XEMPERIA®

bio-inspired diagnostics

An innovative blood test for convenient breast cancer early detection

Business Summary
Q1 2026

Our story

Our foundation

XEMPERIA was established in 2023 as a spin-off of the University of Fribourg in Switzerland, on a profound commitment to transforming breast cancer care through the power of early detection. Our foundation lies in over 25 years of pioneering translational cancer research and biomarker discovery with a passionate drive to make a meaningful impact on global health.

Prof. Curzio Rüegg

Founder and CEO/CSO

Curzio is a MD, recognized leading figure in cancer research, trained in Basel, Zurich Bellinzona, and San Francisco. He pursued his academic career at the University of Lausanne/CHUV and the University of Fribourg, Switzerland . He has published over 180 scientific articles and previously co-founded two cancer diagnostic companies.

Dr. Sarah Cattin

Founder and CTO

Sarah holds a PhD in Medical Biology with a focus on immunology and cancer from the University of Lausanne. She is the Head of the Cell Analytic Facility at the University of Fribourg where her expertise in cancer biology and immunology plays a key role in advancing cell analysis techniques and applications in academic and biotech research.

Dr. Tuto Rossi

Founder and CLO

Tuto is a legal expert with a PhD from the University of Fribourg, specializes in commercial and banking law, as well as private international law. He is the founder of «Tuto Rossi Law & Notary Office» and has been instrumental in founding numerous start-ups. He also teaches at the universities of Fribourg and Urbino and is an active member of the parliament in Ticino.

Our vision

Our vision is to shape a future where cancer is detected earlier through innovative blood-based diagnostics, leading to better patient outcomes.

Our mission

Our mission is to deliver innovative, accessible, highly accurate and streamlined blood tests for the early detection and monitoring of cancer.

Our solution

Our solution is a PCR blood test leveraging the body's immune system to detect breast cancer at its earliest and most treatable stage.

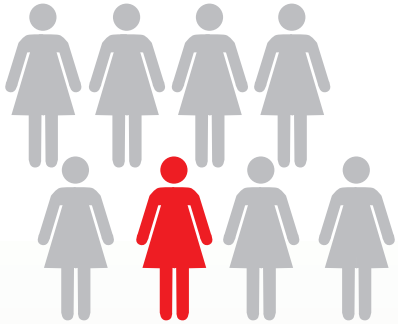
Our financial potential

Thanks to its distinctive features, our technology holds tremendous market and financial potential. In 2024, the market size for breast cancer diagnostic is projected to reach a valuation of USD 4.7 Billion. By 2033, the valuation is anticipated to reach USD 11.3 Billion.

Our funding needs

To bring our solution to the market by 2029, we are seeking CHF 8–10 million.

