

BIOMETASENS: Point-of-care device for monitoring of disease-related antibodies

Challenge

Rare Autoimmune Neurological Diseases (RAND) are a group of disorders that affects over a quarter million patients in Europe. Diagnosis is challenging and relies on tests that require specialized central laboratories, which are only available in limited centres across the EU. This increases logistics and reagent costs, sample amount, chemical waste, and time to get results, and require highly qualified personnel. All these deficiencies, in the end, increase the number of clinic visits, the length of hospital stay, the use of blood products, and specialized staff, while reducing outcomes for the patients. New potential point-of-care pipelines products can achieve **multiplexed, real-time, label-free detection** and minimize the false-positive results due to **highly specific biointerfaces**, and offer a flexible solution with a direct market target.

Market

The global biosensors market was valued at **USD 22.4 billion in 2020** and is expected to expand at a compound annual growth rate (CAGR) of 7.9% from 2021 to 2028.

Global autoimmune disease therapeutic market is likely to be valued at **US\$ 68,410.54 million in 2022** and is predicted to secure a moderate-paced CAGR of 5.6% during the forecast period. The market is expected to grow to a value of 117,967.44 million by 2032.

Asset

We offer a **lab-on-a-chip** nanostructured metasurfaces that allow **multiplexed single screening tests** of several autoantibodies RAND diseases. The scalable Point-of-Care device can be used by non-trained personnel in clinics and hospitals.

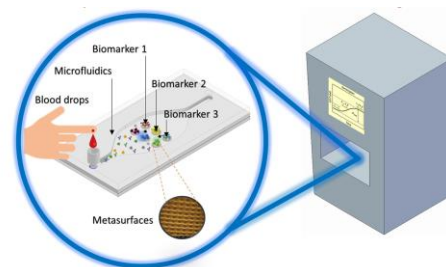
Our technology is entirely disruptive compared to the gold standard techniques in RAND diagnosis. It means an entire revolution in RAND diagnosis: **decentralized, direct, label-free, cost-effective, multiplexed RAND diagnoses/monitoring with just a couple of blood drops at the physician's office in 15 minutes**. There is no logistics cost, no trained personnel required, and it is fully compatible with emerging **microneedle-based painless technology** for low-volume blood sample collection.

For society, our product means diminished logistics and reagent costs, diminished chemical waste, and scalable technology with the potential to diagnose other diseases like Sepsis, tuberculosis, or COVID-19.

Asset Value

- ❖ Superior **surface sensitivity** improving biosensing performance
- ❖ Fast, direct, and real-time multiplexed **monitoring of auto-antibodies** related to rare autoimmune neurological diseases (RAND)
- ❖ User-friendly device applicable in **clinics and hospitals**

Fast, direct, and real-time multiplexed monitoring



Uses

- ❖ Versatile point-of-care device for diagnosis and monitoring of disease. Explored applications: Rare Autoimmune Neurological Diseases (RAND), Sepsis, tuberculosis, or COVID-19
- ❖ Improvement of sensitivity of nanoplasmonic sensors for antibody/antigen recognition
 - Organ-On a Chip devices
 - Sensing devices

Team

Javier Ramón - Scientific Leader IBEC
Artur Rydosz - Scientific Leader AGH
Eduardo Salas - Head of Tech Transfer

Stage of Development

- Prototype of the point-of-care device for myasthenia gravis (MG) detection and monitoring
- Proof-of-concept of the device in the laboratory scale (ongoing)
- Sensor calibration and validation with human blood samples (ongoing)

Intellectual Property Status

A patent application was filed on January 2023. The patent is owned by IBEC (Spain), ICREA (Spain) and AGH University of Science and Technology (Poland)

Exploitation Plan

Patent available for licensing with technical cooperation or technical co-development

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