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Q2: an aptamer with breast cancer as the lead indication

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Layout

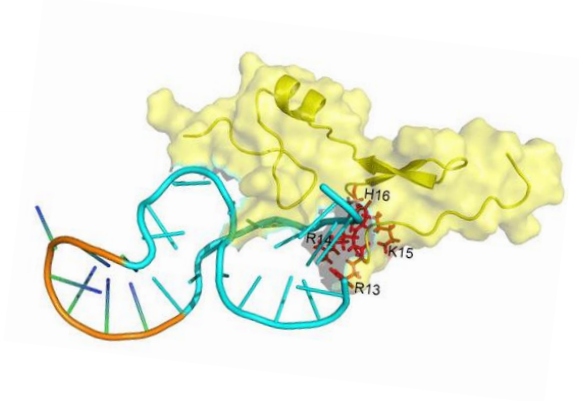
1. **Aptusbiotech**: Our Mission
2. **Q2: an aptamer targeting MNK1b**

    a) The problem: **BREAST CANCER**
    b) Our solution: **Q2**
    c) Differential features facing the market
    d) Current status of development
    e) IPR protection

3. **Partnering Opportunities**

SME devoted to the
Discovery and Development of **aptamers**

Diagnostics and Therapeutics
ensuring the industrial property



Platform for Aptamers Discovery

Public & Private funding

2011

instituto ramón y cajal de investigación sanitaria irycis

Knowhow in **aptamer** technology

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Private investors

Technology transfer & business venture

AptusBiotech

Platform for Aptamers Discovery

Aptamers: a real technology in pharmacology

1. **Nucleic acids** capable of binding to specific target molecules due to the acquisition of a **stable 3D structure**.
2. **Selected *in vitro*** from millions of random sequences to have **high affinity** and **specificity of binding** to its target.
3. Show relevant advantages and are a **clear alternative to antibodies**.

Aptamers' Advantages

Costs	Chemical synthesis
Safety	Non-immunogenic
Long half-life	Reversible denaturation
Range	To a wide number of targets
Other	Smaller size, stability and reproducibility

Specific recognition and stable binding

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Business Model

R&D Services

Selection, optimization and characterization of **aptamers on demand** for our clients

Develop applications based in **aptamers**

Diagnostics and therapeutics (early stages)

ApTOLL: Aptamer to treat acute ischemic stroke. **Clinical stage phase IIa FINISHED.** Licenced in 2017 to: AptaTargets

AptusBiotech

Our Team

Management & Business Development

Ana Seco
CFO

Dr. Víctor M. González
Director & COO

Dr. Miguel Moreno
CSO

Scientific Advisors

Dr. Javier Cortes
Director IBCC

Dr. Elena Martín
Group of Aptamers (IRYCIS)

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Dr. Gerónimo Fernández
Technical Director & QA

Dra. Ana García-Sacristán
Project Manager

Dr. Celia Pinto
Researcher

Ana Salgado
Researcher

Laura Herraiz
Researcher

Miriam Barragán
Researcher

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Aptamers to improve patients' quality of life

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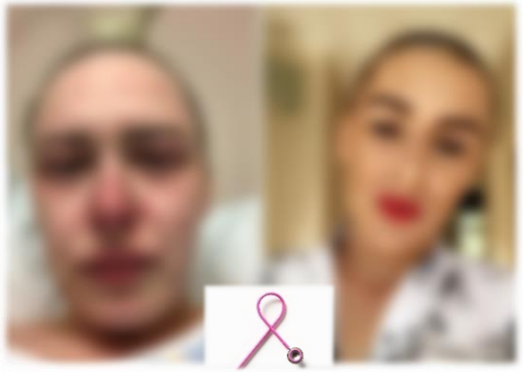
Q2: an aptamer with breast cancer as the lead indication