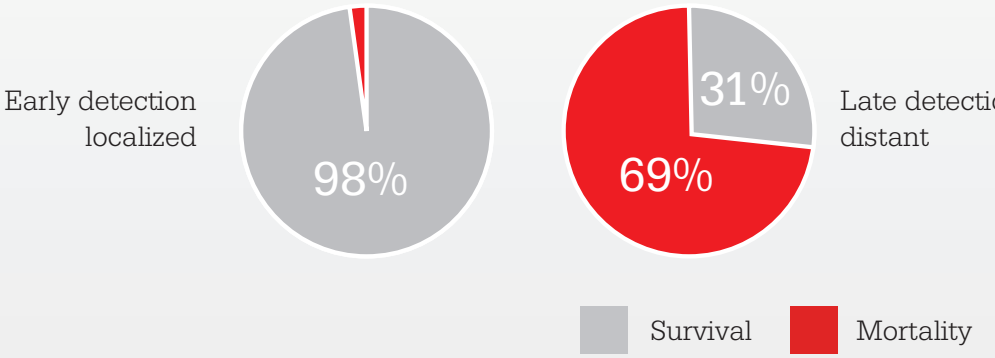
Breast cancer – the numbers

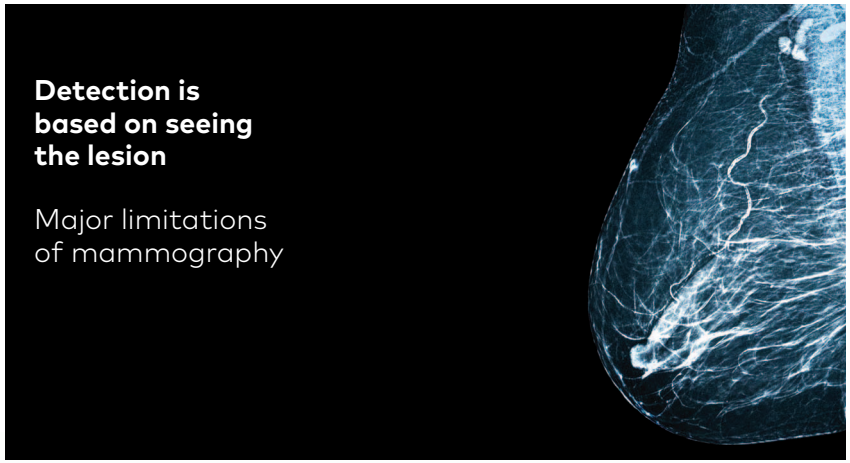


1 out of 8 women will develop breast cancer
Incidence rates have recently increased by 0.6% per year[1]

Today only 65% of breast cancers are detected at early localized stages (I-II)[2].

Early detection reduces breast cancer mortality





Mammography screening

Mammograms are the best screening tests we have today, but do not detect all cancers: [1–3]

- Overall, **20–30%** of cancers are **NOT** detected.
  1–3 out of 5 positive mammography are **NOT** due to cancer.
- Younger women (<50 years) are currently excluded from organised screening, though 25% of breast cancers occurs in that age.
- 35% of breast cancer are identified at advanced stages (III–IV).

There is an outstanding need for more accurate, and cost-effective screening tests. XEMPERIA develops precise, user-friendly blood test for breast cancer early detection and monitoring.

[1] Key statistics for breast cancer. American Cancer Society. Updated September 14, 2023. Accessed October 10, 2023.
[2] American Cancer Society. Breast Cancer Facts and Figures 2019–2020.
[3] Fitzjohn et al. Critical Assessment of Mammography Accuracy. IFAC-PapersOnLine, 2023, Pages 5620–5625

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Our solution

XEMPERIA's groundbreaking approach draws inspiration from the body's natural response to infections. Just as immune cells are activated in the presence of an infection, we observed a similar activation in the presence of cancer. This activation reflects the intricated interplay between immune cells and cancer cells, shaping tumor fate.

In a clinical study of 200 women (GENOA), we have identified molecular determinants within circulating immune cells that distinguish women with primary breast cancer from healthy individuals with over 95% accuracy. A superior performance compared to the current standard of care, mammography.

Our test leverages a PCR-based platform along with a proprietary algorithm to detect these determinants and generates a score indicating the presence or absence of breast cancer.

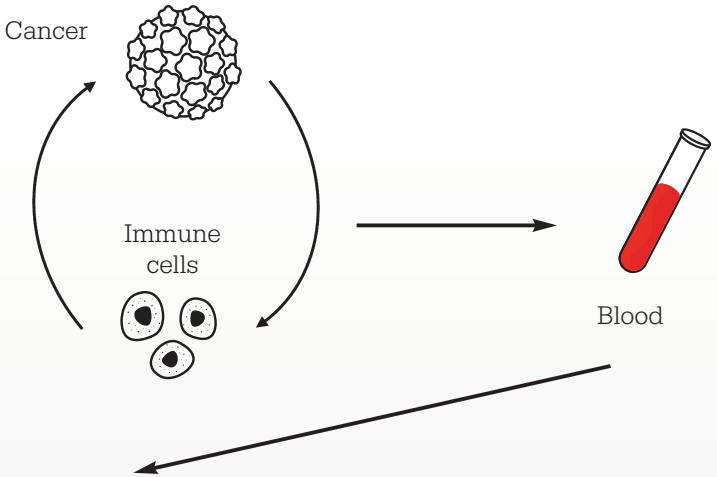
The inventions are protected by multiple intellectual property protections.

