

# Postgraduate Diploma in Microbiota in Neonatology and Pediatrics in Pharmacy





## Postgraduate Diploma Microbiota in Neonatology and Pediatrics in Pharmacy

Course Modality: **Online**

Duration: **2 months.**

Certificate: **TECH Technological University**

**18 ECTS Credits**

Teaching Hours: **450 hours.**

Website: [www.techitute.com/pharmacy/postgraduate-diploma/postgraduate-diploma-microbiota-neotology-pediatrics-pharmacy](http://www.techitute.com/pharmacy/postgraduate-diploma/postgraduate-diploma-microbiota-neotology-pediatrics-pharmacy)

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# 01

# Introduction

Scientific research in the field of Microbiota has been booming in recent decades, aimed both at the study of its characteristics and its impact on our health. The study of human microbiota opens the door to the knowledge of multiple diseases, especially the so-called functional diseases, with the microbiome being researchers' main workhorse. Aware of this, TECH professionals have designed this Postgraduate Diploma aimed at training pharmacists to be able to understand the functioning of the Microbiome in neonates and pediatric patients. All this will make them much more competent professionals, prepared to work in various fields, both in pharmacy and in research, with greater guarantees of success.





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*Knowing how microbiota works in children and adolescents opens up a world of possibilities for pharmacists”*

Numerous pieces of scientific evidence have implicated the intestinal microbiome and its metabolic potential in various pathological conditions in recent years, giving rise to new therapeutic strategies to control and regulate this ecosystem. The study of this ecosystem is a field that is rapidly advancing scientifically, and it is universally accepted that to achieve an adequate state of health it is also necessary to have a "healthy" Microbiota.

Microbiota undergoes changes as a consequence of the influence of multiple factors, diet, lifestyle and pharmacological treatments generating, among others, which alter the bacterial ecosystem and may cause abnormal interaction with the organism, and it is related to certain processes: allergies, acute and chronic intestinal diseases, obesity and metabolic syndrome, neurological diseases, dermatitis and other alterations in the dermis, and even some types of cancer.

Consequently, the Postgraduate Diploma in Microbiota in Neonatology and Pediatrics for Pharmacy provides easy access to information and the interest among the general public on topics related to Microbiota, its Eubiosis and Dysbiosis, and the problems related to them.

Likewise, during the training, the use of Probiotics and Prebiotics based medicines and the growing market launch of new products with very specific strains for very specific problems and diseases will be addressed. This will be a great asset when it comes to updating pharmacists' knowledge.

All this makes it necessary for pharmacy professionals to be up to date with all the scientific advances in this regard, in order to offer the pediatric or neonatal patient more precise information on the subject, guiding them to use drugs that help them to recover and maintain this bacterial Eubiosis and thus maintain a good state of health, in addition to collaborating positively with the recommended medical treatment.

This Postgraduate Diploma in **Microbiota in Neonatology and Pediatrics in Pharmacy** comprises the most complete and up-to-date scientific program on the market. The most important features of the program include:

- ♦ Practical cases presented by Neonatology and Pediatrics Microbiota experts. The graphic, schematic, and eminently practical contents with which they are created provide scientific and practical information on the disciplines that are essential for professional practice.
- ♦ Latest developments in Microbiota in Neonatology and Pediatrics.
- ♦ It contains practical exercises where the self-evaluation process can be carried out to improve learning.
- ♦ Special focus on innovative methodologies in Microbiota Neonatology and Pediatrics.
- ♦ 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.



*TECH provides you with the best academic material on the market aimed at training you to become a successful pharmacist"*

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*This Postgraduate Diploma is the best investment you can make in selecting a refresher program in the field of pharmacy”*

*The Postgraduate Diploma allows training through simulated environments, which provide immersive learning programmed to train for real situations.*

*Thanks to this 100% online training, you can perfectly balance it with the rest of your daily activities.*

The program includes, in its teaching staff, professionals belonging to the field of medicine and pharmacy, who bring to this training the experience of their work, in addition to recognized specialists from prestigious reference societies and 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 training 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 during the academic year. For this purpose, the Professional will be assisted by an innovative Interactive Video System, developed by renowned and experienced experts in Medicine and Pharmacy



# 02

# Objectives

The main objective of the program is the development of theoretical and practical learning, so that the professional can practically and rigorously master the study of Microbiotics in daily professional practice. Consequently, the Postgraduate Diploma in Microbiotics in Neonatology and Pediatrics in Pharmacy responds to the continuous professional demand for quality training in this area, which serves as a means to use microbiological therapy and probiotics as a preventive or therapeutic tool in maintaining the health of neonatal or pediatric patients who require this type of service.







