

# Hybrid Professional Master's Degree

## Human Microbiota



## Hybrid Professional Master's Degree

### Human Microbiota

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 créditos ECTS

Website: [www.techtute.com/us/medicine/hybrid-professional-master-degre/hybrid-professional-master-degree-human-microbiota](http://www.techtute.com/us/medicine/hybrid-professional-master-degre/hybrid-professional-master-degree-human-microbiota)

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# 01

# Introduction

As a result of scientific advances in Human Microbiota in recent years, new probiotics have emerged that allow balancing the intestinal flora of people quickly and safely. Thanks to the benefits they offer in the prevention of gastrointestinal diseases, it is essential for physicians to acquire a high level of knowledge in their administration in order to improve the quality of life of their patients. For this reason, TECH has developed this Hybrid Professional Master's Degree, with which students will expand their skills in probiotic treatment for pediatric and adult patients by combining 100% online theoretical learning with a 3-week hospital internship.







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*This Hybrid Professional Master's Degree will enable you to master the administration of novel probiotics in adult and pediatric patients suffering from microbiota imbalances"*

In recent years, numerous researchers have focused their studies on the human microbiota, giving it greater visibility and discovering advances linked to its relationship with the emergence and prevention of diseases. Thanks to these scientific studies, it has been found that in pregnant women or people suffering from different chronic pathologies, it is extremely useful to establish diets aimed at improving their intestinal flora in order to ensure their health. These countless innovations highlight the medical relevance of being constantly updated in this field in order to provide a quality service, fully adapted to the needs and particularities of each patient.

This is why TECH has designed the Hybrid Professional Master's Degree in Human Microbiota, oriented to offer the doctor the latest knowledge in this field backed by scientific evidence, through the compatibility of theoretical learning with the realization of an internship. Throughout 12 months of teaching, the student will manage the applications of probiotics and prebiotics in areas such as Urology, Gynecology or Gastroenterology and will detect their possible adverse effects in both adult and pediatric patients. In the same way, it will identify the relationships between different types of allergies and intolerances with the microbiota.

Once the 100% online theoretical teaching stage is finished, in which the student will be able to manage his or her own study schedule will be able to manage their own study schedules as they wish in order to achieve efficient learning, they will enjoy the practical experience in a prestigious hospital. During 3 weeks, as part of an excellent multidisciplinary team, you will transfer to the real world all the knowledge you will have acquired in this program.

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

- Development of more than 100 clinical cases presented by medical experts in Human Microbiota
- Its graphic, schematic and eminently practical contents, which are designed to provide scientific and assistance information on those medical disciplines that are essential for professional practice
- Techniques for the administration of probiotics in the pediatric patient
- Novel strategies for novel probiotic therapeutics for the adult patient with various gut microbiota problems
- Cutting-edge approach to intestinal flora-triggered skin diseases
- All 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
- In addition, you will be able to carry out a clinical internship in one of the best hospitals in the world



*Enhance your healthcare practice through this program and multiply your chances of accessing the best hospitals"*

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*By combining theory and practice,  
position yourself as a leading practitioner  
in the field of Human Microbiota"*

In this Professional Master's Degree proposal, of a professionalizing nature and blended learning modality, the program is aimed at updating medical experts in the treatment of pathologies related to the Human Microbiota. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge into healthcare practice, and the theoretical-practical elements will facilitate the updating of knowledge and allow decision making in patient management.

Thanks to their multimedia content developed with the latest educational technology, they will allow the medical professional to obtain situated and contextual learning, that is to say, 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 student will be assisted by an innovative interactive video system created by renowned experts.

*Enjoy learning from anywhere and  
accessible 24 hours a day thanks to the  
100% proprietary methodology of this  
Hybrid Professional Master's Degree.*

*Develop your knowledge in subjects such  
as intestinal microbiota or skin treatment  
in just 12 months, making it perfectly  
compatible with your professional duties.*



02

# Why Study this Hybrid Professional Master's Degree?

In the field of Medicine, it is as important to know the latest advances in Human Microbiota as it is to master the methods to transfer all the new knowledge to practice with maximum efficiency. Because of this, TECH has created this Hybrid Professional Master's Degree, through which the student will enjoy an excellent theoretical learning in this medical discipline and a 3-week hospital stay, through which he will adopt all these innovations in his work methodology.





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*TECH offers you an unparalleled opportunity to combine excellent theoretical learning with an internship in a first class hospital to perfect and expand your knowledge in Human Microbiota"*

### **1. Updating from the latest technology available**

The world of the Human Microbiota is in constant evolution due to the appearance of new probiotics and studies that demonstrate their relationship with the prevention of various types of diseases. Because of this, TECH has created this program, so that the professional can know and apply all these advances in their health practice in a solvent way.

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

The didactic resources that the student will enjoy in this Hybrid Professional Master's Degree are elaborated by active doctors and experts in Human Microbiota, which guarantees the updating of all the contents that will be assimilated. In addition, you will be integrated during your hospital stay in a first class medical team, whose professionals will provide you with the skills with the greatest health applicability.

### **3. Entering First-Class Clinical Environments**

TECH selects in detail the centers where students will be able to carry out their practical training. In this way, you will gain access to a clinical environment characterized by the latest technology, where you will develop your best skills and be at the forefront of the Human Microbiota.





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

In today's educational market, there is an abundance of programs that offer a very broad theoretical content, but with little real applicability. For this reason, TECH wanted to create a completely effective model, based on the combination of teaching and professional life.

#### **5. Expanding the Boundaries of Knowledge**

TECH offers the possibility of carrying out this Internship Program in large hospitals. In this way, the specialist will be able to keep up to date with the best professionals, who practice in first class hospitals. A unique opportunity that only TECH, the world's largest digital university, could offer.

