



REVOLUTIONIZING DIAGNOSTIC OF BREAST PARHOLOGY

Artificial Intelligence at the service of Medicine



TRANSMURAL
BIOTECH

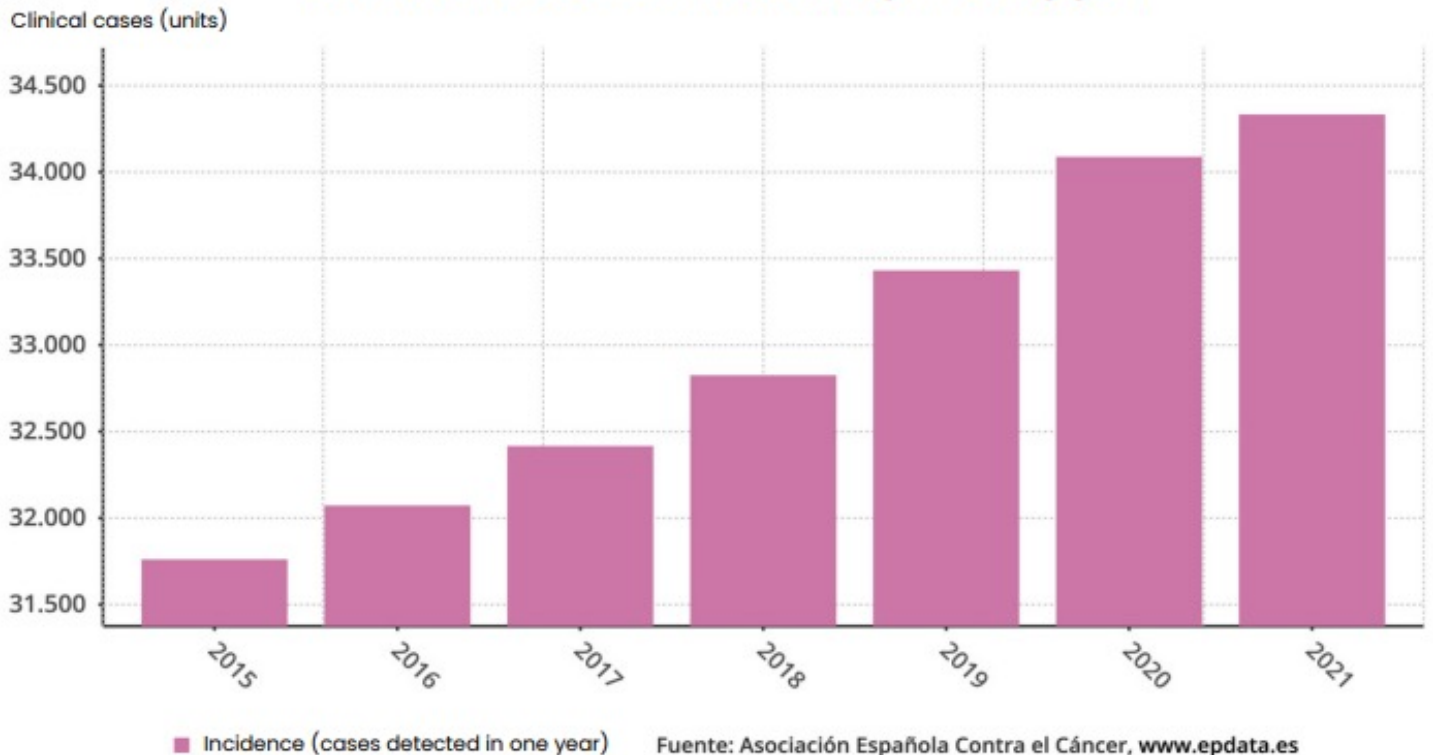
WHAT IS quantusMM?

quantusMM is a non-invasive, quick and easy-to-use test for the early detection of breast pathologies, developed in collaboration with the Basque Health Service Osakidetza and the Biodonostia Institute Association.



Based on a mammography, it is capable of detecting the presence of malignant nodules or microcalcifications, thus helping to identify the risk of breast cancer.

Breast cancer cases evolution in Spain every year





Transmural Biotech is a spin-off of the Hospital Clinic of Barcelona and the University of Barcelona created at the end of 2009 by medical and engineering professionals.

Our expertise focuses on developing disruptive medical technologies, based on image analysis and processing to provide healthcare professionals with additional information and resources that current technologies and existent techniques cannot provide, to substantially improve the quality of service they can offer to their patients.



**DEVELOPING TOMORROW'S CUTTING-EDGE
MEDICAL TECH, TODAY.**

A REVOLUTIONARY SOLUTION FOR RESOURCE OPTIMIZATION

quantusMM is presented as a key tool in the optimization of a scarce resource such as radiologists, offering an aid to diagnosis, so that the latter can focus on what really matters: the patient.



