



XIII Symposium on **BIOENGINEERING**

25th to 27th of March 2022 Porto, Portugal

Game Changing Engineering

In this panel, we will dive into some crucial game-changing moments in the different fields of Bioengineering, and how they changed the current paradigms into what we know today.

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MICROBIAL INTERACTIONS IN INFECTIOUS DISEASES AND THE THERAPEUTIC CHALLENGES

The Koch's postulates provided a significant advancement in medical microbiology, in the late XIX century, by establishing four criteria designed to determine if there was a causative relationship between a specific microorganism and a disease, therefore being able to determine a disease etiology. On the late XX century a new version of the Kock's postulates considered no the presence of bacterial cultures, but the presence of their DNA, basically because some pathogens are not easily grown in laboratory. However, these postulates did not consider that some bacterial infections are caused not by a specific bacterial species, but by bacterial consortia, wherein the outcome caused by these polymicrobial consortia are significantly more virulent that the sum of the individual parts. Examples of polymicrobial infections include cystic fibrosis, dental caries, or bacterial vaginosis. While the first two are easily diagnosed, bacterial vaginosis presents a further challenge, not only due to the very high recurrence rates after antimicrobial treatment, but mainly because its etiology is yet fully understood, making diagnosis also a challenge.

During this talk, it will be highlighted how different bacterial species can cooperate to overcome the host immune response and to become refractory to current antimicrobial therapy and will provide some examples of how my research group is tackling these challenges.