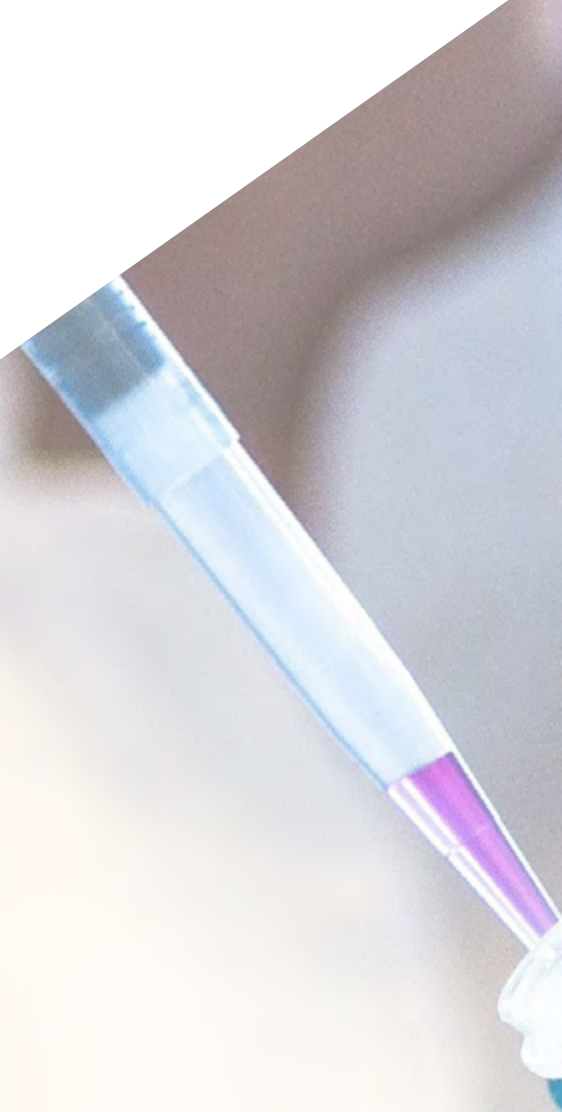
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*You will have full hands-on immersion  
at the center of your choice”*



# 03 Objectives

The Hybrid Professional Master's Degree in Human Microbiota has been designed with the intention of providing the physician with the necessary knowledge to update and increase their health skills in this field. Thus, you will master all those factors that influence the intestinal microbiota and you will manage the latest probiotics that offer efficient results in the patient. All this is ensured by following general and specific objectives.







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*Ensure effective learning thanks to the general and specific objectives designed by TECH for this Hybrid Professional Master's Degree"*



## General Objective

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- The general objective of this program is to update the physician's knowledge and skills in the field of Human Microbiota from a theoretical-practical perspective, combining a 100% online learning of high quality with a practical stay in one of the best hospitals to promote their professional development

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*Significantly improve your skills in dealing with the pediatric patient through the assimilation of the most up-to-date mechanisms of probiotic and prebiotic administration in children”*





## Specific Objectives

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### Module 1. Microbiota. Microbiome. Metagenomics

- ♦ Update and clarify general and key terms for a full understanding of the subject such as Microbiome, Metagenomics, Microbiota, Symbiosis or Dysbiosis
- ♦ Enhance knowledge of how drugs designed for humans can have a negative impact on the gut microbiota, in addition to the known impact of antibiotics

### Module 2. Gut Microbiota I. Intestinal homeostasis

- ♦ Analyze the microbial communities that coexist in symbiosis with humans, learning more about their structure and functions and how these communities can be altered due to factors such as diet, lifestyle, etc
- ♦ Understand the relationship between the intestinal pathologies SIBO, IBS, Crohn's disease and intestinal dysbiosis

### Module 3. Gut Microbiota II. Intestinal Dysbiosis

- ♦ Identify the intestinal microbiota as the main axis of the human microbiota and detect its interrelation with the rest of the body, its study methods and its applications in clinical practice to maintain a good state of health

### Module 4. Microbiota in Neonatology and Pediatrics

- ♦ Master the most influential factors of the mother's intestinal microbiota, both at delivery and during the gestation period itself
- ♦ Delve in the clinical applications of probiotics and prebiotics in the pediatric patient

### Module 5. Oral Microbiota and Respiratory Tract

- ♦ Manage the mechanisms by virtue of which probiotics are postulated as preventive in the formation of dental caries and periodontal diseases
- ♦ Acquire an in-depth knowledge of all the oral and respiratory structure and the ecosystems that live in them, seeing how an alteration of these ecosystems has a direct relationship with many associated pathologies

### Module 6. Microbiota and Immune System

- ♦ Analyze the bidirectional relationship between microbiota and neuroimmunological system
- ♦ Mastering the intestine-microbiota-brain axis and all the pathologies generated by its imbalance

### Module 7. Skin Microbiota

- ♦ Identify the factors that regulate the type of bacterial flora in the skin
- ♦ Use the methods of approach to triggered cutaneous pathologies

### Module 8. Genitourinary Tract Microbiota

- ♦ Analyze the main microorganisms causing urinary tract infections and their relationship with the alteration of the microbiota in men and women
- ♦ Know the applicability of probiotics in the prevention of the main infections of the genitourinary tract

### Module 9. Relationship between Intolerances/Allergies and Microbiota

- ♦ Linking negative modulation in the microbiota to the occurrence of food intolerances and allergies
- ♦ Delve into the changes in the microbiota in patients on gluten-free diets

### Module 10. Probiotics, Prebiotics, Microbiota, and Health

- ♦ Identify possible adverse effects and potential risks of probiotics in certain patients
- ♦ Analyze the various clinical applications of probiotics and prebiotics in areas such as Urology, Gynecology, Gastroenterology and Immunology

# 04 Skills

After successfully passing the evaluations of the Hybrid Professional Master's Degree in Human Microbiota, the student should have broad and updated competencies in this subject that will allow them to improve the health care provided to each of their patients on a daily basis.





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*Upgrade your skills in Human Microbiota to provide high level care to your patients through this program"*



## General Skills

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- ♦ Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context
- ♦ Apply acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study
- ♦ Integrate knowledge and face the complexity of making judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments
- ♦ Communicate findings to specialized and non-specialized audiences in a clear and unambiguous manner
- ♦ Possess learning skills that will enable them to continue studying in a manner that will be largely self-directed or autonomous





## Specific Skills

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- Offer a global vision of the Human Microbiota so that the professional knows more about this community of microorganisms that coexist with us and the functions they perform in our organism
- Identify the functions of the intestinal microbiota in pediatrics and in other patients, taking into account its relationship with digestive and non-digestive diseases
- Master the factors that can alter the balance of the human ecosystem and lead to a state of disease
- Manage the factors that can help maintain the balance of the human ecosystem to maintain a good state of health
- Update and broaden the knowledge of students with special training and interest in probiotic therapy, prebiotic therapy and the latest advances in this field, such as fecal transplantation, the current situation and future development paths, as the main tools we have to optimize the functions of the microbiota and its future projection



*Take this Professional Master's Degree program and broaden your knowledge of the factors that alter the balance of the human ecosystem and cause the appearance of diseases"*



05

# Course Management

With TECH's untiring zeal to maintain the high level characteristic of its programs, this program is directed and taught by physicians and experts in Microbiology who have extensive experience working in various hospitals. These professionals are in charge of creating the didactic materials that the student will study throughout this Hybrid Professional Master's Degree, so the contents they will provide will have been previously applied in their work experience.





