A new Horizon 2020 project BeyondSeq in the area of Genomic Diagnostics is launched

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Tel-Aviv, Israel – A new research project has been selected for funding by the highly-competitive Horizon 2020 Framework Programme of the European Union and will be launched this month. The project, named "**BeyondSeq**", acronym for "genomic diagnostics beyond the sequence", is coordinated by Tel-Aviv University, led by Dr. Yuval Ebenstein and aims to develop new diagnostic tools based on emerging optical DNA mapping technologies.

Current DNA sequence analysis approaches, suffer from certain shortcomings which prevent utilization of DNA mapping for fast and accurate diagnostics. Cytogenetic diagnostics provides information on the single-chromosome level, but suffers from low resolution and throughput. In contrast, Next Generation Sequencing (NGS)-based diagnostics provides single base resolution and high throughput, but suffers from short reads that prevent analysis of large genomic aberrations, as well as being prone to PCR-amplification bias and erasure of epigenetic information.

The goal of **BeyondSeq** is to bridge the gap between these approaches by analyzing long individual DNA molecules without PCR-amplification, via utilization of emerging optical DNA mapping technologies. "***BeyondSeq*** *is a project that is emblematic of European genetic research, whose objective is to develop new technologies to provide complementary solutions to sequencing and thus analyze the hidden dimension of genetic mutations",* says Dr Yuval Ebenstein, the project's coordinator and scientific leader.

The **BeyondSeq** project will develop a set of tools for integrated genetic and epigenetic profiling of single DNA molecules based on optical barcoding of individual DNA molecules, which will include systems for extracting long DNA molecules, dedicated optical labeling techniques and sample preparation, as well as software platforms and analysis tools for readout, extraction and quantification of medically relevant genomic information.

BeyondSeq will demonstrate the new technology on four specific diagnostic assays: Bacterial infections and detection of antibiotic resistance, Diagnosis/prognosis tools for hematological malignancies, Early diagnosis of colorectal and lung cancer, and Spinal Muscular Atrophy (SMA) carrier diagnosis.

BeyondSeq, which is planned to span over four years, with a budget of over €6 million, brings together eight distinguished participants from around Europe, both from the academia and biotech industry: Tel Aviv University and Technion Institute of Technology, Israel; Lund University and Chalmers University of Technology, Sweden; University of Leuven, Belgium; Genomic Vision, France; University of Birmingham, and Impasara from the UK.

To learn more about this project, please contact:

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