Comparison XEMPERIA's breast cancer screening test vs standard mammography

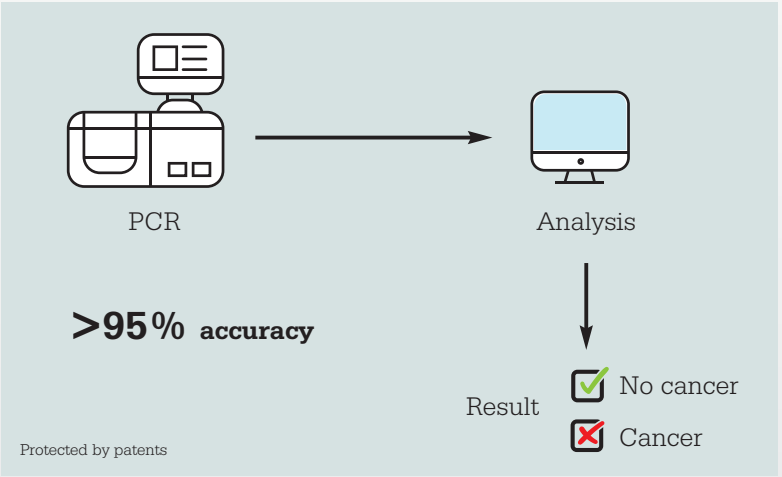
	Mammography	XEMPERIA's test
Accuracy (sensitivity/specificity)	70–85%[1]	>95% (preliminary data based on clinical study with 200 women)
Radiation Exposure	Yes	No
Convenience	Uncomfortable procedure	As part of regular physician checkup
Cost-effectiveness	Unfavourable ratio, requires specialized equipment	Superior value at lower costs
Accessibility & frequency	Every second year for women 50–70 years	Could be done more frequently, for woman between 35–80 years, regardless of breast density

[1] Fitzjohn et al. IFAC-PapersOnLine, 2023, Pages 5620–5625

1 The cancer stimulates the immune cells



2 The test detects the stimulated immune cells



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Our solution

Seamless integration into existing screening pathways:

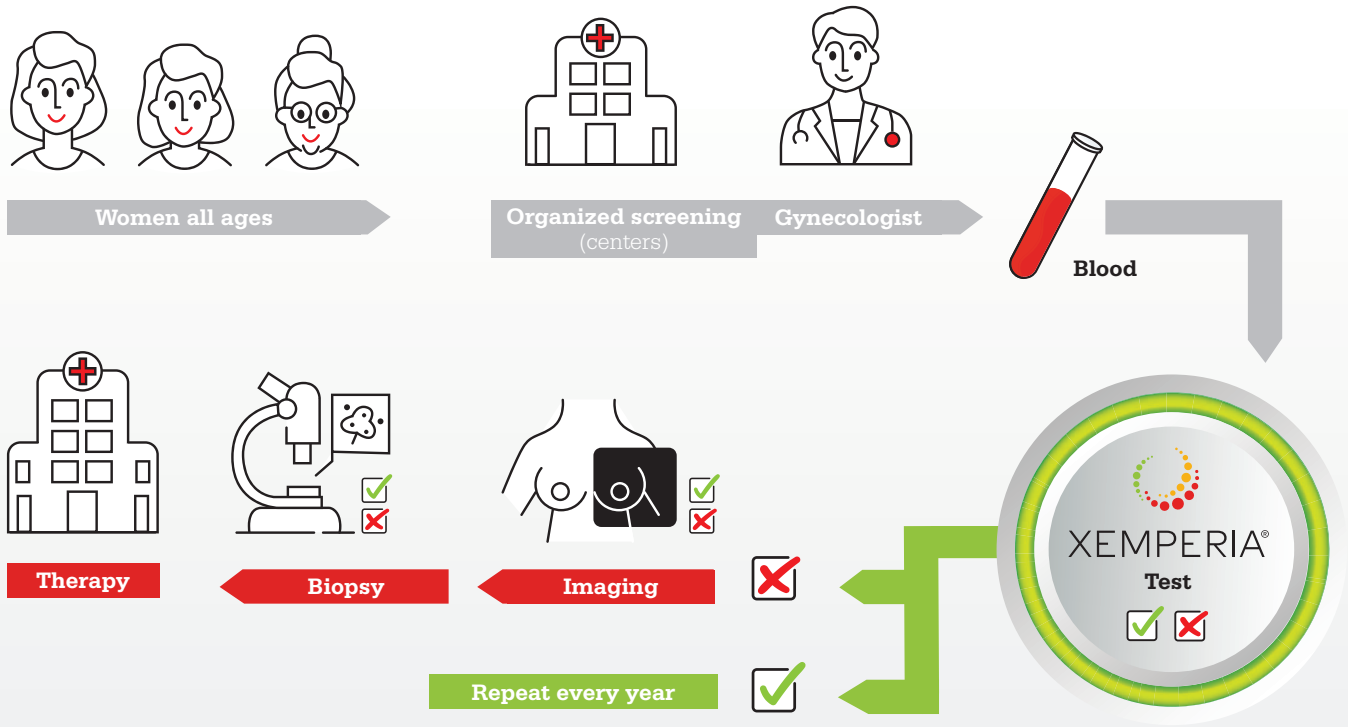
XEMPERIA's test as the new first screening step

