



Weill Cornell Medicine-Qatar
Continuing Professional Development

Online Course

ROLE OF THE GUT MICROBIOTA IN HEALTH AND DISEASE

Release Date: Wednesday, February 19, 2020

End Date: Sunday, February 19, 2023

Estimated Time: 19.5 hours

Overview

Release Date: Wednesday, February 19, 2020
End Date: Sunday, February 19, 2023
Revision date: August 19, 2020
Estimated Time: 19.5 hours

Role of the Gut Microbiota in Health and Disease

Description

This enduringly interesting material is composed of five online modules which provide an evidence-based update on the role of the Gut Microbiota in health and disease.

Participants who complete the modules will be able to define what microbiota are and describe the general principles governing interactions between gut-resident microbes and humans. They will be able to identify the numerous facets of human biology that are influenced by the

gut microbiota in health and disease. In addition, participants will learn about the effects of lifestyle/nutrition and antibiotic/probiotic use on shaping the gut microbiota composition.

Toward the end of the course, participants will be able to discuss the incorporation of the gut microbiota analysis into the daily practice of medicine and explain the principles behind the use of fecal transplants and the potential benefits and risks of this procedure.

Learning Objectives

At the end of this activity, participants will:

- Describe the general principles governing interactions between gut resident microbes and humans.
- Identify the numerous facets of human biology that are influenced by the gut microbiota in health and disease.
- Define the factors that can alter the microbiota in everyday life, including antibiotics and diet, which directly impact microbiota composition and function.
- Explain the principles behind the use of fecal transplants, the potential benefits and risks.
- Discuss the incorporation of the gut microbiota analysis into daily practice of medicine.

Target Audience

Physicians, Nurses, Dentists, Pharmacists, Allied Health Professionals, Students, Researchers, Educators

Note

Participants **MUST** complete the course within 6 months from registration. They will receive an email with a link to access the course content along with necessary instructions.

Identified Practice Gaps/Educational Needs

The human gut microbiota contains trillions of microorganisms, primarily bacteria but also archaea, protists, viruses and fungi. Their number is about ten times more than human eukaryotic cells, and their genome extends to more than one fifty times more genes than human genes. In the last ten years, fundamental and experimental studies aiming to understand the role of gut microbiota in the onset of diseases have been proliferating around the world. We are currently living a tremendous paradigm shift in health sciences, where microbiota is being linked to diseases of 'modern civilization' such as cancer, diabetes, obesity, cardiovascular disease, autoimmune diseases etc. The role of the gut microbiota is becoming a central question in the study of diseases.

Indeed, the number of publications about the role of the gut microbiota has increased significantly during the past ten years (Figure 1, source: Pubmed). However, our search shows that the role of the gut microbiota is very little studied by scientists in Qatar (Figure 2, source: Pubmed).

Moreover, survey results from an ongoing study at WCM-Q show that among a group of 44 healthcare professionals 88.6% feel that healthcare professionals are not knowledgeable of the role of microbiota in inflammatory diseases such as IBD or in neuropsychiatric disorders such as Autism Spectrum Disorders and Attention Deficit Hyperactivity Disorders. Nevertheless, 100% of them believe there is a need for further investigations into the role of the gut microbiota in the gut-brain axis. Another online survey, of Qatar residents, shows that a large proportion of respondents are ready to participate in clinical trials involving modulation of the gut microbiota through either diet or fecal transplant (Figure 3) (source: UREP21-059-1-011- Qatar National research Funds).

In addition, new practice guidelines to help practitioners consider the gut microbiota have been described by various groups worldwide 1–5. The vagus nerve is described as a key modulator of the gut-brain axis in psychiatric and inflammatory disorders, revealing a wide range of clinical applications in the treatment of inflammatory diseases 6–8.

Neurosciences are experiencing a paradigm shift with the identification of the gut as the “second brain” and the existence of the gut-brain axis. It is, therefore, extremely difficult to hope for any change in practice before unraveling the mechanisms involved. This lecture will constitute one step forward in raising awareness among healthcare professionals of the importance of the microbiota-gut-brain axis by clarifying definitions and some of the mechanisms involved, such as the impact of diet on metabolites secretion by microorganisms, the role of the vagus nerve and other pathways to the organs, as well as potential clinical applications.

Figures

Figure 1: Publication counts using the MeSH Term “Microbiota”. (source: Pubmed).