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*This program counts on the participation of guest directors who actively practice in the Microbiology Service of prestigious hospitals"*

## International Guest Director

Dr. Harry Sokol is internationally recognized in the field of **Gastroenterology** for his research on the **gut microbiota**. With more than 2 decades of experience, he has established himself as a true scientific authority thanks to his numerous studies on the role of **microorganisms in the human body** and their impact on **chronic inflammatory bowel diseases**. In particular, his work has revolutionized medical understanding of this organ, often referred to as the «**second brain**.»

Among Dr. Sokol's contributions, he and his team have opened a new line of advances on the bacterium **Faecalibacterium prausnitzii**. In turn, these studies have led to crucial discoveries about its **anti-inflammatory effects**, opening the door to **revolutionary treatments**.

In addition, the expert is distinguished by his **commitment to the dissemination of knowledge**, whether by teaching academic programs at the Sorbonne University or by publishing works such as the **comic book** *The Extraordinary Powers of the Belly*. His scientific publications appear continuously in **world-renowned journals** and he is invited to **specialized congresses**. At the same time, he carries out his clinical work at the **Saint-Antoine Hospital** (AP-HP/University Hospital Federation IMPEC/Sorbonne University), one of the most renowned hospitals in Europe.

On the other hand, Dr. Sokol began his **medical studies** at Paris Cité University, showing early on a strong interest in **health research**. A chance meeting with the eminent Professor Philippe Marteau led him to **Gastroenterology** and the enigmas of the **Intestinal Microbiota**. Throughout his career, he also broadened his horizons by training in the United States, at Harvard University, where he shared experiences with **leading scientists**. Upon his return to France, he founded his **own team** where he researches on **Fecal Transplantation**, offering state-of-the-art therapeutic innovations.



## Dr. Sokol, Harry

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- Director of Microbiota, Gut and Inflammation at Sorbonne University, Paris, France
- Specialist Physician at the Gastroenterology Department of the Saint-Antoine Hospital (AP-HP), Paris, France
- Group Leader at the Institut Micalis (INRA)
- Coordinator of the Center of Microbiome Medicine of Paris FHU
- Founder of the pharmaceutical company Exeliom Biosciences (Nextbiotix)
- President of the Fecal Microbiota Transplantation Group
- Medical Specialist in different hospitals in Paris
- Doctorate in Microbiology at the Université Paris-Sud
- Postdoctoral Fellowship at the Massachusetts General Hospital, Harvard University Medical School
- Degree in Medicine, Hepatology and Gastroenterology at Université Paris Cité

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

## Guest Directors



### Dr. María Isabel Sánchez Romero

- ♦ Area Specialist in the Microbiology Department of the Puerta de Hierro Majadahonda University Hospital, Madrid
- ♦ PhD in Medicine and Surgery from the University of Salamanca
- ♦ Medical Specialist in Clinical Microbiology and Parasitology
- ♦ Member of the Spanish Society of Infectious Diseases and Clinical Microbiology
- ♦ Technical Secretary of the Madrid Society of Clinical Microbiology



### Dr. María Francisca Portero Azorín

- ♦ Acting Head of the Microbiology Service at the Puerta de Hierro Majadahonda University Hospital
- ♦ Specialist in Microbiology and Clinical Parasitology at the Puerta de Hierro University Hospital
- ♦ Doctorate in Medicine from the Autonomous University Madrid
- ♦ Postgraduate in Clinical Management by Gaspar Casal Foundation
- ♦ Research stay at the Presbyterian Hospital of Pittsburgh through a FISS scholarship





### **Dr. Teresa Alarcón Caveró**

- ◆ Biologist Specialist in Microbiology, Princesa University Hospital
- ◆ Head of Group 52 of the Research Institute of the La Princesa Hospital
- ◆ Degree in Biological Sciences with a major in Fundamental Biology from the Complutense University of Madrid
- ◆ Master's Degree in Medical Microbiology from the Complutense University of Madrid



### **Dr. María Muñoz Algarra**

- ◆ Head of Patient Safety at the Microbiology Department of the Puerta de Hierro Majadahonda University Hospital
- ◆ Area Specialist in the Microbiology Department of the Puerta de Hierro Majadahonda University Hospital, Madrid
- ◆ Collaborator Department of Preventive Medicine and Public Health and Microbiology Autonomous University of Madrid
- ◆ Doctorate in Pharmacy from the Complutense University of Madrid



### Dr. Marcos López Dosil

- ♦ Area Specialist in Microbiology and Parasitology at San Carlos Clinical University Hospital
- ♦ Specialist Physician of the Microbiology and Parasitology Department of the Mostoles Hospital
- ♦ Master's Degree in Infectious Diseases and Antimicrobial Treatment from CEU Cardenal Herrera University
- ♦ Master's Degree in Tropical and Health Medicine from the Autonomous University of Madrid
- ♦ Expert in Tropical Medicine from the Autonomous University Madrid



### Dr. Anel Pedroche, Jorge

- ♦ Facultative Area Specialist. Microbiology Department. Puerta de Hierro University Hospital
- ♦ Degree in Pharmacy from the Complutense University of Madrid
- ♦ Course in Interactive Sessions on Hospital Antibiotherapy by MSD
- ♦ Updating course on infection in hematologic patients by Puerta del Hierro Hospital
- ♦ Attendance at the XXII Congress of the Spanish Society of Infectious Diseases and Clinical Microbiology

## Management



### Dr. María Ángeles Fernández Montalvo

- ◆ Naintmed - Nutrition and Integrative Medicine
- ◆ Director of the Master's Degree in Human Microbiota at CEU University
- ◆ Parapharmacy Manager, Nutrition and Natural Medicine professional at Natural Life Parapharmacy
- ◆ Degree in Biochemistry from the University of Valencia
- ◆ Diploma in Natural and Orthomolecular Medicine
- ◆ Postgraduate in Food, Nutrition and Cancer: prevention and treatment
- ◆ Master's Degree in Integrative Medicine from CEU University
- ◆ Specialist Degree in Nutrition, Dietetics and Diet Therapy
- ◆ Expert in Vegetarian, Clinical, and Sports Nutrition
- ◆ Expert in the current use of Nutricosmetics and Nutraceuticals in general