Faster Adoption – no workflow change

- Integrates with national screening centers and gynecologists
- Requires no new hardware or dedicated medical/technician staff training

Lower cost – earlier insight

- Reduces unnecessary imaging and biopsies
- Detects immune activation at early tumor stages though a simple blood probe



Painless and fully compatible with today's diagnostics workflows.

XEMPERIA's solution is based on more than a decade of academic research at the University of Fribourg, in collaboration with hospital and clinics.

Preclinical and clinical phases were made possible through collaborative research and generous funding.

XEMPERIA's test will improve the accuracy of breast cancer screening, save more lives and increase the cost/effectiveness ratio.

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Our solution

A breast cancer detection test unlike any other

- Traditional breast imaging screening is dominated by major players like Hologic, GE Healthcare, and Siemens Healthineers, offering a wide range of products and services.
- A few companies are developing blood-based screening tests, but currently none of these are included in clinical guidelines. Their technology mainly focuses on the detection of tumour derived materials such as ctDNA.
- Some are being developed as multi cancer detection tests, necessitating further analyses to identify the specific cancer (Grail). Sensitivity is generally low (<50%).
- Next to that, a handful of companies are developing RNA based tests, which are still in clinical development or await comparative testing (Syantra, Mammogen).
- XEMPERIA's blood-based test stands out as the only test based on the analysis of circulating immune cells achieving unparalleled levels of sensitivity and specificity.

XEMPERIA's test is based on a **unique** competitive **methodology** and **product.**

Current standard

Mammography *(Imaging)*

Detects (visible) tumor mass

- Needs > 5–10 mm mass to be visible
- Painful
- Unhealthy radiation (X rays)
- costly
- 85% accuracy

SIEMENS Healthineers · HOLOGIC · FUJIFILM · GE HealthCare

Competition's approach

Liquid Biopsy *(free DNA/RNA)*

Detects circulating DNA/RNA

- Detectable only *after* release from tumor
- High signal dilution –> low sensitivity in early stage
- Expensive & not guideline-approved

GRAIL · natera · syantra · mammogen · GUARDANT · Freenome

Unique concept and solution

Host response *(immune cell RNA)*

Detects the body's reaction to the tumor

- Host-based immune signature
- High accuracy (> 95%)
- Low-cost, fast, scalable
- Clinically assessed
- Unique **concept, methodology** and **product**
  …and product, based on the immune response to cancer.