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*With this Postgraduate Diploma, you will acquire greater decision-making confidence in your daily professional practice and, therefore, you will become a prestigious pharmacist”*



## General Objectives

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- ♦ This Postgraduate Diploma fulfills a need in today's society, a quality and updated training program that allows for the use of microbiological therapy as a preventive or therapeutic tool for health maintenance.
- ♦ Offer a comprehensive and broad view of the current state of the field of human microbiota, in its broadest sense, the importance of the balance of this microbiota as a direct effect on our health, with the multiple factors that influence it positively and negatively.
- ♦ Arguments based in scientific evidence show how Microbiota and its interaction with many non-digestive pathologies of autoimmune nature, or its relation with the dysregulation of the immune system, its capacity for disease prevention and as a support to other medical treatments, are all currently being given a privileged position.
- ♦ Promote work strategies based on the integral approach of the patient as a reference model, not only focusing on the symptomatology of the specific disease, but also looking at its interaction with the microbiota and how it may be influencing it.
- ♦ To encourage professional stimulation through continuous education and research.





## Specific Objectives

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### **Module 1 Microbiota. Microbiome. Metagenomics.**

- ◆ Know the relationship between Microbiota and Microbiome and their most accurate definitions.
- ◆ Gain an in-depth understanding of the concepts of symbiosis, commensalism, mutualism, and parasitism.
- ◆ Delve into the different types of Human Microbiota and understand their generalities.
- ◆ Delve into the aspects that trigger the balance and imbalance of Microbiota.

### **Module 2 Microbiota in Neonatology and Pediatrics.**

- ◆ Become familiar with mother-infant symbiosis.
- ◆ Understand the factors influencing the Intestinal Microbiota of the mother in the gestational stage and at the time of delivery.
- ◆ Understand how the type of delivery influences the neonate's microbiota.
- ◆ Understand how the type of breastfeeding influences the infant's microbiota.
- ◆ Become familiar with the clinical applications of Probiotics and Prebiotics in pediatric patients.
- ◆ Understand how antibiotics and other psychotropic treatments influence the infant's Microbiota.
- ◆ Delve deeper into the current lines of research on the subject.

### **Module 3 Probiotics, Prebiotics, Microbiota and Health.**

- ◆ Delve into probiotics, their definition, history, and mechanisms of action.
- ◆ Delve into prebiotics, their definition, types and mechanisms of action.
- ◆ Know the clinical applications of probiotics and prebiotics in Gastroenterology
- ◆ Know the Clinical Applications of Endocrinology and Cardiovascular Disorders
- ◆ Understand the clinical applications of probiotics and prebiotics in Urology
- ◆ Understand the clinical applications of probiotics and prebiotics in Gynecology
- ◆ Know the clinical applications of Probiotics and prebiotics in Immunology: Autoimmunity, Pneumology, Dermatology, and Vaccines.
- ◆ Know the clinical applications of probiotics and prebiotics in nutritional diseases
- ◆ Know the clinical applications of probiotics and prebiotics in neurological diseases, mental health, and elderly
- ◆ Understand the clinical applications of probiotics and prebiotics in critically ill cancer patients.
- ◆ Understand the use of dairy products as a natural source of Probiotics and Prebiotics.
- ◆ Delve into safety and legislation in the use of Probiotics.

03

# Course Management

The program's teaching staff includes leading specialists in Human Microbiota and other related areas, who bring their years of work experience to this training program. In addition, other specialists of recognized prestige participate in its design and elaboration, completing the program in an interdisciplinary manner. All of which is carried out with the aim of providing pharmacists with the most complete educational information and contents so that they can practice their profession with greater guarantees of success and treat neonate and pediatric patients with a deeper knowledge of the functioning of their microbiota.





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*Learn from leading professionals the latest advances in the use of probiotics as a means to cure problems in neonatal patients”*

## Management



### Fernández Montalvo, Mª Ángeles

- ♦ Degree in Biochemistry from the University of Valencia.
- ♦ Specialist Degree in Nutrition, Dietetics, and Diet Therapy.
- ♦ Specialist Degree in Microbiological Food Analysis.
- ♦ Specialist Degree in Nutrition, Food, and Cancer. Prevention and Treatment.
- ♦ Specialist Degree in Vegetarian, Clinical, and Sports Nutrition.
- ♦ Specialist in food intolerances and the study of the intestinal microbiota.
- ♦ Numerous courses on Intestinal Microbiota, methods of analysis, and applications.
- ♦ Diploma in Natural and Orthomolecular Medicine.
- ♦ Specialist Degree in the current use of Nutricosmetics and Nutraceuticals in general.
- ♦ Specialist Degree in point-of-sale management in Pharmacies and Parapharmacies.
- ♦ Member of the Spanish Society of Probiotics and Prebiotics (SEPyP).
- ♦ Member of the Spanish Society of Dietetics (SEDCA).
- ♦ Member of the Spanish Society of Nutrition (SEÑ).