Likewise, quantusMM also represents a relevant tool in screening processes of patients with risk factors and prioritization of waiting lists to improve the treatment of the most serious cases.

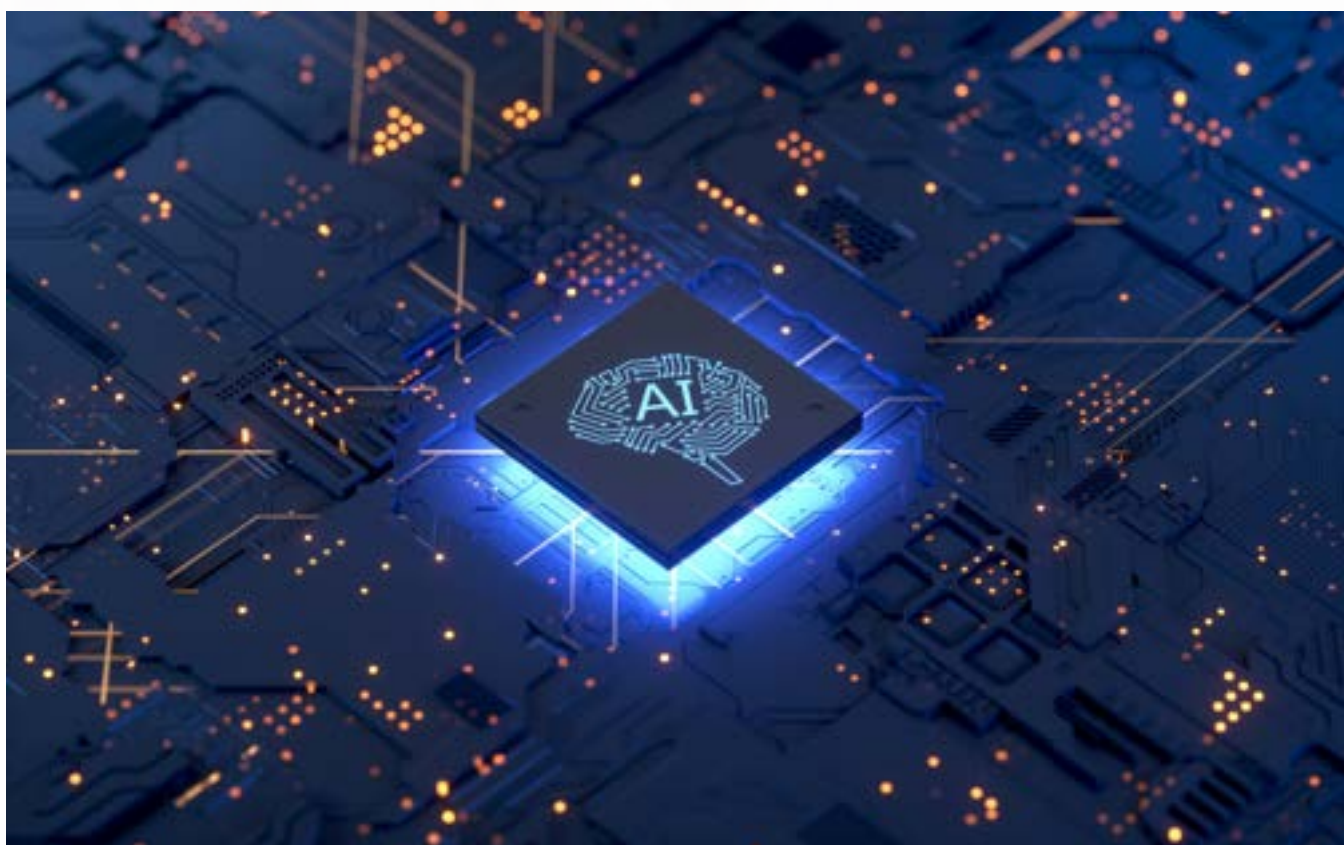


ARTIFICIAL INTELLIGENCE AT THE SERVICE OF MEDICINE

quantusMM is presented as a novel Artificial Intelligence method based on state-of-the-art Deep Learning, with 2 different classification algorithms: one for nodules and one for microcalcifications.

Its technology is based on a quantitative analysis of the texture of the image. This analysis makes it possible to identify patterns associated with malignant nodules or microcalcifications, thus helping to identify the risk of breast cancer.

The original image is subjected to contrast enhancement filters and a division into patches so as not to lose image quality when the lesions to be detected are very small.



ANÁLISIS Y CLASIFICACIÓN DE MAMOGRAFÍAS

Its technology is based on the quantitative analysis of the texture of the breast image. quantusMM classifies the images (craniocaudal perspective (CC) and oblique mid-lateral perspective (OML) of both breasts) and gives them a category which determines the malignancy status of the analyzed breast.