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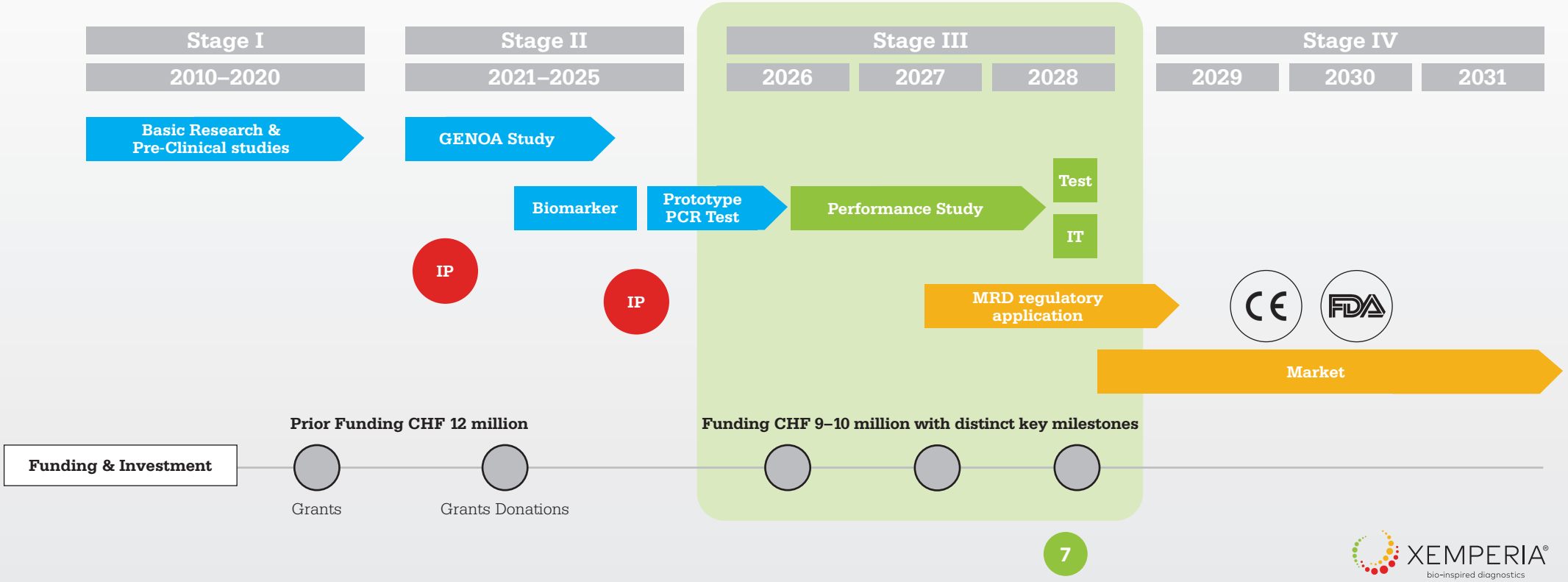
Development strategy

Our innovation is based on over 25 years of pioneering cancer research and biomarker discovery.

- **Stage I:** A comprehensive approach integrating in vivo models, in vitro analyses and translational research led to the discovery of significant modifications in circulating immune cells associated with breast cancer.
- **Stage II:** A clinical study with 200 patients (GENOA) has led to the successful identification of a combination of biomarkers with high diagnostic accuracy.
- **Stage III:** The molecular signature will be consolidated, and a test kit will be developed. XEMPERIA will carry out a large validation study to compare the test to routine mammography. This phase will require a total of CHF 9–10 million funding and will be divided in two distinct key stages.
- **Stage IV:** Our product will be a state-of-the-art CE certified PCR Kit comprising reagents, protocols and analysis software. It will be ready for commercialization in collaboration with partners.



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Breast cancer diagnostic market

A $4B screening market at a turning point:

The **global Breast Cancer Diagnostics Market** is expected to record a CAGR of 7.5% from 2024 to 2033. In 2024, the market size is projected to reach a valuation of USD 4.7 Billion. By 2033, the valuation is anticipated to reach USD 11.3 Billion[1].

The global **liquid biopsy** market was valued at USD 10.85 billion in 2023 and is expected to reach USD 32.54 billion by 2033 (CAGR 11.61%)[2].

Why Now?

