DNAsequence

DNA sequence - Company presentation

DNAsequence

QUANTIFYING LIFE WITH DIGITAL BIOLOGY

- Start up biotechnology company based in Greece with branches in Romania and soon in Cyprus.
- We provide end-to-end, personalised solutions to our customers using cutting-edge technologies.
- We use innovative technologies to sequence genetic material and we analyse complex data using Bioinformatics and Artificial Intelligence methods.
- We employ and collaborate with scientist world-renowned in their field. Thus, we have the possibility to provide consulting services, add to the theoretical background of the problem and co-shape with our clients their personalised solution.

Areas of Expertise

Metagenomics of Built Environments

- Detection and monitoring of all microorganisms found in a built environment.
- Huge range of applications such as hospitals, public buildings, means of transport, livestock units, water supply systems, sewage, archaeological excavation sites and works of art.

Agrigenomics

- Genetic identification of ingredients in organic samples such as food and soil samples, using state-of-the-art technologies (Next Generation Sequencing, microarrays).
- Applications in agriculture, livestock farming and across the wide range of industries.

Metagenomics of Built Environments (MBE)

- Traditional microorganism detection methods are based on their isolation and culture. Disadvantage: Only a small percentage of microorganisms can be detected with this approach.

- MBE technology allows the exhaustive identification of microbial presence in a sample and is an effective solution for the identification of pathogenic microbial communities in an environment, without the need for specific tests for expected or well-characterised pathogens.

- The sampling method is non-invasive and can be applied to air, liquids and surfaces. DNA sequence also provides automated sampling solutions with *in situ* collection devices.

- Our advanced Bioinformatics platform for downstream analysis of the results permits the tailored identification of biological factors of interest on a case-by-case basis, according to customers' needs. Specifically:

MBE in Archaeology

By analysing excavation soil samples, tissues, surfaces, etc., we can:

- Identify possible pandemic outbreaks that changed the world (eg black death).
- Detect microorganisms that contribute to the biodeterioration of archaeological finds (eg mummies) and to suggest possible solutions.
- Enrich, through the MBE findings, our knowledge about the climate and geoclimatic changes of the era under investigation.
- Understand potential cultural habits.

MBE and Art

The problem

Biodegradation is a long process and the microbial communities involved are complex, consisting mainly of fungi and bacteria. Determining the diversity of microorganisms residing in various works of art is of great importance for their restoration and maintenance.

Our solution

- Non-invasive sampling of works of art (paintings, statues, etc.).
- Exhaustive detection of microbial communities by MBE methods.
- Identification of hazardous microbes and their correlation with maintenance and environmental conditions.
- Monitoring the development of biocommunities diversity during the restoration process of the work of art.

MBE and Biosafety

Using automated collection devices for systematic air and water sampling in situ, as well as non-invasive surface sampling, we offer a universal solution for the identification of pathogenic microbial communities of built environments

- Water safety with continuous monitoring of pathological microbes (eg Covid-19) and classic infectious agents (eg E. coli and Coliform).
- Biocommunity monitoring in urban, livestock and agricultural wastewater.
- Detection and monitoring of infectious agents in key areas of human activity (eg hospitals, schools, media) to take effective measures for the prevention and elimination of health risks.
- In hospitals: identification of hotspots and transmission patterns of germs responsible for hospital-acquired infections.

The scientific team

CSO (Chief Scientific Officer)

Prof. Christos Ouzounis is the CSO and cofounder of the company, and a Prof. in Bioinformatics at AUTH. He holds a B.Sc. in Biological Sciences (AUTH), an M.Sc. in Biological Computation and a DPhil in Computational Chemistry and Structural Biology, both from the University of York. He has lead core bioinformatic facilities at EMBL-EBI, King's College London and CERTH in Thessaloniki.

CTO (Chief Technology Officer)

Christos Karapiperis is the CTO and co-founder of the company. He has a Bachelor's degree in Computer Science, an MBA degree and is a PhD Candidate in Bioinformatics. He has over 20 years of experience in IT and Bioinformatics projects.

Bioinformatics Expert

Dr. Anastasia Chasapi holds a Bachelor's degree in Biological Sciences (AUTH), an M.Sc. in Proteomics and Bioinformatics from the University of Geneva and a PhD in Computational Biology from the University of Lausanne. She has worked for years at the Swiss Institute of Bioinformatics as a collaborating scientist. Currently she holds a Research position at CERTH.

Agrigenomics

Agrigenomics, or agricultural genomics, a rapidly evolving industry due to the continuous cost reduction of the genetic analyses.

Advantages for the Agriculture & Food Industry:

- Establishment of a unique identity for agricultural, food and processed products.
- DNA-based identification of plant & animal ingredients.
- More effective control of adulteration and fraud at multiple stages of the supply chain.
- Rapid identification of pathogens and beneficial microorganisms

Ingredients Authentication

The problem

- The confirmation of product authenticity and the labelling of listed ingredients with high accuracy requires: knowledge, experience and research .
- DNA-based techniques present a highly accurate tool for resolving these issues. But they are followed by constraints, especially when applied to highly processed products.
- The use of high heat or certain aspects of the manufacturing process can degrade the quality of DNA, rendering the identification of ingredients more difficult.

Our solution

- Development of customized protocols for the accurate identification of agricultural and processed products.
- Utilization of new tools and low-cost molecular techniques that highlight the accessibility and *in situ* analysis.
- Creation of custom genetic databases tailored to each client for the quick draw of conclusions.

Food Safety

WHO estimates that over 600,000,000 people get sick every year from eating contaminated food.