## Professors

### Dr. Antonio López Vázquez

- ◆ Immunology at the Central University Hospital of Asturias
- ◆ Area Specialist in Immunology, Central University Hospital of Asturias, Spain
- ◆ Collaborator of the Carlos III Health Institute
- ◆ Advisor of Aspen Medical
- ◆ Doctor of Medicine, University of Oviedo

### Dr. Fernando Losa Domínguez

- ◆ Gynecologist at the Sagrada Familia Clinic of HM Hospitals
- ◆ Doctor in private practice in Obstetrics and Gynecology in Barcelona
- ◆ Expert in Gynecoesthetics by the Autonomous University of Barcelona
- ◆ Member of: Spanish Association for the Study of Menopause, Spanish Society of Phytotherapeutic Gynecology, Spanish Society of Obstetrics and Gynecology, Board of the Menopause Section of the Catalan Society of Obstetrics and Gynecology

#### **Dr. José Uberos**

- ♦ Head of section in the Neonatology area of the San Cecilio Clinical Hospital of Granada
- ♦ Specialist in Pediatrics and Child Care
- ♦ Associate Professor of Pediatrics, University of Granada
- ♦ Vocal Bioethics Research Committee of the Province of Granada (Spain)
- ♦ Coeditor of the Signs and Symptoms Journal
- ♦ Professor Antonio Galdo Award. Society of Pediatrics of Eastern Andalucía
- ♦ Editor of the Journal of the Pediatric Society of Eastern Andalusia (Bol. PAO)
- ♦ Doctor of Medicine and Surgery.
- ♦ Degree in Medicine from the University of Santiago de Compostela
- ♦ Member of the Board of the Pediatric Society of Eastern Andalusia.

#### **Dr. Rocío López Martínez**

- ♦ Physician in the area of Immunology at the Vall d'Hebron Hospital.
- ♦ Internal Biologist in Immunology at Central University Hospital of Asturias.
- ♦ Master in Biostatistics and Bioinformatics, Universidad Oberta of Catalunya.

#### **Dr. Eva Bueno García**

- ♦ Predoctoral researcher in Immunosenescence at the Immunology Service of the Central University Hospital of Asturias (HUCA).
- ♦ Degree in Biology from the University of Oviedo
- ♦ Master's Degree in Biomedicine and Molecular Oncology from the University of Oviedo
- ♦ Molecular biology and immunology courses

#### **Dr. Patricia Verdú López**

- ♦ Medical Specialist in Allergology at the Beata María Ana Hospital of Hermanas Hospitalarias.
- ♦ Physician specializing in Allergology at Inmunomet Health and Integral Wellness Center.
- ♦ Research physician in Allergology at San Carlos Hospital.
- ♦ Specialist in Allergology at the University Hospital Dr. Negrín in Las Palmas of Gran Canaria.
- ♦ Degree in Medicine from the University of Oviedo
- ♦ Master's Degree in Aesthetics and Antiaging Medicine at Complutense La University of Madrid

#### **Ms. Carolina Rodríguez Fernández**

- ♦ Research Biotechnologist at Adknoma Health Research
- ♦ Researcher at Adknoma Health Research
- ♦ Master in Clinical Trials Monitoring by ESAME Pharmaceutical Business School.
- ♦ Master's Degree in Food Biotechnology from the University of Oviedo.
- ♦ University Expert in Digital Teaching in Medicine and Health by CEU Cardenal Herrera University.

#### **Dr. Verónica Álvarez García**

- ♦ Assistant Physician of the Digestive Area at the Río Hortega University Hospital.
- ♦ Specialist in Digestive System at the Central Hospital of Asturias
- ♦ Speaker at the XLVII Congress SCLECARTO
- ♦ Degree in Medicine and Surgery
- ♦ Digestive System Specialist



**Dr. Silvia Pilar Gonzalez Rodríguez**

- ◆ Deputy Medical Director, Research Coordinator and Clinical Chief of the Menopause and Osteoporosis Unit at Velázquez Medical Office.
- ◆ Specialist in Gynecology and Obstetrics at HM Gabinete Velázquez
- ◆ Medical Expert at Bypass Comunicación en Salud, SL
- ◆ Key Opinion Leader of several international pharmaceutical laboratories
- ◆ Doctor in Medicine and Surgery from the University of Alcalá de Henares, specializing in Gynecology.
- ◆ Specialist in Mastology by the Autonomous University of Madrid.
- ◆ Master's Degree in Sexual Orientation and Therapy from the Sexological Society of Madrid.
- ◆ Master's Degree in Climacteric and Menopause from the International Menopause Society.
- ◆ Postgraduate Diploma in Epidemiology and New Applied Technologies from the UNED (Spanish Distance Learning University)
- ◆ University Diploma in Research Methodology from the Foundation for the Training of the Medical Association and the National School of Health of the Carlos III Health Institute.

**Dr. Beatriz Riostras de Bustos**

- ◆ Microbiologist and renowned researcher
- ◆ Immunology Resident at HUCA
- ◆ Member of the Biotechnology of Nutraceuticals and Bioactive Compounds Research Group (Bionuc) of the University of Oviedo.
- ◆ Member of the Microbiology Area of the Department of Functional Biology.
- ◆ Stay in the Southern Denmark University

- ◆ Doctorate in Microbiology from the University of Oviedo.
- ◆ Master's Degree in Neuroscience Research from the University of Oviedo

**Dr. Felipe Lombó Burgos**

- ◆ PhD in Biology
- ◆ Head of the BIONUC Research Group, University of Oviedo.
- ◆ Former Director of the Research Support Area of the AEI Project.
- ◆ Member of the Microbiology Area of the University of Oviedo.
- ◆ Co-author of the research Biocidal nanoporous membranes with inhibitory activity of biofilm formation at critical points in the production process of the dairy industry'.
- ◆ Head of the study '100% natural acorn-fed ham against inflammatory intestinal diseases'.
- ◆ Speaker III Congress of Industrial Microbiology and Microbial Biotechnology

**Dr. Rebeca Alonso Arias**

- ◆ Director of the Immunosenescence research group of the HUCA Immunology Service.
- ◆ Specialist Immunology Physician at the Central University Hospital of Asturias.
- ◆ Numerous publications in international scientific journals
- ◆ Research work on the association between the microbiota and the immune system
- ◆ 1st National Award for Research in Sports Medicine, 2 occasions

**Dr. Aranzazu López López**

- ◆ Specialist in Biological Sciences research
- ◆ Researcher at Fisabio Foundation
- ◆ Assistant Researcher at the University of the Balearic Islands
- ◆ PhD in Biological Sciences from the University of the Balearic Islands.