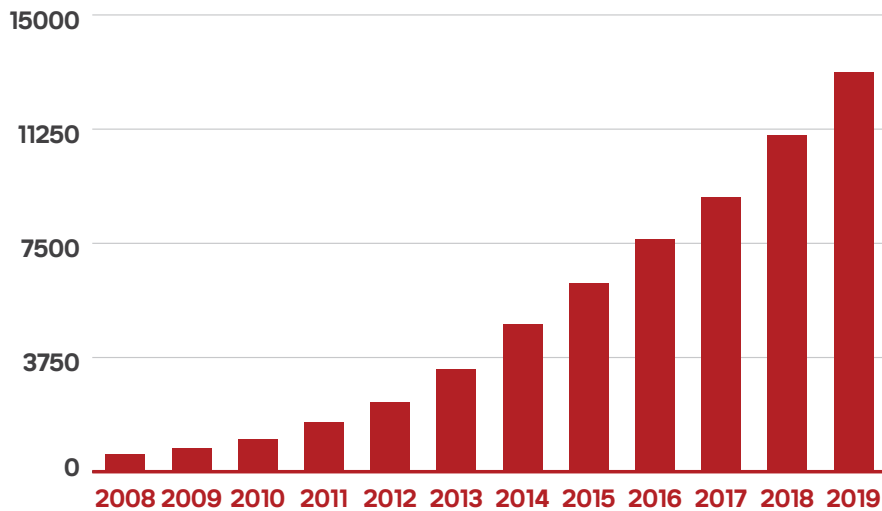


Figure 2: Publication counts using MeSH term : “microbiota AND Qatar”. (source: Pubmed)

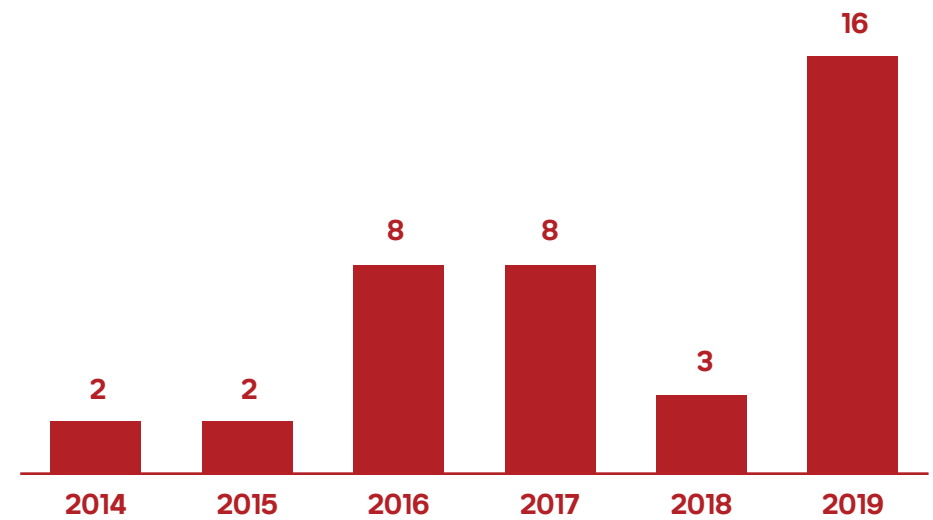
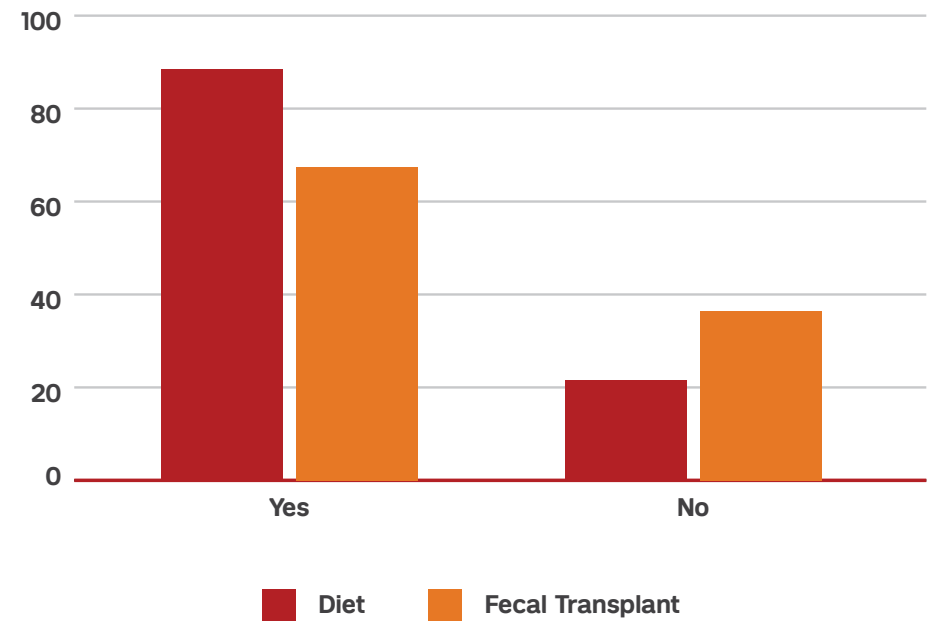


