



MOL2NET, International Conference Series on Multidisciplinary Sciences
UDLABIOTECH-01: I International Biotechnology Congress,
UDLA, Quito, Ecuador, 2019

“What a wonderful MICROworld”: Functional Microbiome Studies in Ecuador

*Ecson Obando Hernandez^a, Aileen Hickey Darquea^a, Pamela Chanco Espinosa^a,
Stalin Sarango Flores^{a,b}, Antonio León-Reyes^{c,d}, Judith Denkinger^a, Paúl Cardenas^{a,d},
Viviane Cordovez da Cunha^{b,e}, Jos Raaijmakers^{b,e}, and Pieter van ‘t Hof^{a,d*}*

^a Department of Biological and Environmental Sciences, Universidad San Francisco de Quito (USFQ), Diego de Robles y Pampite, Quito, Ecuador

^b Department of Microbial Ecology, Netherlands Institute of Ecology (NIOO-KNAW), P.O. Box 50, 6708 PB Wageningen, The Netherlands.

^c Department of Engineering Sciences, Universidad San Francisco de Quito (USFQ), Diego de Robles y Pampite, Quito, Ecuador.

^d Microbiology Institute,, Universidad San Francisco de Quito (USFQ), Diego de Robles y Pampite, Quito, Ecuador.

^e Institute of Biology, Leiden University, Sylviusweg 72, 2333 BE, Leiden, The Netherlands.

* Investigador Principal

Graphical Abstract	Abstract.
<p><i>Insert grafical abstract figure here</i></p>	<p>During the poster sessions of the 1st International Biotechnology Conference, we present the various research initiatives we have developed within the area of Microbial Ecology of the Universidad San Francisco de Quito (USFQ).</p> <p>Microbial ecology is the branch of ecology that investigates microorganisms in their ecosystems or within natural tissues, which exhibit essential functions for all living beings on our planet. It includes the study of symbioses, biogeochemical cycles and the interaction of microbes with anthropogenic effects such as pollution and climate change.</p> <p>Our research team focuses on the associations between plants or animals and their respective microorganisms, thereby integrating functional macroecology with molecular and applied microbiology.</p> <p>Recent revolutions in genomics have delivered an interesting toolbox of promising techniques that can help us understand the enormous amount of data generated by translating all the genetic information.</p>

Instead of focusing on single genes, we are now able to sequence whole genomes of millions of DNA molecules, and recently it is possible to analyse a mix of many different species altogether in one single sample.

These advances allow us to accurately study the identification of the microbial community that lives in or around multicellular organisms. In addition, in a country like Ecuador with an enormous visible MACRObiodiversity, we hypothesize that the invisible MICRObiodiversity has co-evolved to a similar magnitude or even higher.

Currently, we are developing multidisciplinary research lines that focus on functional microbiomes of emblematic species which inhabit diverse landscapes like the Andean highlands, the Amazon rainforest and soon at the Galápagos Islands. We aim to facilitate the knowledge of microbiomes in benefit of the challenges that confront our planet, for instance improving the disease resistance of crops and to identify the effects that climate change might have on the health of wild populations of migratory species like humpback whales.