Breast Cancer: The Problem



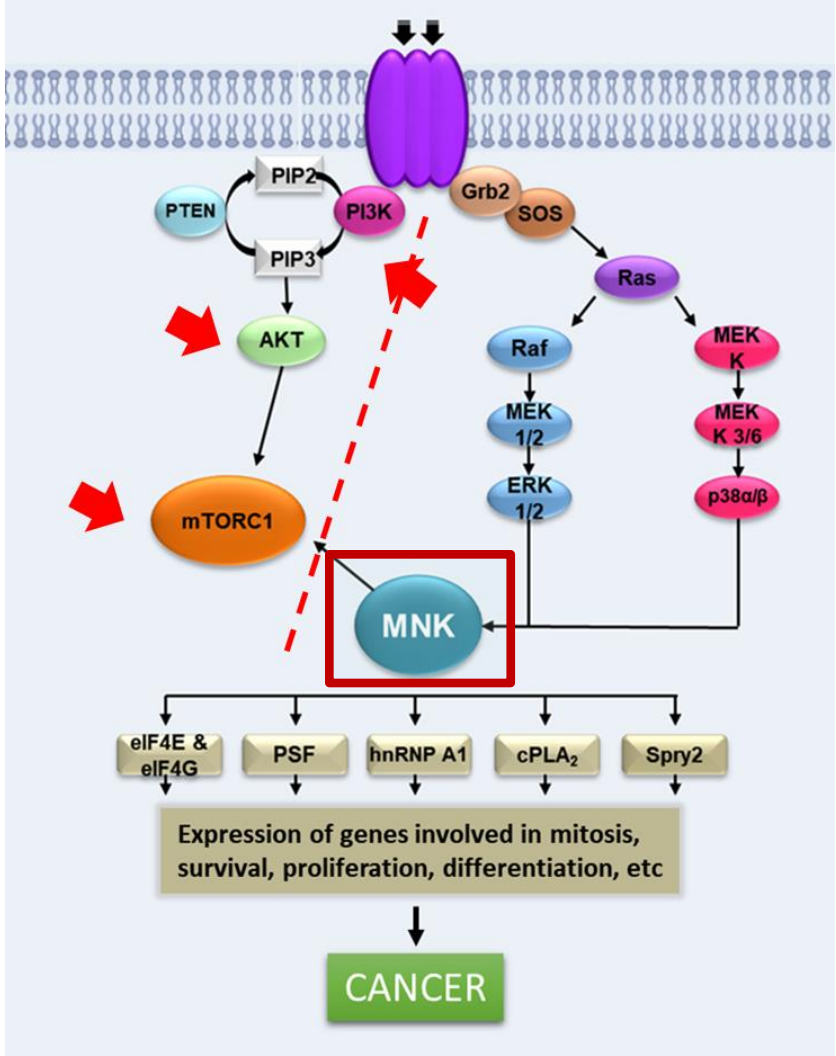
"I lost my mum to breast cancer when I was seven, then I was diagnosed 20 years later" Nicole

https://breastcancernow.org/about-us/news-personal-stories/i-lost-my-mum-breast-cancer-when-i-was-seven-then-i-was-diagnosed-20-years-later

- **Highest death-rate by cancer: ~700,000 in 2019**
- **New diagnosed 2.26 million/year.**
- **One of the most commonly diagnosed tumors in women: 24.2% worldwide**

Data: New Global Cancer Data: GLOBOCAN 2020

Breast Cancer: The Problem



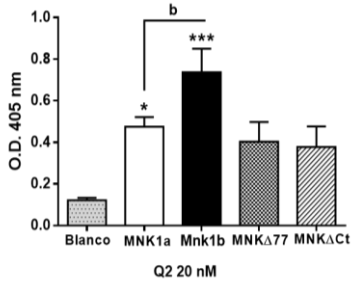
Major clinical problems due to therapeutic resistance

- **PI3K/AKT/mTOR** pathway stand out as **therapeutic target**
- **MNK1b overexpressed in tumors** (not MNK2)
- **MNK1b specific inhibitors** may provide a safe profile and effective anticancer strategy

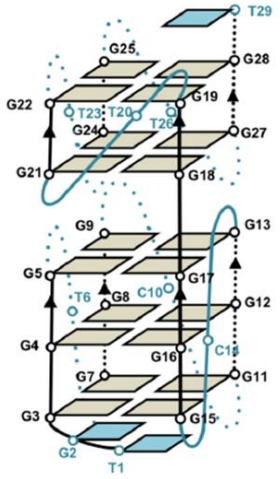
Our Solution

Q2 is an **aptamer targeting MNK1b** with **breast cancer** as the **lead indication**

