

MICROBES FOR A SUSTAINABLE FUTURE

November 14th 2022

Science Park University of Antwerp, Niel

The Science Park University of Antwerp, POM Antwerp and the Centre of Excellence 'Microbial Systems Technology' of the University of Antwerp organized a successful meeting on the future of microbiome research. The Isala building, named after the first female doctor Isala Van Diest (1842-1916), was the inspiring setting to exchange ideas between key researchers, industry experts and other stakeholders about microbiome research and industrial valorization pathways to patients and consumers.

The full programme and list of speakers of the event, is available [here](#).

All speakers aligned on the following conclusions at the end of the interactive sessions:

The potential to use microorganisms in food and health applications is massive! Enabling technologies, such as next-generation sequencing, bioinformatics, and bioreactor technologies, have evolved to the point that they allow us to effectively tap into that potential.

In **health applications**, setting up clinical trials is particularly complicated. This is in part because life biotherapeutics are fundamentally different from synthetic substances. Pasteurized 'postbiotics' provide a solution to this challenge and might help the field move forward, even without clear regulatory guidelines. Another challenge is the characterization of microorganisms, their behaviour, and their ability to positively impact health. Further clinical research is critical to obtain better and more complete data sets. Flanders' biotech and clinical research ecosystem has all the knowledge and infrastructure to play a pivotal role in moving forward the research field. Citizen science projects involving the broader public have proven to be valuable tools in the collection of large data sets and developing the larger societal context, including science education and participation by all stakeholders. We are seeing a trend toward personalized (preventive) healthcare, and it will be of utmost importance to link microbiome research with platforms that can interpret datasets. Mapping the human microbiome and its impact on human health will stimulate future research and move countless health applications forward.

Microbiome-based **food applications** might be easier to advance, but we still face technological, economic, and regulatory hurdles. Research shows that consumers are ready to experiment with their diet composition. Food applications create no side effects, therefore have no dose limitation and can be manufactured at a more reasonable cost than medicinal products. Micro-organisms offer opportunities to make our foods more sustainable and to positively impact climate change by providing valuable alternatives to animal proteins and, at the same time, recovering resources and upgrading waste streams. Getting enjoyable microbial food on our plates at an affordable cost requires research and development. There needs to be a focus on nutritional values and aspects such as flavor, texture, and functional characteristics. The extent to which consumers become aware of the importance of the microbiome and are willing to change their behavior will hugely impact the success of these products.

Applications using microbes or microbe-based products go beyond food and health applications. Research continues to discover promising possibilities and invests in studying additional applications, such as bacterial products derived from cable bacteria that can be used as electronic conductors. We will undoubtedly hear a lot more about this in the coming years, and the impact on our future lives will be real.

Call to action:

All stakeholders must collaborate to bring microbial products to the market. It falls upon researchers to demonstrate that using living microorganisms in food or health applications is safe. Regulatory authorities must step up their game, ensuring that they follow the developments within the field closely and can advise accordingly. The government should provide financial incentives for start-ups and scaleups that translate research into actual products. The media can inform the broader public about the importance of the microbiome so that consumers can make smart, sustainable choices.

You can count on us to:

- Support the community by sharing research updates and inspiring best practices,
- Facilitate project ideas or proposals,
- Ensure that we meet again soon to discuss progress.

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