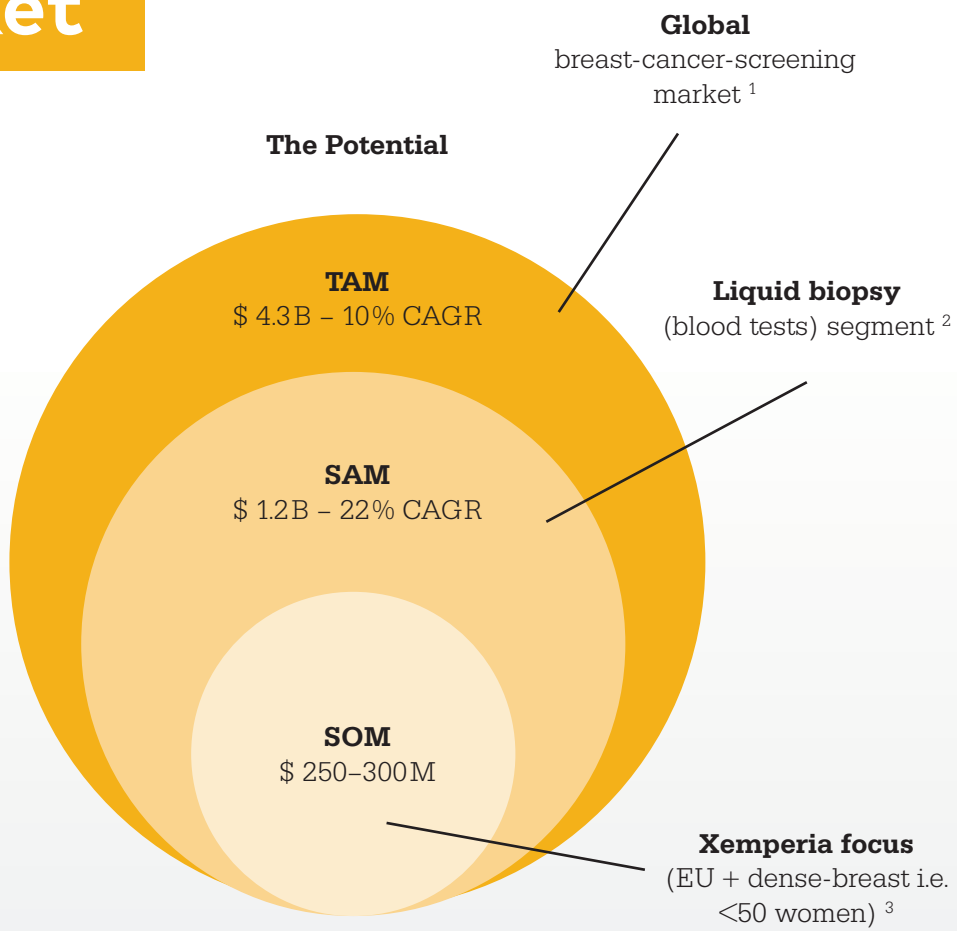
- 🧬 **Shift to molecular diagnostics**
  record VC investment > $7 B in 2023 (300% increase from 2020)[4]
- 🏛️ **Regulatory push** toward non-invasive tests (FDA & EU IVDR adaptations)
- 🧪 **First validated immune RNA signature**
  for early breast cancer → clinical proof (GENOA study)
- 🧠 **AI-driven data analytics** make **RNA-based screening scalable**

Breast cancer diagnostic market

Revenue 2024	Exp. revenue 2028	CAGR (growth)
$ 4.7 bn	**$ 11.3 bn**	**7.5%**

Global oncology Liquid biopsy Market

Revenue 2023	Exp. revenue 2033	CAGR (growth)
$ 10.85 bn	**$ 32.54 bn**	**11.6%**



TAM total addressable market
SAM specific addressable market
SOM specific obtainable market

1. https://www.alliedmarketresearch.com/breast-cancer-screening-market-A324383
2. https://www.alliedmarketresearch.com/liquid-biopsy-market
3. https://www.researchandmarkets.com/reports/5927566/europe-next-generation-breast-cancer-diagnostic
4. https://www.fiercebiotech.com/biotech/biopharma-funding-levels-new-normal-until-federal-interest-rates-change-pitchbook