- **Q2** is a 29-nucleotide DNA aptamer with **high specificity and affinity to MNK1b**
- **Q2 is protected** by patents filed by the Ramon y Cajal Hospital Foundation (FIBio-HRC) and **exclusively licensed to AptusBiotech**
- **Non-regulatory preclinical**



Kd (MNK1b) = 15,47 ± 2,36 nM
Kd (MNK1a) = 66,13 ± 20,18 nM



Aptamer Q2

Citation: Molecular Therapy—Nucleic Acids (2016) 5, e275; doi:10.1038/mtna.2015.50
Official journal of the American Society of Gene & Cell Therapy
www.nature.com/mtna

Characterization of MNK1b DNA Aptamers That Inhibit Proliferation in MDA-MB231 Breast Cancer Cells

Eva M García-Recio[1], Celia Pinto-Díez[1], M Isabel Pérez-Morgado[1], Marta García-Hernández[2], Gerónimo Fernández[2], M Elena Martín[1] and Víctor M González[1]

(19) Europäisches Patentamt / European Patent Office / Office européen des brevets

(11) **EP 3 663 404 A1**

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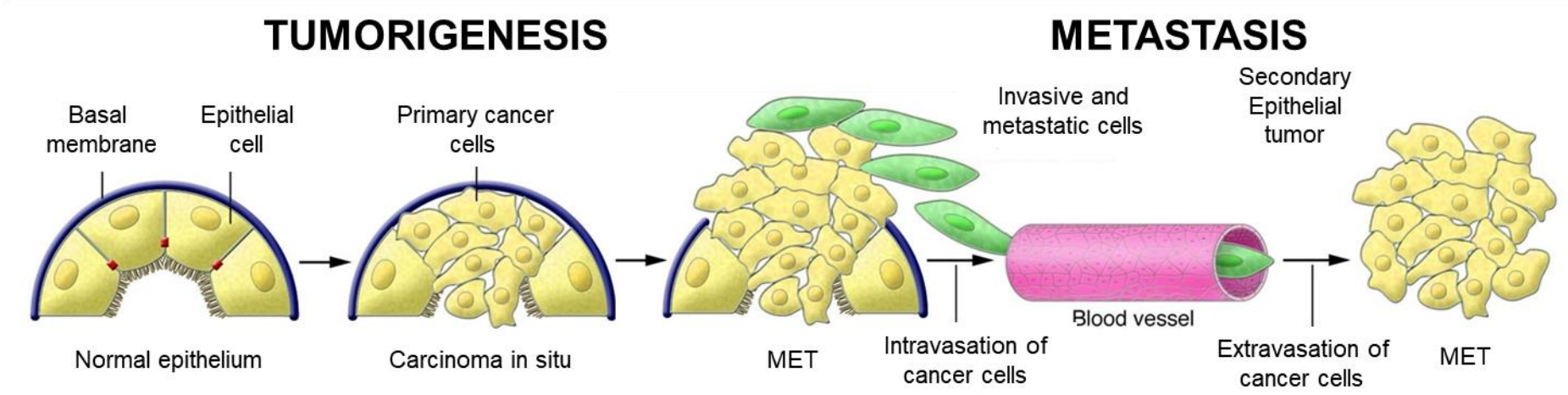
Our Solution

