ARTIFICIAL INTELLIGENCE FOR EARLY DIAGNOSIS AND TREATMENT
STOA Working Breakfast, 7 February 2019, European Parliament, Brussels

FINAL REPORT

Introduction
The STOA meeting gave the opportunity to debate the current status of artificial intelligence - applied to early diagnosis and targeted disease interventions - with eminent scientists coming from different European research institutions and beyond.

In its introduction, Paul RÜBIG, MEP and STOA 1st Vice-Chair said that the STOA Panel provides independent expert assessment of scientific and technological options in various sectors, including the life sciences. STOA has been successfully undertaking this work for more than 30 years and aims to bridge the gap between the scientific community and policy-makers.

In relation to the topic of the working breakfast, he mentioned that in the last decades considerable progress has been made in the medical field but many challenges remain. We need to; i) diagnose diseases early, preferably before they manifest symptoms; ii) choose the optimal treatment for a patient; iii) predict the response to a therapy; and iv) anticipate the treatment toxicity.

Paul RÜBIG added that the increasing availability of healthcare data and rapid development of big data methods has made possible the successful applications of artificial intelligence in healthcare. He concluded that "powerful artificial intelligence techniques can unlock clinically relevant information hidden in the massive amount of data, which in turn can assist clinical decision making".

Speakers
AMOS TANAY, associate professor in the Department of Computer Science and Biological Regulation at the Weizmann Institute, Rehovot, Israel said that clinical practice requires change to pave the way for the digital revolution in healthcare: we need to change the paradigm he said, preventing instead of treating.

Linked to this, MARC MARTI-RENOM, Professor at the National Center for Genomic Analysis in Barcelona, mentioned that artificial intelligence and single cell technologies allow earlier diagnosis and more targeted treatment and will fundamentally change the way we do medicine.

Professor ANGELIKA EGGERT, from the Division of Gastroenterology and Metabolic Medicine at the Charité-Universitätsmedizin in Berlin, stated that nowadays we needs to develop and combine several breakthrough technologies: single cell technologies, personalized disease models and artificial intelligence. These tools will revolutionize the early diagnosis /treatment of a wide range of human diseases, including cancer, neurological diseases, cardiovascular disorders, etc.

Professor NIKOLAUS RAJEWSKY, from the Max Delbrück Center for Molecular Medicine, Helmholtz Association, Berlin, Germany, and doctor GENEVIÈVE ALMOUZNI, from the Institut Curie and Centre National de la Recherche Scientifique (CNRS), Paris, presented the LifeTime initiative.

They said that a multinational and interdisciplinary large-scale programme that brings together academia, clinics, industry, policy makers and the public in an open and integrative spirit is the most effective way to tackle these challenges. Such a long-term concerted effort will maximize impact on improving healthcare and innovation. A coordinated, synergistic approach will be essential to allow Europe to lead the way.

Conclusions
MICHAŁ JAN BONI, MEP, closed the meeting saying that "healthcare will be the lead industrial area in the future and one of the major catalysts for change is going to be artificial intelligence". He concluded mentioning that Europe have to tear down the prejudices and fears regarding artificial intelligence, helping European citizens to understand how artificial intelligence could be beneficial and how we can fight its possible distorted and non-transparent use. Europe has the opportunity to create a global reference point on how to use data.

About LifeTime
LifeTime is a transnational and interdisciplinary initiative of leading European researchers that wants to map, understand, and target cells for treatment during disease in patients. It was recently selected by the European Commission to prepare the plan for a fundamentally new approach to understanding the constant changes within cells and their relationships to one another. It will develop and combine several disruptive technologies, thereby generating huge amounts of data, requiring machine learning and artificial intelligence for the analysis. The ultimate aim is to advance our understanding and the treatment/early diagnosis of a wide range of human diseases. For more information:
- Website:
 https://lifetime-fetflagship.eu/
- Opening conference: 6 & 7 May, 2019, Berlin, available at:
https://lifetime-fetflagship.eu/index.php/lifetime-launch-event/