## Professors

### **Dr. Álvarez García, Verónica**

- ♦ Degree in Medicine.
- ♦ Digestive system specialist at the Central Hospital of Asturias (HUCA).

### **Dr. Díaz Martín, Juan José**

- ♦ Pediatric gastroenterologist at the Central Hospital of Asturias (HUCA).
- ♦ Member of the Spanish Society of Pediatric Gastroenterology, Hepatology, and Nutrition.
- ♦ Associate Professor of Pediatrics at the University of Oviedo

### **Dr. Fernández Madera, Juan José**

- ♦ Degree in Medicine.
- ♦ Specialist in Clinical Allergology and Immunology.
- ♦ Specialist in Sports Medicine.

### **Dr. Gonzalez Rodríguez, Silvia P.**

- ♦ PhD in Medicine and Surgery from the University of Alcalá de Henares, specialty in Gynecology.
- ♦ Deputy Medical Research Coordinator and Clinical Chief of the Menopause and Osteoporosis Unit at the Velázquez Medical Cabinet (Madrid).

### **Dr. Lombó Burgos, Felipe**

- ♦ Doctor in Biology from the University of Oviedo.
- ♦ Full professor at the University of Oviedo.

### **Dr. López López, Aranzazu**

- ♦ Ph.D. in Biological Sciences
- ♦ Researcher in oral microbiology at the FISABIO Foundation.
- ♦ Public Health Research Center of Valencia.

### **Dr. Méndez García, Celia**

- ♦ Doctorate in Microbiology from the University of Oviedo.
- ♦ Research at Novartis Laboratories (Boston).

### **Dr. Solís Sánchez, Gonzalo**

- ♦ Neonatologist at the Central University Hospital of Asturias (HUCA).
- ♦ Researcher, Associate Professor at the University of Oviedo.

### **Dr. Suárez Rodríguez, Marta**

- ♦ Neonatologist at the Central University Hospital of Asturias (HUCA).
- ♦ Researcher and Professor in the Professional Master's Degree in Early Care and the Professional Master's Degree in Critical Care Nursing at the University of Oviedo and other training courses.

# 04

## Structure and Content

The structure of the contents has been designed by a team of professionals from the best hospital centers and universities in the country, who are aware of the relevance of up-to-date training to be able to prevent, detect, and treat pathologies related to alterations in human microbiota, and are committed to quality teaching through new educational technologies. All of which aimed at training Pharmacists to be much more competent and prepared to offer treatments that help and favor the microbiome of pediatric patients.





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*This Postgraduate Diploma in Microbiota in Neonatology and Pediatrics in Pharmacy comprises the most complete and up-to-date scientific program on the market”*

## Module 1 Microbiota. Microbiome. Metagenomics

- 1.1. Definition and Relationship between Them
- 1.2. Composition of the Microbiota: Genera, Species, and Strains
  - 1.2.1. Characteristics and Main Functions
  - 1.2.2. Groups of Microorganisms that Interact with Humans: Bacteria, Fungi, Viruses, and Protozoa
  - 1.2.3. Key Concepts; symbiosis, Commensalism, Mutualism, Parasitism
  - 1.2.4. Autochthonous Microbiota
- 1.3. Different Human Microbiota General Overview of Eubiosis and Dysbiosis
  - 1.3.1. Gastrointestinal Microbiota
  - 1.3.2. Oral Microbiota
  - 1.3.3. Skin Microbiota
  - 1.3.4. Respiratory Tract Microbiota
  - 1.3.5. Urinary Tract Microbiota
  - 1.3.6. Reproductive System Microbiota
- 1.4. Factors that Influence Microbiota Balance and Imbalance
  - 1.4.1. Diet and Lifestyle Intestinal-Brain Axis
  - 1.4.2. Antibiotic Therapy
  - 1.4.3. Epigenetic-Microbiota Interaction Endocrine Disruptors
  - 1.4.4. Probiotics, Prebiotics, and Symbiotics Concepts and Overviews
  - 1.4.5. Latest Advances in Fecal Transplants