**Dr. Marta Suárez Rodríguez**

- ♦ Gynecologist specialized in Senology and Breast Pathology
- ♦ Researcher and University Professor
- ♦ PhD in Medicine and Surgery from the Complutense University of Madrid.
- ♦ Degree in Medicine and Surgery from the Complutense University of Madrid
- ♦ Master's Degree in Senology and Breast Pathology from the Autonomous University of Barcelona

**Dr. Juan Jesús Fernández Madera**

- ♦ Allergologist at HUCA
- ♦ Former Head of the Allergy Unit, Monte Naranco Hospital, Oviedo.
- ♦ Allergy Service, Central University Hospital of Asturias.
- ♦ Member of: Alergonorte Board of Directors, SEAIC Rhinoconjunctivitis Scientific Committee, Medicinatv.com Advisory Committee.

**Dr. Celia Méndez García**

- ♦ Biomedical Researcher at Novartis Laboratories in Boston, USA.
- ♦ Doctorate in Microbiology from the University of Oviedo.
- ♦ Member of the North American Society for Microbiology.

**Dr. Eduardo Narbona López**

- ♦ Speciality Neonatal Unit, San Cecilio University Hospital
- ♦ Advisor to the Department of Pediatrics, University of Granada.
- ♦ Member of: Pediatric Society of Western Andalusia and Extremadura, Andalusian Association of Primary Care Pediatrics.



**Dr. Toni Gabaldon Estevani**

- ♦ IRB and BSC senior group leader
- ♦ Co-founder and Scientific Advisor (CSO) of Microomics SL
- ♦ ICREA Research Professor and Group Leader of the Comparative Genomics Laboratory
- ♦ Doctor of Medical Sciences, Radboud University Nijmegen.
- ♦ Corresponding Member of the Royal National Academy of Pharmacy of Spain.
- ♦ Member of the Spanish Young Academy

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*Through didactic contents elaborated by great experts in Human Microbiota, the updating of your competences in this field will be guaranteed”*



# 06

## Educational Plan

The syllabus of this Hybrid Professional Master's Degree is made up of 10 modules in which students will broaden their knowledge in various fields related to the Human Microbiota based on the latest scientific evidence. The didactic resources you will have at your disposal during the duration of this program are accessible through formats such as complementary readings, explanatory video or interactive summary. This, coupled with a convenient 100% online methodology, will favor the adaptation of learning to the individualized needs of each student.







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*Enroll in this Hybrid Professional Master's Degree and access the most complete teaching materials on the market in Human Microbiota, available in various textual and multimedia formats"*

### Module 1. Microbiota. Microbiome. Metagenomics

- 1.1. Definition and Relationship Between Them
- 1.2. Composition of the Microbiota: Types, Species and Strains
- 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. Gut-Brain Axis
  - 1.4.2. Antibiotic Therapy
  - 1.4.3. Epigenetic-Microbiota Interaction. Endocrine Disruptors
  - 1.4.4. Probiotics, Prebiotics, Symbiotics. Concepts and Overviews
  - 1.4.5. Fecal Transplant, Latest Advances

### Module 2. Gut Microbiota I. Intestinal homeostasis

- 2.1. Gut Microbiota Studies
  - 2.1.1. Projects MetaHIT, Meta-Biomed, MyNewGut, Human Microbiome Project
- 2.2. Microbiota Composition
  - 2.2.1. Protective Microbiota (Lactobacillus, Bifidobacterium, Bacteroides)
  - 2.2.2. Immunomodulatory Microbiota (Enterococcus faecalis and Escherichia coli)
  - 2.2.3. Mucoprotective or Muconutritive Microbiota (Faecalibacterium prausnitzii and Akkermansia muciniphila)
  - 2.2.4. Microbiota with Proteolytic or Proinflammatory Activities (E. coli Biovare, Clostridium, Proteus, Pseudomonas, Enterobacter, Citrobacter, Klebsiella, Desulfovibrio, Bilophila)
  - 2.2.5. Fungal Microbiota (Candida, Geotrichum)

- 2.3. Digestive System Physiology. Composition of the Microbiota in the Different Parts of the Digestive Tract. Resident Flora and Transient or Colonizing Flora. Sterile Areas in the Digestive Tract
  - 2.3.1. Esophageal Microbiota
    - 2.3.1.1. Healthy Individuals
    - 2.3.1.2. Patients (Gastric Reflux, Barrett's Esophagus, etc.)
  - 2.3.2. Gastric Microbiota
    - 2.3.2.1. Healthy Individuals
    - 2.3.2.2. Patients (Gastric Ulcer, Gastric Cancer, MALT, etc)
  - 2.3.3. Gallbladder Microbiota
    - 2.3.3.1. Healthy Individuals
    - 2.3.3.2. Patients (Cholecystitis, Cholelithiasis, etc.)
  - 2.3.4. Small Intestine Microbiota
    - 2.3.4.1. Healthy Individuals
    - 2.3.4.2. Patients (Inflammatory Bowel Disease, Irritable Bowel Syndrome, etc.)
  - 2.3.5. Colon Microbiota
    - 2.3.5.1. Healthy Individuals. Enterotypes
    - 2.3.5.2. Patients (Inflammatory Bowel Disease, Crohn's Disease, Colon Carcinoma, Appendicitis, etc)
- 2.4. Gut Microbiota Functions: Metabolic. Nutritional and Trophic. Protective and Barrier Immunological
  - 2.4.1. Interrelationships between the Intestinal Microbiota and Distant Organs (Brain, Heart, Liver, Pancreas, etc.)
- 2.5. Intestinal Mucosa and Mucosal Immune System
  - 2.5.1. Anatomy, Characteristics, and Functions (MALT, GALT, and BAL System)
- 2.6. What is Intestinal Homeostasis? Role of Bacteria in Intestinal Homeostasis
  - 2.6.1. Effects on Digestion and Nutrition
  - 2.6.2. Defence Stimulation, Hindering Colonization by Pathogenic Microorganisms
  - 2.6.3. Production of Vitamin B and K
  - 2.6.4. Production of Short Chain Fatty Acids (Butyric, Propionic, Acetic, etc.)
  - 2.6.5. Production of Gases (Methane, Carbon Dioxide, Molecular Hydrogen), Properties and Functions
  - 2.6.6. Lactic Acid

