

## ● BACKGROUND

Cancer metastasis is responsible for 90% of cancer related deaths. In breast cancer, metastasis occurs mostly via the lymphatic system. The lymphatic nodes that are closest to a tumour are the most likely route for the cancer cells to first enter the lymphatic system and are referred to as the sentinel lymph nodes (SLN). Diagnosing the presence of cancerous cells within the SLN is therefore critical to provide optimum treatment plans. The gold standard is currently the Sentinel Lymph Node Biopsy (SLNB).

SLNB however comes with several drawbacks:

- The procedure requires invasive surgery.
- Some patients exhibit an allergic reaction to the blue dye.
- SLNB is complicated and requires several highly skilled clinicians (surgeons, radiologists, pathologists).
- SLNB can result in false negative results (5-10%).
- The analysis of the samples also takes several days/weeks to obtain results.

## ● IMPACT

- Substantially improved in-depth diagnosis.
- More effective treatment of breast cancer.
- Significant decrease in the diagnostic costs associated with metastatic breast cancer progression.
- Improvement in the general lifestyle and well-being of both the cancer patients and their loved ones.
- Step forward in cancer progression prognosis by eliminating the procedure SLNB currently used in breast, vulvar, colorectal and gastric cancer, pelvic and renal tumours (via the use of different tumour-targeting moieties).

## ● HYPOSENS PARTNERS

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# HYPOSENS

Minimally invasive system for faster, simpler and cheaper detection of breast cancer metastasis.

hyposens.eu



## ● OVERVIEW

Our breakthrough research will focus on the development, pre-clinical and clinical validation, and industrial demonstration of a unique all optical cancer prognostic system that will determine presence of cancer cells in the breast lymph nodes and characterize them, which correlates with presence of metastasis and bad prognosis.

The HypoSens imaging system is strategically designed to offer a minimally invasive alternative to the SLNB process with no surgery required. The device is an affordable, accurate, easy to use prognostic solution for clinicians towards, once validated, more accurate and fast diagnosis and personalised treatment options.

## ● WHY USE THIS SYSTEM?

**Label-free:** The photonics system uses tumour targeted nano-confined sensors for intracellular temperature and oxygen sensing.

**Non-invasive:** HypoSens does not require surgery to test the lymph node status.

**Fast:** HypoSens will produce results in real-time.

**Accurate:** The nano-confined sensor particles will be able to monitor both temperature and dissolved oxygen. Coupling the nano-sensors with target antigens ensures the proper identification of the targeted tumour cells.

**Safe:** The prognosis system does not release any ionising radiation.

**Affordable:** Due to the compact nature of the imaging system, the development of HypoSens will result in a decrease in the diagnostic costs associated with metastatic breast cancer.

**Simple:** The device will incorporate a "plug and play" architecture which will render it easy to operate.

## ● HOW DOES HYPOSENS WORK?

