

**Microbiome and antimicrobial resistance from a One-Health perspective****Maarten B. M. van Dongen**

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Abstract

The microbiome refers to the collection of genomes from the microbiota, the living microorganisms in a defined environment. The resistome represents the collection of antibiotic resistance genes (ARGs) in a defined microbiome. In his presentation, Dr. Maarten van Dongen will explain that the One-Health microbiome should take the central stage when considering antimicrobial resistance (AMR) and the holistic approach needed to tackle AMR as an escalating global threat. Based on an examination of recent literature, Dr. van Dongen will shed light on the human (gut) microbiome as an important source of ARGs and a diverse reservoir from which new resistance determinants can be recruited to pathogens. He will explain how antibiotic usage impacts the human microbiome at an individual and population level, in wastewater, and in the urban environment. Likewise, traveling and changes in diet impact AMR in the human microbiome. Also, the environmental dimension is discussed: in addition to the wastewater microbiome, the soil microbiome will be on the table. It will be explained how herbicides enhance ARGs in the soil microbiome. And there is also good news: the animal gut microbiome can be a valuable source for the research and development of novel antimicrobials. We need to take a much more holistic, One-Health approach to combating AMR globally: how can we contain resistant microorganisms and prevent new resistances from emerging?

Keywords: Microbiome, Resistome, One-Health, Antibiotic, Herbicide

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