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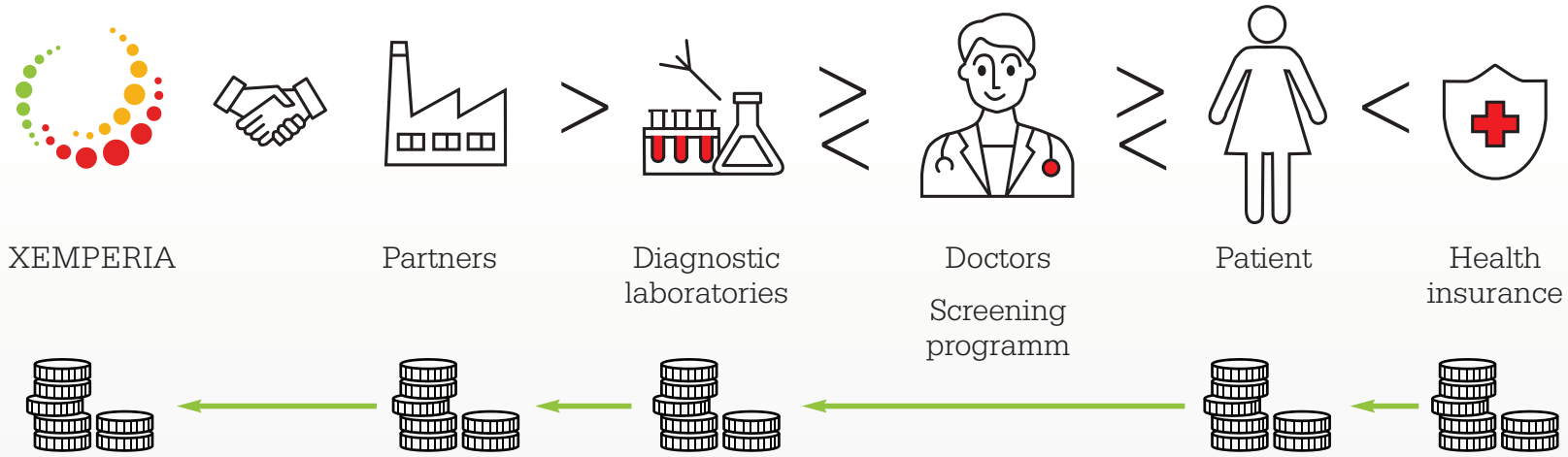
Our Business model



- **XEMPERIA's business strategy is to license** its innovative breast cancer detection test to biopharma partners. The partners would be responsible for manufacturing and commercialization, generating licensing fees or milestone payments and allowing XEMPERIA to continue to focus on innovation and IP development.
- Physicians will prescribe the test, which will be covered by health insurance or paid out-of-pocket by the patient.
- XEMPERIA's test can also be integrated in organized screening programs who will direct eligible women.
- Diagnostic laboratories will analyse the test and communicate the results back to the physician.

Entry to market is planned for late 2028 – early 2029, starting with Switzerland, closely followed by key European markets with expansion plans into broader European markets and the U.S.

The distribution partner and diagnostic laboratories will earn money by selling the test and performing the analysis.

XEMPERIA revenues are based on the licensing fees of the test.

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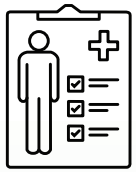
Expanding the applications of our approach

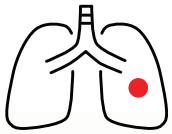


Stratfication of high-risk patients

Identify breast cancer patients at high risk for progression, in particular patients with Ductal Carcinoma In Situ (DCIS) that rarely progress yet are treated. Identify patients responding a particular treatment (predictive test).

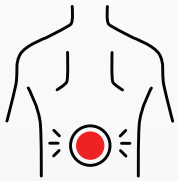
Follow-up

Active monitoring of patients after initial therapy to rapidly detect progressive diseases and adapt therapy accordingly.



Detection of other cancers

Early detection of other cancers, in particular lung cancer, that can benefit from early treatment would be beneficial for high-risk patients (e.g. smokers).



Inflammatory diseases

Monitoring inflammatory diseases such as a multiple sclerosis, rheumatic, or inflammatory bowel diseases to adapt therapy.

The adaptability and broad applicability of our technology uniquely positions XEMPERIA for significant growth in the diagnostic market, with the potential for substantial revenues and economic benefits.

Together, let's move towards a future where early detection saves more lives!

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