AptaBreast: *in vitro* results for Q2



Q2 on tumoral cells

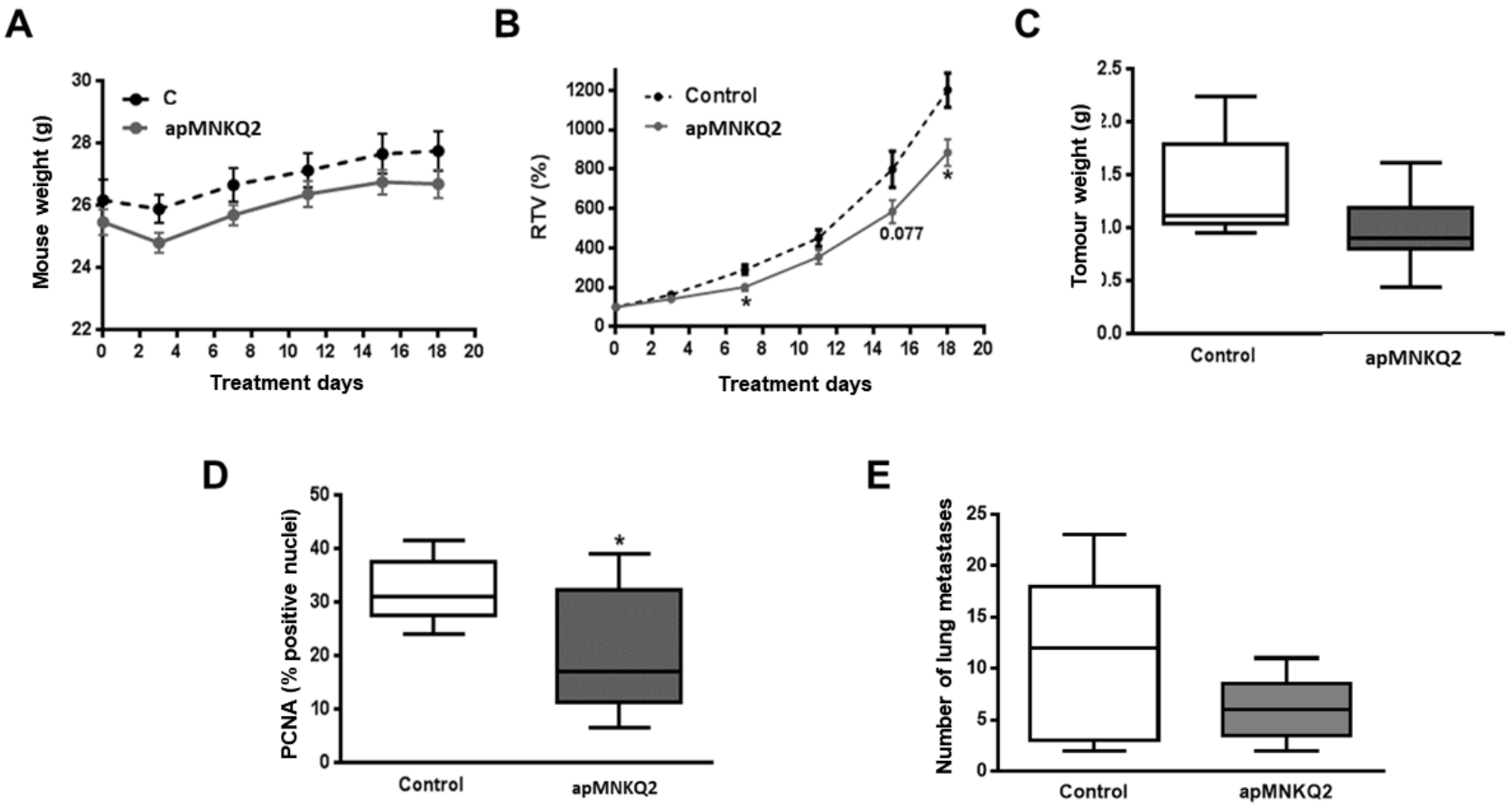
- **Inhibits proliferation**
- **Induces apoptosis**
- **Inhibits formation of colonies**