Figure 3: Readiness of respondents (%) who are resident in Qatar to participate in clinical trials involving diet or fecal transplants. (source: UREP21-059-1-011)





Accreditation

Disclosure of Relationships/Content Validity

It is the policy of Weill Cornell Medicine-Qatar to adhere to Department of Healthcare Professions (DHP) and Accreditation Council for Continuing Medical Education (ACCME) Criteria, Policies, and Standards for Commercial Support and content validation in order to ensure fair balance, independence, objectivity, and scientific rigor in all its sponsored programs. All faculty participating in sponsored programs are expected to disclose relevant financial relationships pertaining to their contribution to the activity, and any discussions of off-label or investigational uses of approved commercial products or devices, or of any products or devices not yet approved in the United States and elsewhere. WCM-Q CME/CPD activities are intended to be evidence-based and free of commercial bias.

Course Director

- Ghizlane Bendriss, PhD

Course Faculty

- Ghizlane Bendriss, PhD
- Ali Chaari, PhD
- Riham Shadid, PharmB

Course Administrator

- Safia Rabia

Scientific Planning Committee

- Linda Abbad, DMD
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- Meriem Bendriss, Radiography
- Ali Chaari, PhD
- Elisa Pajulammi, RN
- Majda Sebah, BSC, PhD
- Riham Shadid, PharmB
- Ali Sultan, MD, PhD
- Dana Ali, Medical Student

The course Director, Scientific Planning Committee members and Faculty

- Have no relevant financial relationships to disclose.
- Will not be discussing unlabeled/unapproved use of drugs or products.

Course Administrator

Safia Rabia has disclosed the following financial relationship:

- Spouse – employee of Al Wehda Medical Group.
- Will not be discussing unlabeled/unapproved use of drugs or products.

ICR

Ghizlane Bendriss, PhD

- Has no relevant financial relationships to disclose.
- Will not be discussing unlabeled/unapproved use of drugs or products.

Evaluation

An evaluation will be conducted online post activity.

All participants are required to complete the Evaluation Form in order to qualify for a certificate. The evaluation allows us to assess the degree to which the activity met its objectives. It will also guide the planning of future activities and inform decisions about improving the educational program.

Accreditation & Credit Designation Statements



ACCME

The Weill Cornell Medicine-Qatar is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

The Weill Cornell Medicine-Qatar designates this enduring material for a maximum of 19.5 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



Program

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Module	Topic
Module 1	Pre-evaluation
Module 2	Microbiota: definitions and general principles of interaction
Module 3	Evidence on the role of gut microbes in health and diseases
Module 4	Effect of nutrition on microbiota composition

Session Learning Objectives	Speaker
Identify knowledge gaps	Ghizlane Bendriss
<ul style="list-style-type: none">• Define: microbiota, microbiome, metagenome, metabolome• Identify, classify and localize microorganisms hosted by humans• Define the terms symbiosis and Dysbiosis• Identify and classify the mechanisms of microbiota/host interactions in humans	Riham Shadid
<ul style="list-style-type: none">• List all diseases/disorders where gut microbes have been shown to be involved• Diagram for every disorder a current hypothesis on the role of gut microbes in pathogenesis• Summarize most relevant evidence on the role of microbes in Health and Diseases• Conclude on the role of lifestyle in microbiota composition and health and disease	Ghizlane Bendriss
<ul style="list-style-type: none">• Identify/classify microorganisms hosted by humans• Define the terms symbiosis and dysbiosis• Explain the importance of biodiversity of the gut in health and diseases• Analyze populations' diets• Explain biochemical interactions of gut microorganisms with food (carbohydrates, proteins, lipids, fibers) and how a diet can aggravate dysbiosis or reestablish a balanced biodiversity	Ghizlane Bendriss