**Module 3. Gut Microbiota II. Intestinal Dysbiosis**

- 3.1. What is Intestinal Dysbiosis? Consequences
- 3.2. Intestinal Barrier. Physiology. Function. Intestinal Permeability and Hyperpermeability. Relationship between Intestinal Dysbiosis and Intestinal Hyperpermeability
- 3.3. Relationship of Intestinal Dysbiosis and Other Types of Disorders: Immunological, Metabolic, Neurological and Gastric (*Helicobacter Pylori*)
- 3.4. Consequences of the Alteration of the Intestinal Ecosystem and its Relationship to Functional Digestive Disorders
  - 3.4.1. Inflammatory Bowel Disease IBD
  - 3.4.2. Chronic Inflammatory Bowel Diseases: Crohn's Disease  
Ulcerative Colitis
  - 3.4.3. Irritable Bowel Syndrome (IBS) and Diverticulitis
  - 3.4.4. Intestinal Motility Disorders. Diarrhea. Diarrhea Caused by *Clostridium Difficile*. Constipation
  - 3.4.5. Digestive Disorders and Nutrient Malabsorption Problems: Carbohydrates, Proteins, and Fats
  - 3.4.6. Markers of Intestinal Inflammation: Calprotectin. Eosinophil Cationic Protein (ECP). Lactoferrin. Lysozyme
  - 3.4.7. Leaky Gut Syndrome. Permeability Markers: Alpha-1 Antitrypsin. Zonulin. Tight Junctions and their Main Function
- 3.5. Alteration of the Intestinal Ecosystem and its Relationship with Intestinal Infections
  - 3.5.1. Viral Intestinal Infections
  - 3.5.2. Bacterial Intestinal Infections
  - 3.5.3. Intestinal Infections due to Parasites
  - 3.5.4. Fungal Intestinal Infections. Intestinal Candidiasis
- 3.6. Composition of the Intestinal Microbiota in the Different Stages of Life
  - 3.6.1. Variation in Gut Microbiota Composition, from the Neonatal-Early Childhood Stage to Adolescence. "Unstable Period"
  - 3.6.2. Composition of the Intestinal Microbiota in Adulthood. "Stable Period"
  - 3.6.3. Gut Microbiota Composition in the Elderly "Unstable Stage" Aging and Microbiota
- 3.7. Nutritional Modulation of Intestinal Dysbiosis and Hyperpermeability: Glutamine, Zinc, Vitamins, Probiotics, Prebiotics
- 3.8. Techniques for Quantitative Analysis of Microorganisms in Feces
- 3.9. Current Lines of Research

**Module 4. Microbiota in Neonatology and Pediatrics**

- 4.1. Mother-Child Symbiosis
- 4.2. Influencing Factors on the Gut Microbiota of the Mother During Pregnancy and During Birth. Influence of the Type of Delivery on the Microbiota of the New-born
- 4.3. Type and Duration of Breastfeeding, Influence on the Infant's Microbiota
  - 4.3.1. Breast Milk: Composition of the Breast Milk Microbiota. Importance of Breastfeeding in the New-born's Microbiota
  - 4.3.2. Artificial Breastfeeding. Use of Probiotics and Prebiotics in Infant Milk Formulas
- 4.4. Clinical Applications of Probiotics and Prebiotics in Pediatric Patients
  - 4.4.1. Digestive Pathologies: Functional Digestive Disorders, Diarrhea, Necrotizing Enterocolitis. Intolerances
  - 4.4.2. Non-digestive Pathologies: Respiratory and ENT, Atopic Diseases, Metabolic Diseases. Allergies
- 4.5. Influence of Antibiotic and other Psychotropic Treatment on the Microbiota of the Infant
- 4.6. Current Lines of Research

**Module 5. Oral Microbiota and Respiratory Tract**

- 5.1. Structure and Oral Ecosystems
  - 5.1.1. Main Ecosystems that are Found in the Oral Cavity. Characteristics and Composition of Each of Them. Nostrils, Nasopharynx and Oropharynx
- 5.2. Alterations of the Oral Microbial Ecosystem: Oral Dysbiosis. Relationship with Different Oral Disease States
  - 5.2.1. Cavities
  - 5.2.2. Halitosis
  - 5.2.3. Periodontal and Gingival Diseases
  - 5.2.4. Peri-Implant Diseases
  - 5.2.5. Other Infectious Diseases: *Candida Albicans*
- 5.3. Influence of External Agents in Oral Eubiosis and Dysbiosis. Hygiene
- 5.4. Structure of the Respiratory Tract and Composition of the Microbiota and Microbiome
  - 5.4.1. Upper Respiratory Tract (Nasopharynx, Middle Ear, Sinuses, and Tonsils)
  - 5.4.2. Lower Respiratory Tract (Trachea, Lungs, Bronchi, Bronchioles, and Alveoli)

- 5.5. Factors that Regulate the Respiratory Microbiota: Microbial Immigration, Microbial Elimination and Reproduction Rates of its Members
  - 5.5.1. Microbial Immigration
  - 5.5.2. Elimination of Microbes and the Reproduction Rates of its Members
- 5.6. Alteration of the Respiratory Tract Microbiota and its Relationship with Different Respiratory Tract Diseases
- 5.7. Therapeutic Manipulation of the Microbiome of the Oral Cavity in Prevention and Treatment of Related Diseases
- 5.8. Therapeutic Manipulation of the Microbiome of the Respiratory Tract in Prevention and Treatment of Related Diseases
- 5.9. Current Lines of Research and Clinical Applications