Q2 on metastatic cells

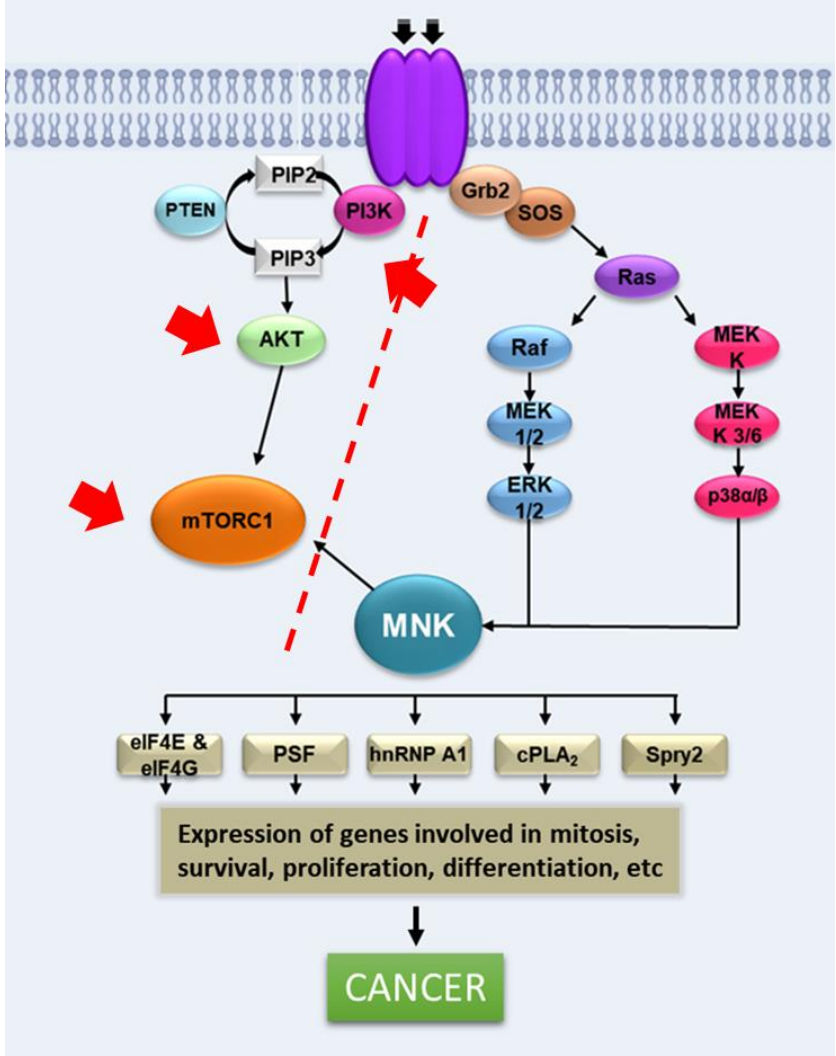
- **Inhibits migration**
- **Inhibits invasion**
- **Inhibits epithelial-mesenchymal transition**

Our Solution

Q2 on animal experimental models:
reduces the tumor size, cell proliferation and number of metastasis



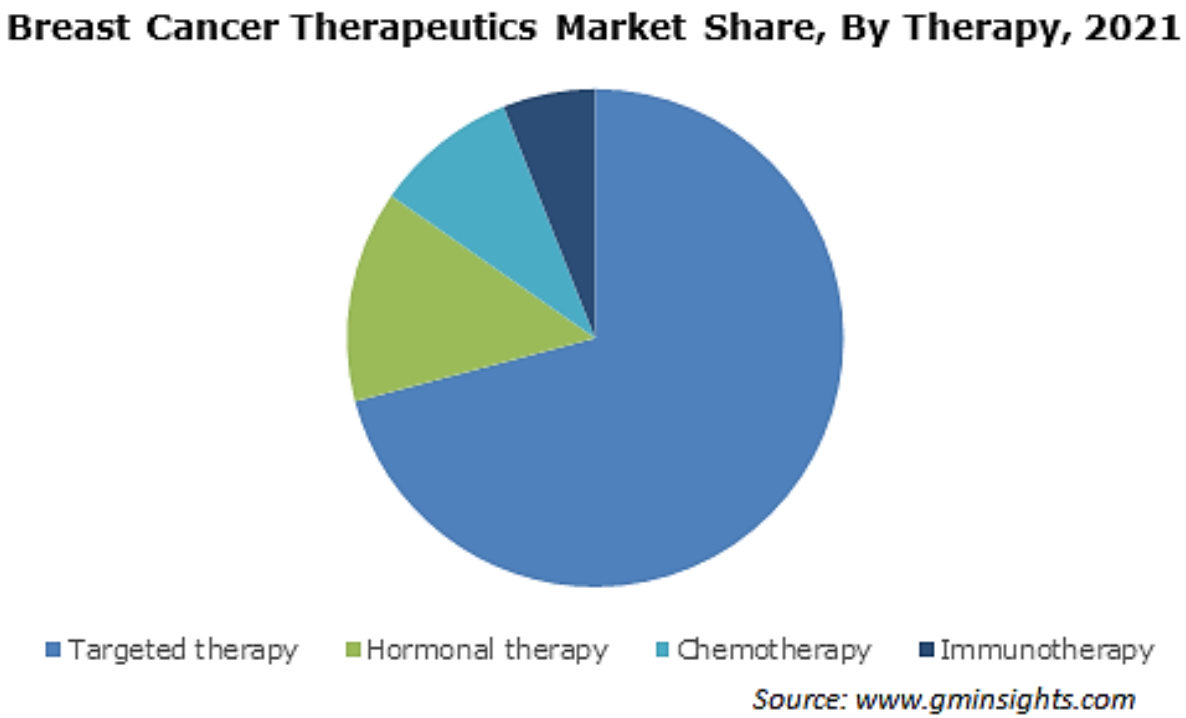
Q2: What's different? Advantages?