**Module 2** Microbiota in Neonatology and Pediatrics

- 2.1. Mother-Child Symbiosis
- 2.2. Influencing Factors in Intestinal Microbiota of the Mother during Pregnancy and at Birth  
Influence of the Type of Delivery on the Microbiota of the Newborn
- 2.3. Type and Duration of Breastfeeding, Influence on the Baby's Microbiota
  - 2.3.1. Breast Milk: Composition of the Breast Milk Microbiota Importance of Breastfeeding in the Newborn's Microbiota
  - 2.3.2. Artificial Breastfeeding Use of Probiotics and Prebiotics in Infant Milk Formulas
- 2.4 Clinical Applications of Probiotics and Prebiotics in Pediatric Patients
  - 2.4.1. Digestive Diseases: Functional Digestive Disorders, Diarrhea, and Necrotizing Enterocolitis Intolerances
  - 2.4.2. Non-Digestive Diseases: Respiratory and ENT, Atopic Diseases, Metabolic Diseases Allergies
- 2.5. Influence of Antibiotic and other Psychotropic Treatments on the Infant Microbiota
- 2.6. Current Lines of Research

**Module 3** Probiotics, Prebiotics, Microbiota, and Health

- 3.1. Probiotics: Definition, History, Mechanisms of Action
- 3.2. Prebiotics: Definition, Types of Prebiotics (Starch, Inulin, FOS Oligosaccharides), Mechanisms of Action
- 3.3. Clinical Applications of Probiotics and Prebiotics in Gastroenterology
- 3.4. Clinical Applications of Endocrinology and Cardiovascular Disorders
- 3.5. Clinical Applications of Probiotics and Prebiotics in Urology
- 3.6. Clinical Applications of Probiotics and Prebiotics in Gynecology
- 3.7. Clinical Applications of Probiotics and Prebiotics in Immunology Autoimmunity, Pneumology, Dermatology, and Vaccines
- 3.8. Clinical Applications of Probiotics and Prebiotics in Nutritional Diseases Obesity and Eating Disorders Metabolism, Malnutrition, and Malabsorption of Nutrients
- 3.9. Clinical Applications of Probiotics and Prebiotics in Neurological Diseases. Mental Health. Old Age.
- 3.10. Clinical Applications of Probiotics and Prebiotics in Critically Ill Patients. Cancer
- 3.11. Dairy Products as a Natural Source of Probiotics and Prebiotics Fermented Milk
- 3.12. Safety and Legislation in the Use of Probiotics.



*A unique, key, and decisive training experience to boost your professional development.*

05

# Methodology

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

This teaching system is used 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

In a given clinical situation, what would you do? Throughout the program, you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is abundant scientific evidence on the effectiveness of the method. Pharmacists learn better, more quickly and more sustainably over time.

*With TECH you can 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 potential 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 achieve the assimilation of concepts, but also develop their mental capacity through exercises to evaluate real situations and apply their knowledge.
2. The learning process has a clear focus on 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.

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 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 we have trained more than 115,000 pharmacists with unprecedented success, in all clinical specialties. Our 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 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 (we learn, unlearn, forget, and re-learn). Hence, we combine each of these elements concentrically.

The overall score obtained by our learning system is 8.01, according to the highest international standards.



In this program you will have access to the best educational material, prepared with you 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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



### Video Techniques and Procedures

We bring you closer to the latest techniques, to the newest educational advances, to the forefront of current pharmaceutical care procedures. All this, in first person, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



### Interactive Summaries

We present 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, international guides. in our virtual library you will have access to everything you need to complete your training.





**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 & Re-testing**

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



**Classes**

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an expert strengthens knowledge and memory, and generates confidence in our future difficult decisions.



**Quick Action Guides**

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.



06

# Certificate

The **Postgraduate Diploma in Microbiota in Neonatology and Pediatrics in Pharmacy** guarantees, in addition to the most accurate and up-to-date training, access to a **qualification issued by TECH Technological University**.



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*Successfully complete this training and receive your university degree without travel or laborious paperwork”*

Este **Postgraduate Diploma in Microbiota in Neonatology and Pediatrics in Pharmacy** comprises the most complete and up-to-date scientific program on the market.

After the student has passed the evaluations, they will receive their corresponding **certificate** issued by TECH Technological University via tracked delivery.

The certificate issued by **TECH Technological University** will specify 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 Diploma in Microbiota in Neonatology and Pediatrics in Pharmacy

**ECTS:** 18

**Official Number of Hours:** 450



\*Apostille Convention. In the event that the student wishes to have their paper certificate 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 quality  
development languages  
virtual classroom



**Postgraduate Diploma**  
Microbiota in Neonatology  
and Pediatrics in Pharmacy

**Course Modality:** Online

**Duration:** 2 months.

**Certificate:** TECH Technological University

18 Credits **ECTS**

**Teaching Hours:** 450 hours.

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