The problem

- The emergence of new pathogens in agri-food and processed products requires the use of identification methods beyond the conventional diagnostic tests.

- Limited ability to capture all pathogens and distinguish between more infectious pathogen strains.

Our solution

- **Holistic approach:** Exhaustive pathogen detection (bacteria, fungi, viruses, parasites, etc.), and beneficial microbes (e.g. probiotics) from biological samples and products.

- **Dynamic approach:** Detection at various stages of the manufacturing and the supply chain.

- **Interactive approach:** Automated bioinformatic pipeline for downstream analysis. The client can either upload their own sequencing results, or receive our lab's results with conclusions

- Enrichment of online databases that will improve the ability to distinguish between natural sources of contamination or improper handling.

Applications

Agriculture

Food Industry

Milk Industry

Brewery

Aquaculture

Cosmetics

Hospitality

Restaurants

Soda

Winery

The scientific team

Agrigenomics Team Leader

Dr. Zoe Chilioti is an agronomist, she holds an M.Sc. in Greenhouses / Protected Crops and a PhD in Molecular Plant Biology. She has many years of experience as a collaborating scientist at Johns Hopkins University and the NIH in USA.

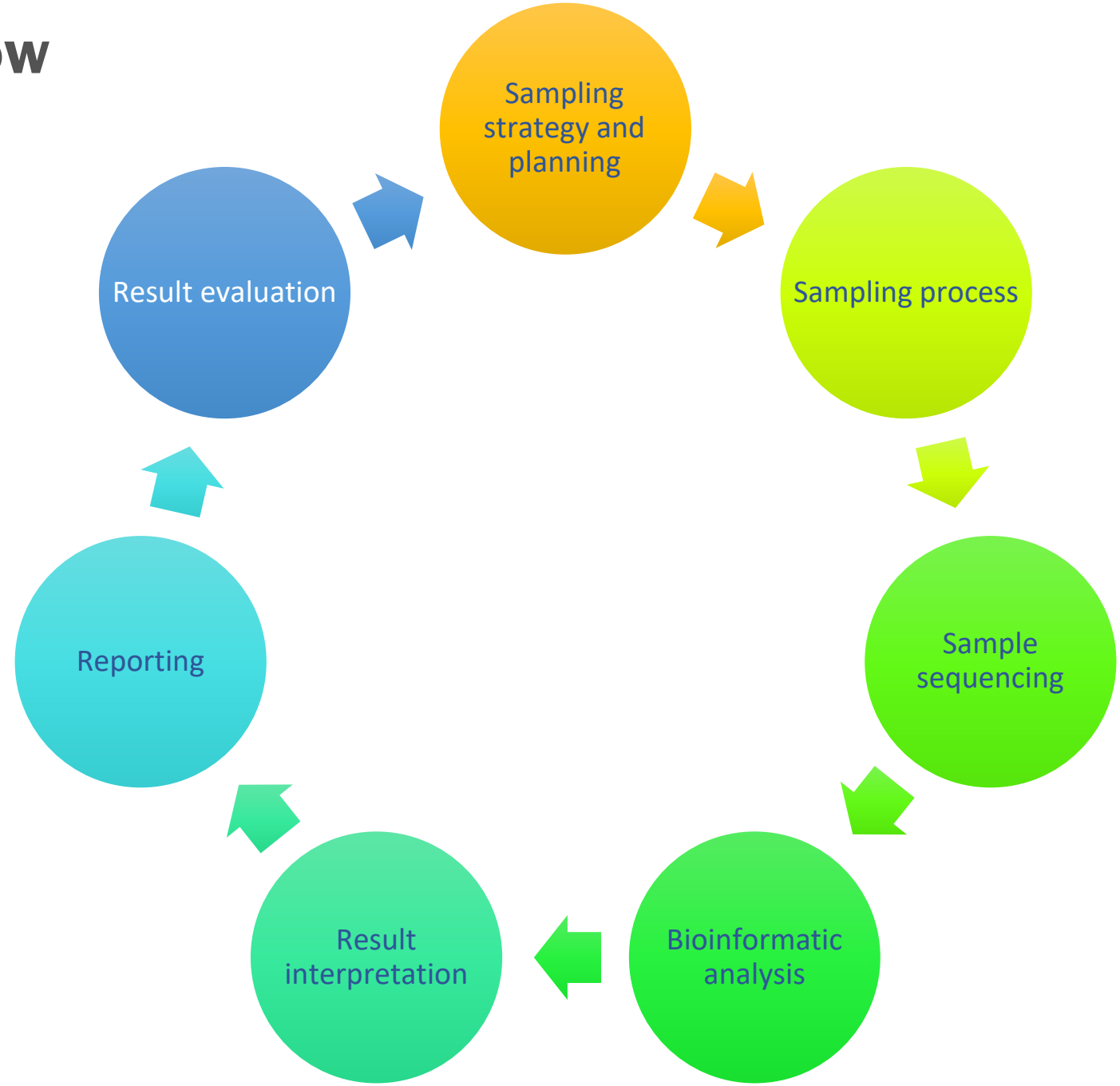
Agrigenomics Expert

Dimitrios Valasiadis is an agronomist, he holds an M.Sc. in Genetics & Plant Breeding and is a PhD candidate in Systems Biology & Post-Harvest Physiology. Currently, he is an active researcher in the field of Applied Life Sciences.

Biologist

Athanasia Alexandridou recently obtained a Bachelor's degree in Biological Sciences from the University of Oklahoma, USA. She is currently conducting her first research steps in Applied Life Sciences.

Analysis workflow



THANK YOU FOR YOUR ATTENTION

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