Classification system applied in quantusMM

- 1: Benign breast
- 3: Probably benign findings
- 4: Suspected of malignancy
- 5: Highly suggestive of malignancy
- 6: Malignant breast
-

The determination of the BIRAD category to which each mammogram image belongs is based on different thresholds with different values of sensitivity and specificity, as shown in the following tables. quantusMM bases category determination on sensitivity values and not on positive predictive value values.



quantusMM reliability for each category for Nodules

| BI-RADS | SENS | SPECIFICITY | PPV | NPV |
|---------|---------------------------|-------------|-----|-----|
| 1 | Completely healthy breast | | | |
| 2 | 99% | 23% | 56% | 71% |
| 3 | 95% | 51% | 65% | 91% |
| 4 | 65% | 95% | 92% | 73% |
| 5 | 37% | 100% | 99% | 62% |

quantusMM reliability for each category for Microcalcifications

| BI-RADS | SENS | SPECIFICITY | PPV | NPV |
|---------|---------------------------|-------------|-----|-----|
| 1 | Completely healthy breast | | | |
| 2 | 99% | 3% | 39% | 89% |
| 3 | 95% | 52% | 56% | 94% |
| 4 | 66% | 95% | 89% | 76% |
| 5 | 42% | 100% | 99% | 73% |

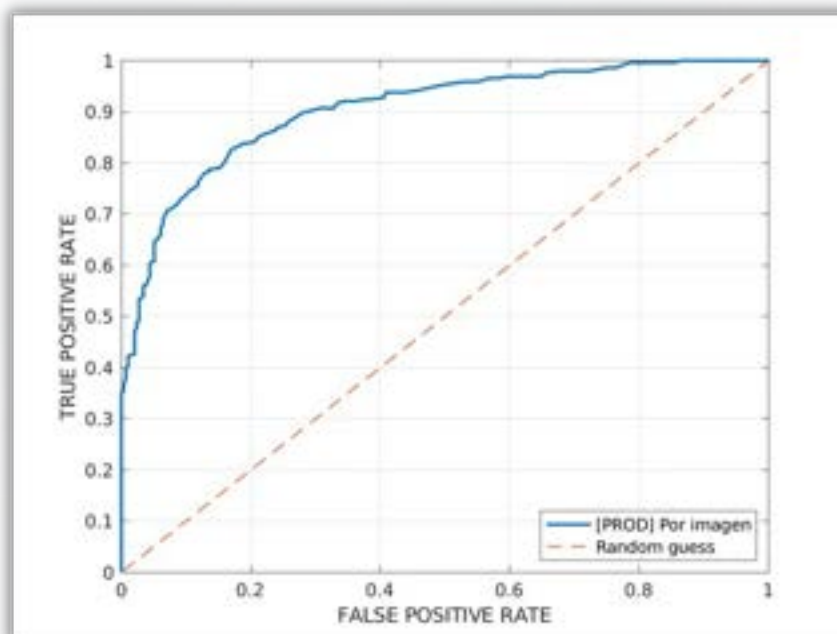
* Sensitivity: Proportion of negative cases correctly identified by the algorithm. It is the number of items correctly identified as negative out of the total number of negatives.

* Specificity: Proportion of positive cases correctly identified by the algorithm. It is the number of items correctly identified as positive over the actual total number of positives

* PPV: Positive Predicted Value

* NPV: Negative Predicted Value.

AUC ROC curve for nodule detection AUC: 90.42



HOW TO USE quantusMM?

Using quantusMM is simple, requiring only 3 steps:

Step 1: Acquire a mammography

quantusMM requires a mammography in DICOM format. There is a simple guide available within the application that shows how to perform the image acquisition.



Step 2: Use quantusMM medical app to analyze the image.

The app is a simple tool that allows the user to send the image that wants to be analyzed by following, three simple steps:



Upload



Select



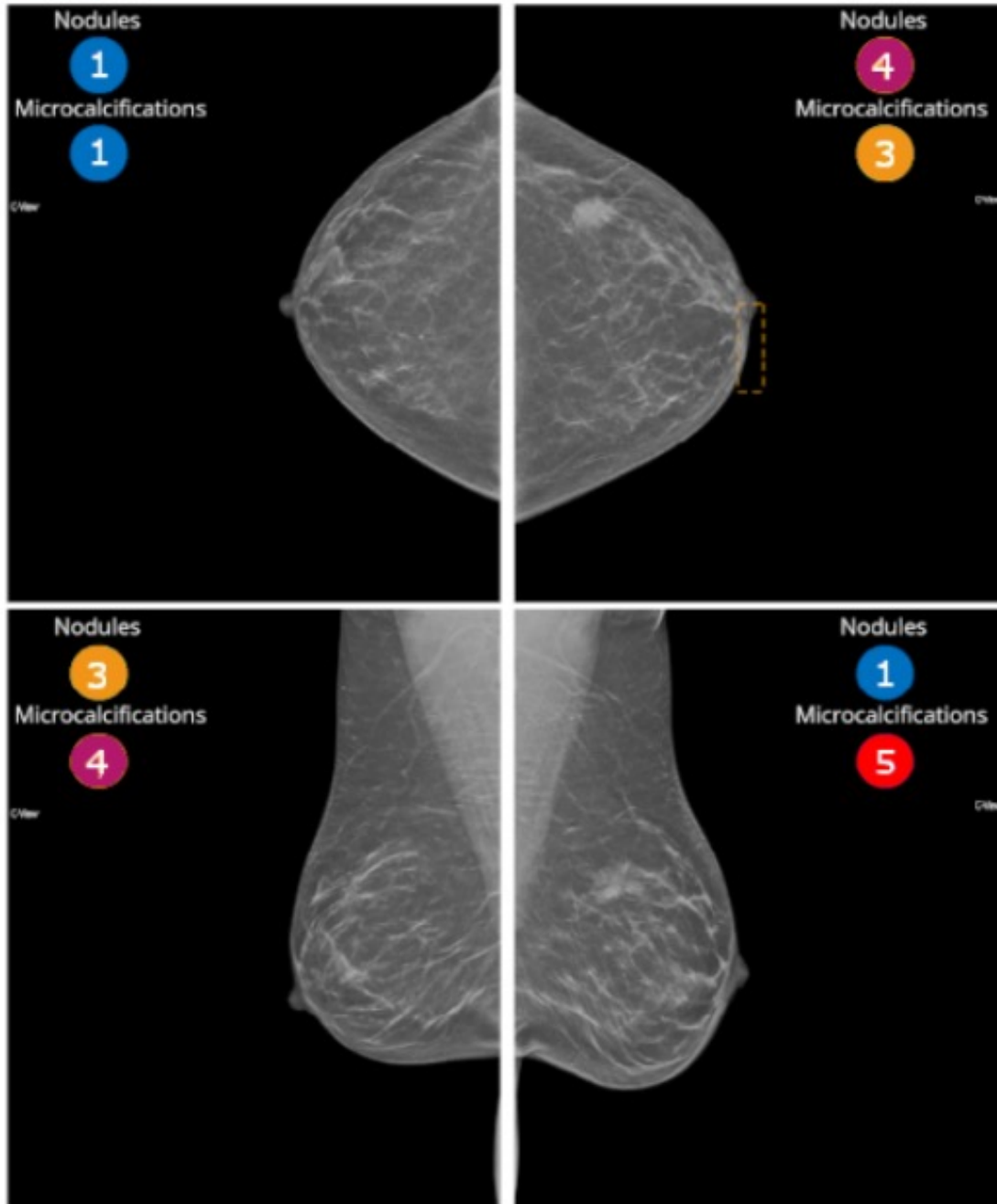
Send

Step 3: Obtain the result within few minutes.

Breast Cancer Test



Sample Information



Patient

NAME:
Prueba pt

ID:
PAT_1_pt

Test result

NODULES: **4**

MICROCALCIFICATIONS: **5**

- 1** > NEGATIVE MAMMOGRAPHY
- 2** > MAMMOGRAPHY PROBABLY BENIGN
- 3** > SUSPICIOUS MAMMOGRAPHY OF MALIGNANCY
- 4** > VERY HIGH MAMMOGRAPHY SUSPECTED MALIGNANCY
- 5** > MALIGNANT MAMMOGRAPHY

AN INNOVATIVE MEDICAL SOLUTION

- ✓ **Unrestricted 24-hours access:** Through an internet connection it is possible to use quantusMM and review the results at any time and from anywhere.
- ✓ **No installation required:** It does not require the download or installation of any software.
- ✓ **High compatibility:** quantusMM is compatible with most browsers. It can be used for web-based as well as primary devices of primary care.

quantusMM OFFERS HIGH ECONOMIC VALUE

- ✓ **NO initial investment in infrastructure required!**
- ✓ **Pay-as-you-go: Pay only for each test you order!**
- ✓ **Add more value to your clinic and increase your profits!**





A product of



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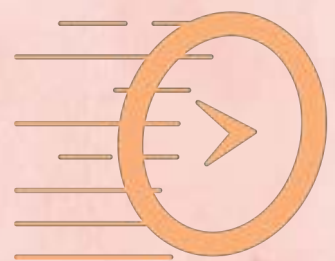
www.quantusMM.org



Accurate



Effective



Fast

**Give it a try!
Contact us today!**



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