OPEN ACCESS Freely available online

ISSN: 1948-5948
Journal of Microbial & Biochemical Technology

Perspective

Brief Note on Bacterial Consortia or Synthetic Co-Culture

David Rezaee*

Department of Biomolecular Engineering, University of California, Santa Cruz, USA

DESCRIPTION

Today the use of microbial co-cultures in biotechnology, ecology and medicine is acknowledged. In order to build artificial or synthetic co-cultures or consortia, it is important to understand the biological interactions that control the affiliation of microorganisms. Synthetic biology would greatly benefit from the ability to properly predict, regulate and govern cell-to-cell interactions. The development of co-culturing methods is essential for strategically designing habitats where co-cultured microorganisms can be seen. The use of a shared liquid medium for development, a solid-liquid interface, membrane separation, spatial separation and the usage of microfluidics systems are a few of these techniques. One of the main problems that these designs need to solve is how to increase the information richness of the interactions that are being observed as much as possible. The system uses the bacterial Quorum Sensing (QS) orthogonal auto inducer AI-1 and AI-2 cell-cell signaling pathways to enable strain-to-strain communication and QS signal-controlled growth rate control to vary relative population densities. We continue to create mathematical model that permits the creation of cells and systems for autonomous closed-loop regulation of population trajectories. The ability of microbial consortia to undertake complex tasks that are more challenging or perhaps impossible for individual populations is one of the compelling qualities that have recently sparked interest in this field of research.

Cell-cell interactions are essential to all investigations and have been used for a long time to examine interactions between cell populations. Synthetic biologists have recently developed a special interest in such systems for researching and creating complex multicellular synthetic systems. A co-culture, at its most basic level, is a cell cultivation setup in which two or more distinct cell populations are cultivated in some degree of interaction with one another. Studying natural interactions between populations, increasing the success of certain populations during cultivation or creating artificial interactions between populations are some of the reasons for employing such a setup. Explants from co-culture studies were biochemically purified to identify particular compounds that could be added to immortalized cell lines to express and exude these molecular guiding signals. The response of the spinal cord neurons' neurite outgrowth to particular guidance signals may then be studied by co-culturing transfected cell lines with cultures made from spinal cord explants. Such methods have analyzed a wide range of chemo attractants and chemo repellants, which have subsequently been confirmed *in vivo*. The ultimate organoleptic, nutritional and health aspects of fermented food products are influenced by Lactic Acid Bacteria (LAB). With the exception of the well-studied LAB co-culture used to make yogurt, interactions in LAB co-cultures have not received much attention. LAB on the other hand is multipurpose bacteria with a lot of potential for productive interactions.

CONCLUSION

Utilizing co-culture techniques, researchers can investigate a population of cells from several cell types and gain a more accurate understanding of biological processes like tissue regeneration and repair. As their systems will be crucial to the advancement of synthetic biology, co-cultures are believed to offer a wide range of advantages over monocultures in terms of flexibility, scalability, predictability and stability. It is employed to research both synthetic and natural cell-cell interactions, with the potential to create new ones. Such research will also provide fresh avenues for re-engineering, even in hard-to-culture species. The capacity to evaluate a wider range of components, such as those that have a high molecular mass and are thermally labile, is another advantage co-cultures offer over monoculture. However, there will always be obstacles that could impede these technological advancements. First of all, because synthetic biology is fundamentally interdisciplinary, there is no standard language for these experiments because phrases with similar meanings may be used differently in such a broad field. Additionally, detailed data collection and characterization are needed for industrial scale-up, medicinal and environmental applications and not all data capture techniques may be appropriate for future industrial, medical or environmental applications.

Correspondence to: David Rezaee, Department of Biomolecular Engineering, University of California, Santa Cruz, USA, E-mail: dfrzaee@ucsc.edu

Received: 04-Jul-2022, Manuscript No. JMBT-22-18174; **Editor assigned:** 07-Jul-2022, Pre QC No. JMBT-22-18174 (PQ); **Reviewed:** 22-Jul-2022, QC No JMBT-22-18174; **Revised:** 29-Jul-2022, Manuscript No. JMBT-22-18174 (R); **Published:** 08-Aug-2022, DOI: 10.35248/1948-5948.22.14.508.

Citation: Rezaee D (2022) Brief Note on Bacterial Consortia or Synthetic Co-Culture. J Microb Biochem Technol. 14:508.