

BENEFICIAL MICROBES IN FOOD AND HEALTH 16:400:535 **starting from the Fall of 2013**

This course is directed to graduate students in the fields of Food Science, Nutrition, and Human/Public Health. It will be also available for undergraduate students who have sufficient background in Microbiology, Molecular Biology and Immunology. The course should be of interest for the students from the following graduate and undergraduate programs of study at Rutgers: Food Science, Agricultural Science, Biotechnology, Microbiology, Public Health, Animal Science, Pre-Medical/Health, etc. The course is designed to give the students an understanding of the role of microorganisms in health promotion. Upon completion of the course, the students should be able to understand the microorganisms, which can positively influence human and animal health, understand the molecular mechanism underlying health promotion actions by probiotic bacteria, evaluate possible risks and determine essential measures required to control safety of health promoting microorganisms, and understand the role of microorganisms in animal and human health.

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Letter of support from Dr. Koen Venema:

As Editor-in-Chief of the journal *Beneficial Microbes*, and as organizer of the biannual TNO *Beneficial Microbes* Conferences, I am pleased to learn that the phrase 'beneficial microbes' has gotten a place in graduate courses now, too.

You could say that I have devoted my entire career to beneficial microbes. Whether that were probiotic microorganisms that one can nowadays buy in numerous product formats (although mostly in dairy products), or microorganisms that already reside in and on our body and are part of the host microbiota. The largest number of microbes can be found in the gut.

This graduate course should give students a better understanding of the role of microbes in health and disease, and at least it should become clear that the concept that 'one should shoot bugs at first sight' no longer is appropriate. Sure, some microorganisms are pathogens, but there are numerous bacteria that are considered to be beneficial for health. There is almost no disease or disorder anymore in which (gut) microbes do not play a role. This ranges from obvious examples as infection and gut inflammation, to less obvious ones including obesity, allergy, brain development and autism. All of these will be covered by the graduate course. Some of these diseases and disorders can be prevented by intervening somewhere in the process with beneficial microbes! This may be already before birth to prevent allergy, with mothers taking beneficial microbes, or throughout life, e.g. when suffering from constipation.

Due to recent insight caused by progress in molecular methods over the past decade, we will soon be able to screen for microbial factors and predict which microorganisms beneficially influence human and animal health. An important factor in determining whether a bug is healthy or not, is through understanding the molecular mechanisms underlying the interaction with the host. Also, not every bug is healthy under all circumstances; e.g. is it safe to provide immunomodulating microbes to severely immune compromised patients? Should probiotic for babies be the same as the ones for adults or elderly? The available tools, models and techniques to decipher this will be provided by this graduate course.

I highly recommend this course, which is timely and versatile. And I hope to meet some of the enthusiastic students on my conference or see their manuscripts submitted in my journal. Also, if time and resources allows it, I hope to be able to play a role in this course, for instance as one of the lecturers.

Sincerely,
Koen Venema



Dr. Koen Venema (TNO, The Netherlands) and Dr. Michael Chikindas (Rutgers, USA) at the Conference on Bacteriocins and Antimicrobial Peptides. Kosice, Slovakia (2012).