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Module	Topic
Module 5	Antibiotics, Probiotics and Microbiota
Module 6	Fecal Transplants
Module 7	Latest technologies for study and analysis of microbiota, metagenome, and metabolome

Session Learning Objectives	Speaker
<ul style="list-style-type: none">• Define the terms probiotic and antibiotic• Classify antibiotics• Explain what is resistance to antibiotic and its consequences• Conclude on dangers of antibiotic overuse on microbiota diversity• Identify the WHO requirements for the label "probiotic"• Explain the role and importance of probiotics in health and diseases• Summarize latest evidence on the clinical benefits of probiotics• List methods and tools available to minimize the use of antibiotics• Recognize cases that require use or not of antibiotic and/or probiotic using appropriate available tools	Riham Shadid
<ul style="list-style-type: none">• Explain the principle of fecal transplant• Describe the diverse methods used up to date to perform fecal transplants• List the evidence available on the benefits of fecal transplants• Name the diseases/disorders which have shown positive responses to fecal transplants• Evaluate the risks of fecal transplants• State the current regulations on use of fecal transplants technique as a therapeutic treatment as per FDA	Ghizlane Bendriss
<ul style="list-style-type: none">• Lists and classify technologies used to study and analyze microbiota composition, metagenome and metabolome• Compare costs of the technologies described	Ali Chaari



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Module	Topic
Module 8	Post-evaluation

Session Learning Objectives	Speaker
<ul style="list-style-type: none">• Conclude on the potential benefits of integrating routine analysis of microbiota in clinical settings• Describe the general principles governing interactions between gut resident microbes and humans• Identify the numerous facets of human biology that are influenced by the gut microbiota in health and disease• Define the factors that can alter the microbiota in everyday life, including antibiotics, diets, which directly impact microbiota composition and function• Explain the principles behind the use of fecal transplants, the potential benefits and risks• Discuss the incorporation of the gut microbiota analysis into daily practice of medicine	Ghizlane Bendriss

Faculty



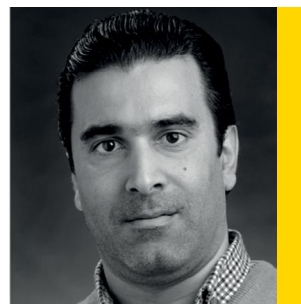
Ghizlane Bendriss, PhD

**Lecturer in Biology and Neurosciences
Weill Cornell Medicine-Qatar**

Dr. Ghizlane Bendriss holds a PhD in neurobiology and neurophysiology as well as a master's in neurophysiology and cognitive neurosciences from the University of Aix-Marseille in France. She started her career in Research at the Center for Research in Oncobiology and Oncopharmacology in France, before joining Weill Cornell Medicine-Qatar in 2011. Dr. Ghizlane is a faculty lecturer and teaches Biological sciences and Neurophysiology to premedical students, in which she focuses on special senses and sensory nervous system. Driven by her interest in on the gut-brain axis, her studies on the gut microbiota lead her to become an advocate of lifestyle medicine. Her main research interest is about the effect of lifestyle on the development and physiology of the brain via the modulation of the gut microbiome. She developed and is currently leading several educational and research projects on the role of the gut microbiota in neurological and neuropsychiatric conditions such as autism spectrum disorders. She obtained a QNRF grant in 2017 to run a pilot study that aimed at assessing awareness and readiness of the population in enrolling in microbiome-targeting lifestyle interventions, as well as an internal grant as a co-investigator on a study that aims at charactering the probiotic content of dairy products in Qatar.

She developed and is the course director of two continued professional development courses that are serving her aims of raising awareness on the importance of lifestyle: 1/ The Certificate in the Fundamentals of Music Therapy and 2/ The role of the Gut microbiota in Health and Disease.

She manages to merge her passion for teaching, her research interests and her passion for music while leading the first EEG-based exploration of the variables affecting cortical responses to Arab Music scales, through which she is teaching her students to run an EEG, ethics of human research, statistical analysis and scientific writing. This study also serves her vision of designing a clinical trial for children with Autism Spectrum Disorders.



Ali Chaari, PhD

**Lecturer in Biochemistry
Weill Cornell Medicine-Qatar**

Dr. Ali Chaari holds a PhD in Biochemistry and Biophysics. He is currently a lecturer in biochemistry at Weill Cornell Medicine-Qatar. Dr. Chaari is experienced in biochemistry, molecular biology, and biophysics. He has co-authored several original research articles, written two books and has presented his work at several conferences. In addition, he is active as a research mentor to WCM-Q's medical students.

