

iDetect

Research and development of a portable biodetection device

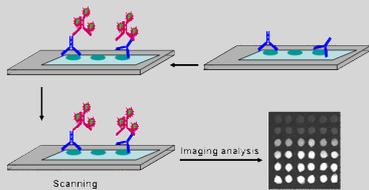


Fig. 1: Microarray detection principle

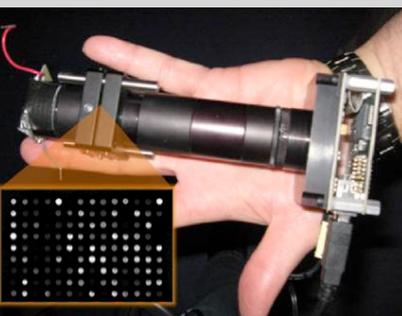


Fig. 2: Portable microarray detector

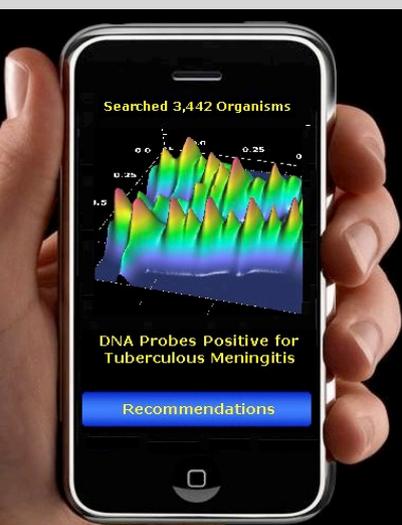


Fig. 3: Portable data analysis and diagnosis

The iDetect project aims to research and develop a portable low cost biodetection device using microarray technology in order to provide on the spot chemical detection and *in loco* diagnosis through a portable clinical analysis system.

The microarray technology uses the substances and microorganisms specific chemical properties in order to identify them through a comparing system. This technology is extremely sensitive and reliable, but its principle relies on an expected result basis, meaning one must know what one is looking for.

As a result, the current technology uses a generalist approach trying to provide detection to a vast array of chemical substances, microorganisms and biological threats, disregarding the specifications and special needs in the market, using exactly the same detection matrices of expected results in different areas such as public safety and security, medical diagnosis, food and drug testing and several others.

Therefore, these machines require the use of big microarray matrices which require big and expensive laser systems and very complex and powerful computer analysis to treat vast amounts of data. This approach requires big laboratory installations and highly qualified technicians, rendering the current machines impossible to use as a fast and portable detection system on the spot.

The iDetect project aims to develop a small microarray matrix based detector, addressing each submarket special needs in bio and chemical detection. This alternative perspective requires inexpensive LED systems, generates much smaller data results which can be processed using current mobile technology such as portable tablets or smartphones or even using a cloud computing if needed.

This portable concept is extremely valuable in different emergencies such as epidemics, domestic and on the spot medical assistance but also addresses common issues in hospitals speeding diagnosis and freeing more powerful diagnosis tools and resources, reducing costs providing fast results and improving the connection between patient history, doctor and hospital also allowing a dynamic real time digital treatment of information.

It's also invaluable regarding national security and anti-terrorism providing detection tools to chemical, biological and food poisoning threats but also in ecology and environment allowing fast analysis to contaminated soil and water increasing the safety and quality in agriculture.