## Module 6. Microbiota and Immune System

- 6.1. Immune System Physiology: What is Immunity?
  - 6.1.1. Immune System Components
    - 6.1.1.1. Lymphoid Tissue
    - 6.1.1.2. Immune Cells
    - 6.1.1.3. Chemical Systems
- 6.2. Organs Involved in Immunity
  - 6.2.1. Primary Organs
  - 6.2.2. Secondary Organs
- 6.3. Innate, Non-Specific, or Natural Immunity
- 6.4. Acquired, Adaptive, or Specific Immunity
- 6.5. Nutrition and Lifestyle and their Interaction with the Immune System and the Microbiota
- 6.6. Functional Foods and their Effect on the Immune System
  - 6.6.1. Probiotics, Prebiotics, and Symbiotics
  - 6.6.2. Nutraceuticals and Functional Foods
- 6.7. Bidirectional Relationship between Microbiota and Neuroimmunoendocrine System
- 6.8. Microbiota, Immunity, and Nervous System Disorders: Anxiety, Depression, Autism, Schizophrenia, or Alzheimer's Disease

- 6.9. The Gut-Microbiota-Brain Axis
- 6.10. Current Lines of Research
- 6.11. Microbiota, Immunity, and Nervous System Disorders: Anxiety, Depression, Autism, Schizophrenia, or Alzheimer's Disease
- 6.12. The Gut-Microbiota-Brain Axis
- 6.13. Current Lines of Research

## Module 7. Skin Microbiota

- 7.1. Skin Physiology
  - 7.1.1. Structure of the Skin: Epidermis, Dermis, and Hypodermis
  - 7.1.2. Functions of the Skin
  - 7.1.3. Microbial Composition of the Skin
- 7.2. Factors that Regulate the Type of Bacterial Flora in the Skin
  - 7.2.1. Sweat Glands, Sebaceous Glands, Desquamation
  - 7.2.2. Factors that Alter the Ecology of the Skin and its Microbiota
- 7.3. Skin Immune System
  - 7.3.1. Epidermis; Essential Element of our Defences
  - 7.3.2. Elements of the Skin Immune System: Cytokines, Keratinocytes, Dendritic Cells, Lymphocytes, Antimicrobial Peptides
  - 7.3.3. Influence of the Skin Microbiota on the Skin Immune System. Staphylococcus Epidermidis, Staphylococcus Aureus
- 7.4. Alteration of the Normal Skin Microbiota (Dysbiosis)
  - 7.4.1. Impaired Barrier Function
- 7.5. Triggered Skin Diseases
  - 7.5.1. Psoriasis (Streptococcus Pyogenes)
  - 7.5.2. Acne Vulgaris
  - 7.5.3. Atopic Dermatitis
  - 7.5.4. Rosacea
- 7.6. Influence of the Use of Probiotics in the Prevention and Treatment of Different Skin Diseases
- 7.7. Current Lines of Research



## Module 8. Genitourinary Tract Microbiota

- 8.1. Genitourinary Tract Physiology and Microbial Composition
  - 8.1.1. In Men
  - 8.1.2. In Women
- 8.2. Microorganisms Causing Urinary Tract Infections: Uropathogens. Relationship with the Alteration of the Microbiota in Men and Women
  - 8.2.1. Enteric Bacteria, Generally Gram-Negative Aerobic Bacteria: E. Coli, Enterobacteria. Klebsiella or Proteus Mirabilis or Pseudomonas Aeruginosa
  - 8.2.2. Gram-Positive Bacteria: Staphylococcus Saprophyticus, etc
- 8.3. Vaginal Microbiota and its Modification with Age
  - 8.3.1. Infant Age
  - 8.3.2. Fertile Age
  - 8.3.3. Adult Age (Menopause)
- 8.4. Alteration of the Vaginal Homeostasis and its Relationship with Infectious Pathologies
  - 8.4.1. Vaginitis
    - 8.4.1.1. Chlamydia
    - 8.4.1.2. Bacterial Vaginosis
    - 8.4.1.3. Vaginal Candidiasis
    - 8.4.1.4. Vaginitis Trichomoniasis
    - 8.4.1.5. Viral Vaginitis
  - 8.4.2. Non-Infectious Vaginitis
- 8.5. Probiotics in the Prevention of the Main Genitourinary Tract Infections: UTI (Cystitis/ Urethritis), Prostatitis, Pyelonephritis, Vaginal infections, and infertility
- 8.6. Current Lines of Research

## Module 9. Relationship between Intolerances/Allergies and Microbiota

- 9.1. Microbiota Changes in Patients on Food Exclusion Diets
  - 9.1.1. Eosinophilic Esophagitis (EoE)
- 9.2. Microbiota Changes in Patients on Food Exclusion Diets: Intolerance to Dairy
  - 9.2.1. Lactose Intolerance
  - 9.2.2. Intolerant to Lactic Proteins: Caseins, Albumins, etc
  - 9.2.3. People Allergic to Milk
- 9.3. Microbiota Changes in Patients on Food Exclusion Diets: Gluten
  - 9.3.1. Alteration of the Intestinal Microbiota in Patients with Gluten Intolerance
  - 9.3.2. Alteration of the Intestinal Microbiota in Celiac Patients
  - 9.3.3. Role of Probiotics and Prebiotics in the Recovery of the Microbiota in Gluten Intolerant and Coeliacs
- 9.4. Microbiota and Biogenic Amines
- 9.5. Current Lines of Research

## Module 10. Probiotics, Prebiotics, Microbiota, and Health

- 10.1. Probiotics: Definition, History, Mechanisms of Action
- 10.2. Prebiotics: Definition, Types of Prebiotics (Starch, Inulin, FOS Oligosaccharides), Mechanisms of Action
- 10.3. Clinical Applications of Probiotics and Prebiotics in Gastroenterology
- 10.4. Clinical Applications of Endocrinology and Cardiovascular Disorders
- 10.5. Clinical Applications of Probiotics and Prebiotics in Urology
- 10.6. Clinical Applications of Probiotics and Prebiotics in Gynecology
- 10.7. Clinical Applications of Probiotics and Prebiotics in Immunology: Autoimmunity, Pulmonology, Vaccines
- 10.8. Clinical Applications of Probiotics and Prebiotics in Nutritional Diseases. Obesity and Eating Disorders. Metabolism, Malnutrition and Malabsorption of Nutrients
- 10.9. Clinical Applications of Probiotics and Prebiotics in Neurological Diseases. Mental Health. Old Age
- 10.10. Clinical Applications of Probiotics and Prebiotics in Critically Ill Patients. Cancer
- 10.11. Dairy Products as a Natural Source of Probiotics and Prebiotics. Fermented Milk
- 10.12. Safety and Legislation in the Use of Probiotics

07

# Clinical Internship

Passing the theoretical 100% online learning phase will give the student access to a practical stay of 3 weeks in a prestigious hospital center, where they will develop their acquired knowledge with real patients in a modern environment and equipped with the best human and technical equipment.





