distinguish the different metabolomic profiles to be at the forefront of their sector, in a completely online way.





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*This Postgraduate Certificate will allow you to master the particularities of targeted and non-targeted Metabolomics to improve your diagnosis of various diseases”*

The countless scientific advances have determined that Metabolomics is an essential branch in personalized medicine due to the benefits it provides in terms of early detection of diseases. Thus, the study of sets of metabolites makes it possible to identify the probabilities that a person has of experiencing various cardiovascular pathologies or diabetes, in order to be able to design a preventive treatment to avoid these conditions. Given the advantages offered by this avant-garde discipline to guarantee an optimal state of health, physicians are obliged to have excellent skills in it to preserve the well-being of their patients.

That is why TECH has designed this program, which will enable this professional to adopt the most updated and useful knowledge in the area of Metabolomics, delving into the management of the microbiota to draw personalized food plans aimed at disease prevention. During 150 intensive teaching hours, you will learn how to apply the main metabolomic profiles in the process of diagnosing pathologies or establish nutritional recommendations based on the microbiota of each person to prevent cardiovascular conditions. It will also analyze the Postgraduate Certificate studies in progress related to the role of the microbiota in the management of obesity in order to successfully face the challenges that this field will present in the medium to long term future.

All this, following a 100% online methodology that will allow the student to obtain excellent learning without the need to travel daily to study centers. You will also be provided with accessible teaching resources in formats such as explanatory videos, interactive summaries or readings, so that you can adapt your teaching to your own academic and personal requirements.

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

- Case studies presented by experts in Nutritional Genomics and Precision Nutrition
- The graphic, schematic, and practical contents which provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where the self-assessment process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- 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



*Throughout this program, you will review the main ongoing studies related to the role of the microbiota in obesity in order to face future challenges in this field"*

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*The Relearning system offered by this program will allow you to learn at your own pace, without having to suffer teaching limitations”*

*Learn without leaving your home thanks to the 100% online mode in which this Postgraduate Certificate is developed.*

*It establishes, with this program, the best nutritional recommendations based on each person's microbiota to prevent cardiovascular conditions.*

The program's teaching staff includes professionals from the industry who contribute their work experience to this program, as well as renowned specialists from leading 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 immersive education programmed to learn 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 during the academic year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.



# 02 Objectives

TECH has designed this Postgraduate Certificate with the idea in mind to provide the student with the most useful and updated knowledge and skills in the area of Metabolomics, in order to develop a cutting-edge practice in the field of Genomic Nutrition. Thus, it will determine the application of the main metabolomic profiles for the diagnosis of diseases and will identify the role of the microbiota in different pathologies, by means of the following general and specific objectives that this institution has outlined.





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*Through these general and specific objectives and specific objectives, you will learn the ins and outs of Metabolomics and its influence on the diagnosis of diseases”*



## General Objectives

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- ◆ Acquire theoretical knowledge of human population genetics
- ◆ Acquire knowledge of Nutritional Genomics 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 Genomic and Precision Nutrition can be applied
- ◆ Be able to assess individual response 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 Nutritional Genomics and Precision Nutrition
- ◆ Be able to adapt personalized dietary and lifestyle habits according to genetic polymorphisms
- ◆ Provide health professionals with all the updated knowledge in the field of Genomic and Precision Nutrition in order to know how to apply it in their professional activity
- ◆ Put all the updated knowledge in perspective. Where we are now and where we are headed 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
- Deepening the foundations of proteomics
- Deepen the microbiota as a tool for preventive and personalized nutrition

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*Adopt in your work methodology the most relevant knowledge in the area of Metabolomics in only 6 weeks”*

03

# Course Management

In order to maintain intact the first level of education that so characterizes TECH's programs, this Postgraduate Certificate is directed and taught by leading experts in the area of Genomic and Precision Nutrition, with a great track record in practice and in the world of research. Since these specialists are the ones in charge of developing the didactic contents of this program, the knowledge that students will receive during their academic experience will have been previously applied in their professional experiences.





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*Under the guidance of top professionals in the field of Genomic Nutrition, you will acquire a series of competencies that will position you as a leading expert in the field of Metabolomics”*

## Management



### Dr. Valentini Konstantinidou

- Dietitian-Nutritionist Specialist in Nutrigenetics and Nutrigenomics
- Founder of DNANutricoach
- Creator of the Food Coaching method to change eating habits
- Lecturer in Nutrigenetics
- PhD in Biomedicine
- Dietitian- Nutritionist
- Food Technologist
- Accredited Life Coach of the British body IPAC&M
- Member of: American Society for Nutrition



## Professors

### Dr. Sarela García Santamarina

- ♦ Group Leader at the Institute of Chemical and Biological Technology of the New University of Lisbon
- ♦ Marie Curie EIPOD Postdoctoral Researcher for: Effects of Drugs on Intestinal Flora, at the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany
- ♦ Postdoctoral Researcher for: Mechanisms of Copper Homeostasis in the Interaction between the Fungal Pathogen *Cryptococcus Neoformans* and the Host in the Interaction between the Fungal Pathogen *Cryptococcus Neoformans* and the Host, Duke University, USA
- ♦ Dr. in Biomedical Research from the Pompeu Fabra University of Barcelona
- ♦ Degree in Chemistry with a major in Organic Chemistry from the University of Santiago de Compostela
- ♦ Master's Degree in Molecular Biology of Infectious Diseases from the London School of Hygiene & Tropical Medicine in London
- ♦ Master's Degree in Biochemistry and Molecular Biology from the Autonomous University of Barcelona



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

# 04

## Structure and Content

The syllabus of this Postgraduate Certificate has been elaborated with the intention of providing the student with the most advanced, relevant and updated knowledge in the area of Metabolomics. The didactic contents that you will access during the duration of this program are available in state-of-the-art formats, such as the self-assessment test, the interactive summary or the explanatory video. This, together with its 100% online methodology, guarantees an enjoyable and individualized learning experience for each student.







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*The curriculum of this program has been designed by the best experts in Genomic Nutrition to provide you with the most up-to-date knowledge in Metabolomics”*

## 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





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*Take this TECH Postgraduate Certificate program and get access to the best Metabolomics teaching content on the market, available in text or video format, among others”*

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.



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*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.





#### Expert-Led Case Studies and Case Analysis

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



#### Testing & Retesting

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



#### Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### Quick Action Guides

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



# 06 Certificate

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



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

This **Postgraduate Certificate in Metabolomics** contains the most complete and up-to-date program on the market.

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

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

Title: **Postgraduate Certificate in Metabolomics**

Official N° of Hours: **150 h.**



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

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge present

online training

development language

virtual classroom

**tech** technological  
university

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