Two active research areas of his are the study of amyloid proteins modulation in neurodegenerative diseases and diabetes, and the effect probiotics on health notably on neurodegenerative diseases and type 2 diabetes.



Riham Nasereddin Shadid, PharmB, MSc

Dr. Riham Nasereddin Shadid is a pharmacist with a PharmB degree. She is also a professional post-graduate diabetes educator and a holistic health coach with more than 15 years of experience in Canada and the Middle East. She also has significant experience of designing and delivering continuing education programs for healthcare professionals. Dr. Riham is currently finishing her master's degree in biomedical and biological sciences at Hamad Bin Khalifa University, and her research is focused on the role of the gut microbiota in health and diseases.

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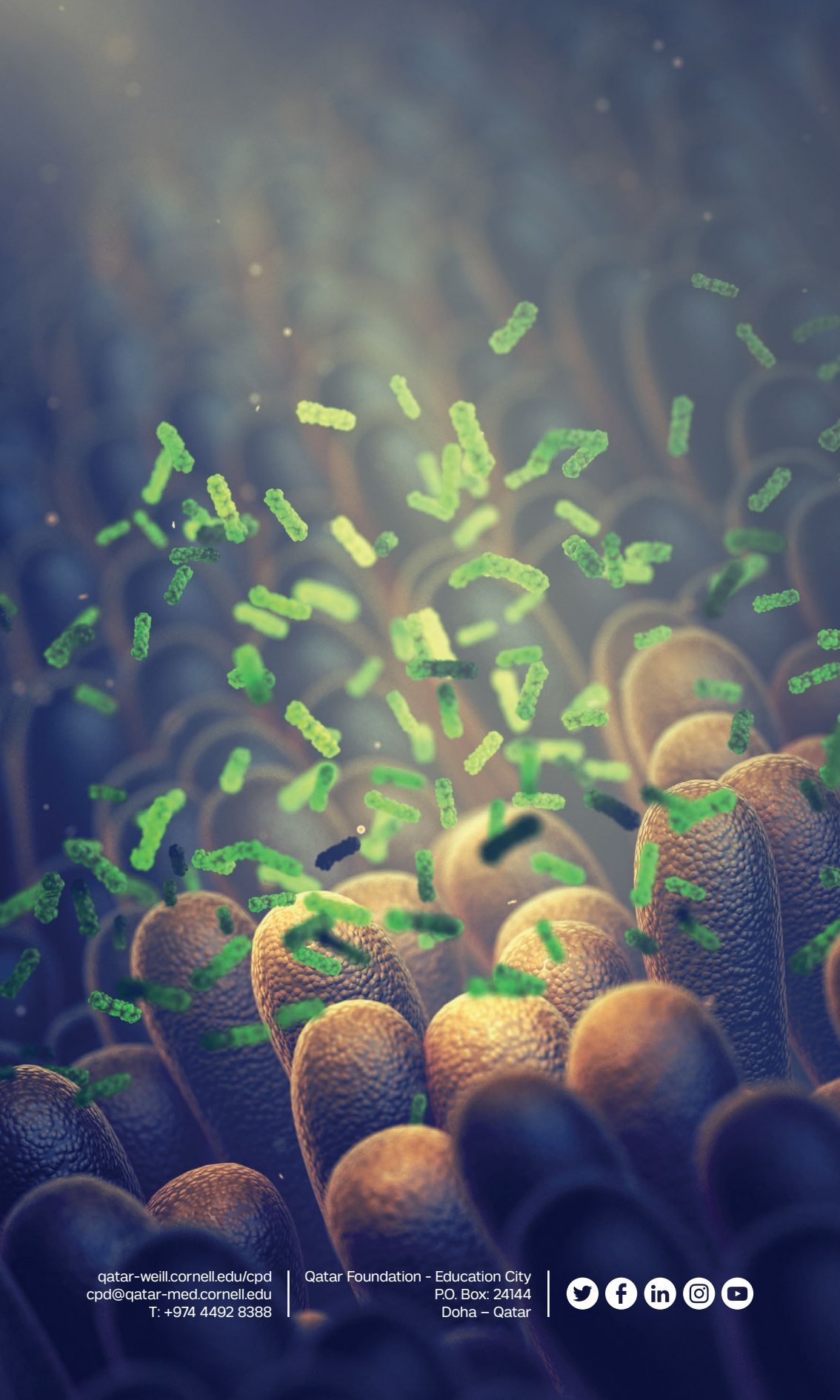
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