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*Do your clinical internship in one of the best hospital centers”*

The internship of this Hybrid Professional Master's Degree consists of a 120-hour hospital stay in a first level center, from Monday to Friday, with consecutive 8-hour days with an attending physician. During this phase, the student will have the opportunity to practice with real patients, applying the knowledge acquired in the theoretical part in their professional performance.

In this practical stay, the activities are aimed at developing and perfecting the competencies necessary for the provision of health care in areas and conditions that require a high level of qualification, and which are oriented to the specific training for the exercise of the activity, in an environment of patient safety and high professional performance.

This is an ideal opportunity to acquire new medical skills in a practical way, working in a prestigious hospital, where the application of the most advanced and updated diagnostic and therapeutic treatments are the key to provide quality service to each patient.

The practical part will be carried out with the active participation of the student performing the activities and procedures of each area of competence (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 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 completion 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:







| Module   | Practical Activity  |
|--|---|
| Intestinal Microbiota                                      | Treat problems in a patient's intestinal microbiota caused by dietary or lifestyle failures   |
|  | Carry out the treatment of different intestinal infections caused by viruses, bacteria or parasites, using medical strategies based on the latest scientific evidence |
| Skin Microbiota  | Diagnose a skin disease that has resulted from an imbalance in the patient's bacterial flora  |
|  | Treat a skin pathology triggered by the most avant-garde methods  |
| Relationship between intolerances/allergies and microbiota | Refining the diet of patients with dairy product intolerance  |
|  | Administering probiotics and prebiotics to support microbiota recovery in patients with gluten intolerance  |
| Probiotics and prebiotics                                  | Tailor probiotic therapy to the patient, taking into account special situations such as pregnant women or people with diabetes  |
|  | Perform probiotic treatment for patients with various urological or gynecological problems  |
|  | Care for the elderly, using probiotics and prebiotics as a method of prevention of various diseases   |

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*Surround yourself and learn from the best medical experts in Human Microbiota thanks to the internships offered by this Hybrid Professional Master's Degree"*

## 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 educational entity undertakes to take out civil liability insurance to cover any eventuality that may arise during the stay at the internship center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. In this way, the professional will not have to worry in case he/she has to face an unexpected situation and will be covered until the end of the practical program at the center.



## General Conditions of the Internship Program

The general terms and conditions of the internship program agreement shall be as follows:

**1. TUTOR:** During the Hybrid Professional 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 student does not show up on the start date of the Hybrid Professional 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 Professional Master's Degree will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** the Hybrid Professional 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 Professional 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 Professional 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?

With the maxim of offering a hospital offer that is completely adapted to the personal and professional needs of each student of this Hybrid Professional Master's Degree, TECH offers students a large number of centers distributed in different geographical locations for the realization of internships.








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*Complete your program with an internship in a first level hospital, as close as possible to your usual place of residence”*

## tech 46 | Where Can I Do the Clinical Internship?



The student will be able to take the practical part of this Hybrid Professional Master's Degree in the following centers:



**Policlínico HM Imi Toledo**

|         |        |
|---------|--------|
| Country | City   |
| Spain   | Toledo |

Address: Av. de Irlanda, 21, 45005, Toledo

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


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**Related internship programs:**

- Electrotherapy in Rehabilitation Medicine
- Hair Transplantation







**Biosalud Day Hospital**

|         |          |
|---------|----------|
| Country | City     |
| Spain   | Zaragoza |

Address: Residencial Paraíso, 9 (50008)  
Zaragoza, España

Center for Integrative and Biological Medicine with a holistic approach.

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**Related internship programs:**

- English for Nursing
- Nursing in Integrative Medicine



*Take advantage of this opportunity to surround yourself with expert professionals and learn from their work methodology"*

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.





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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.



# 10 Certificate

The Hybrid Professional Master's Degree in Human Microbiota guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid Professional 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 Professional Master's Degree diploma in Human Microbiota** 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.

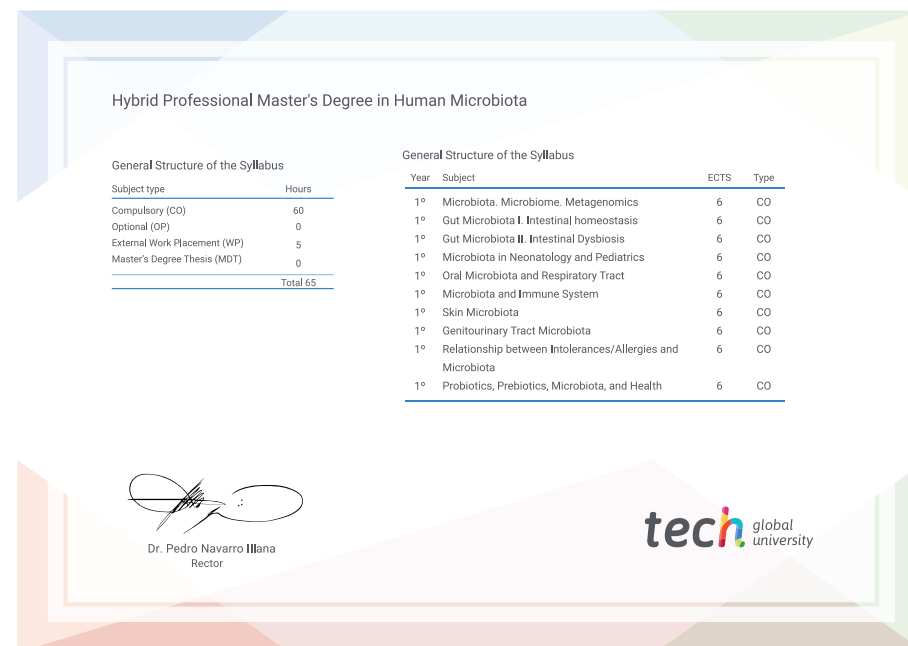
Title: **Hybrid Professional Master's Degree in Human Microbiota**

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

Duration: **12 months**

Certificate: **TECH Global University**

Recognition: **60 + 5 ECTS Credits**



\*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 languages  
virtual classroom



## Hybrid Professional Master's Degree

Human Microbiota

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 créditos ECTS

# Hybrid Professional Master's Degree

## Human Microbiota