- **No approved drugs** in the same pathway, so far
- **25 related clinical trials** in phases I and II, none of them is with a specific inhibitor of MNK1b.
- Two key processes can be regulated: **tumorigenesis and metastasis**
- Preliminary results show **clean safety profile**

Patent in Europe and USA

Competitors



Q2 as a targeted therapy to be used in clinical resistances,
No competes but complete!!!

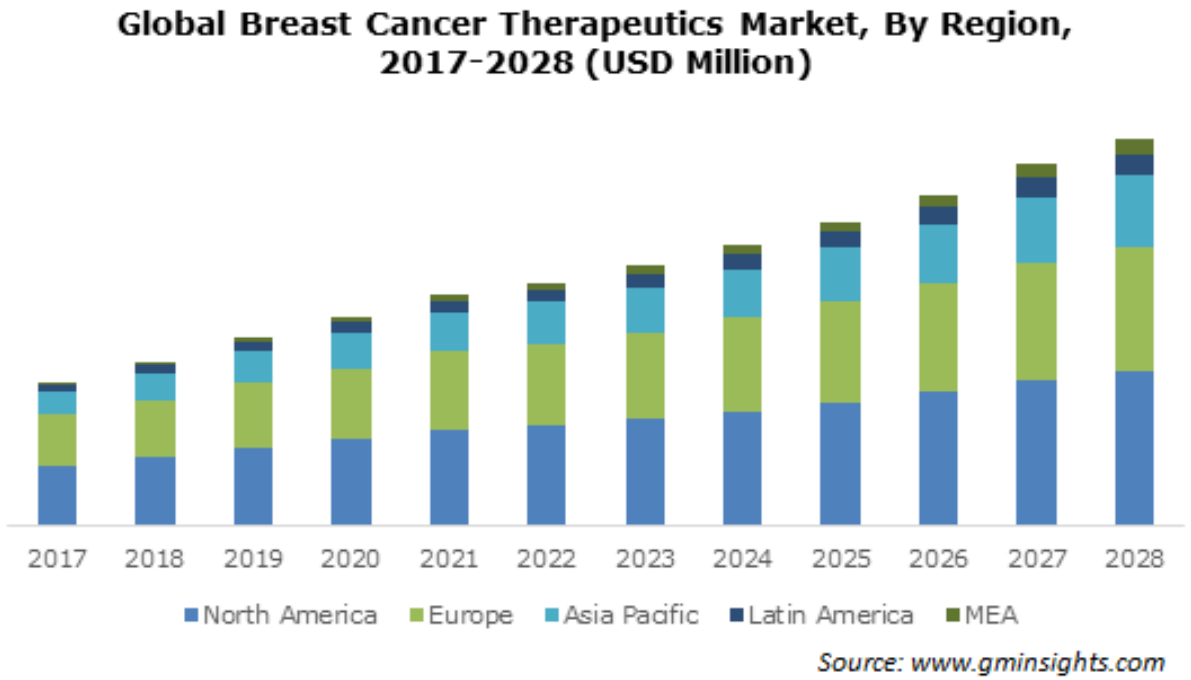
Patient Journey

- Patient treatment resistances with targeted therapies :
  Q2 as an alternative

- Idea supported by **Dr. Javier Cortes**,

  International Breast Cancer Center and involved in pertuzumab, eribuline and **everolimus** development

Breast Cancer Market



- **CAGR of 8%** per year in the period **2022-2028**.
- Income expected in 2028: USD 42,670.5 million.
- Mammary carcinomas: **€7,800/patient (early stages)** and **€22,000 /patient (advanced stages**).

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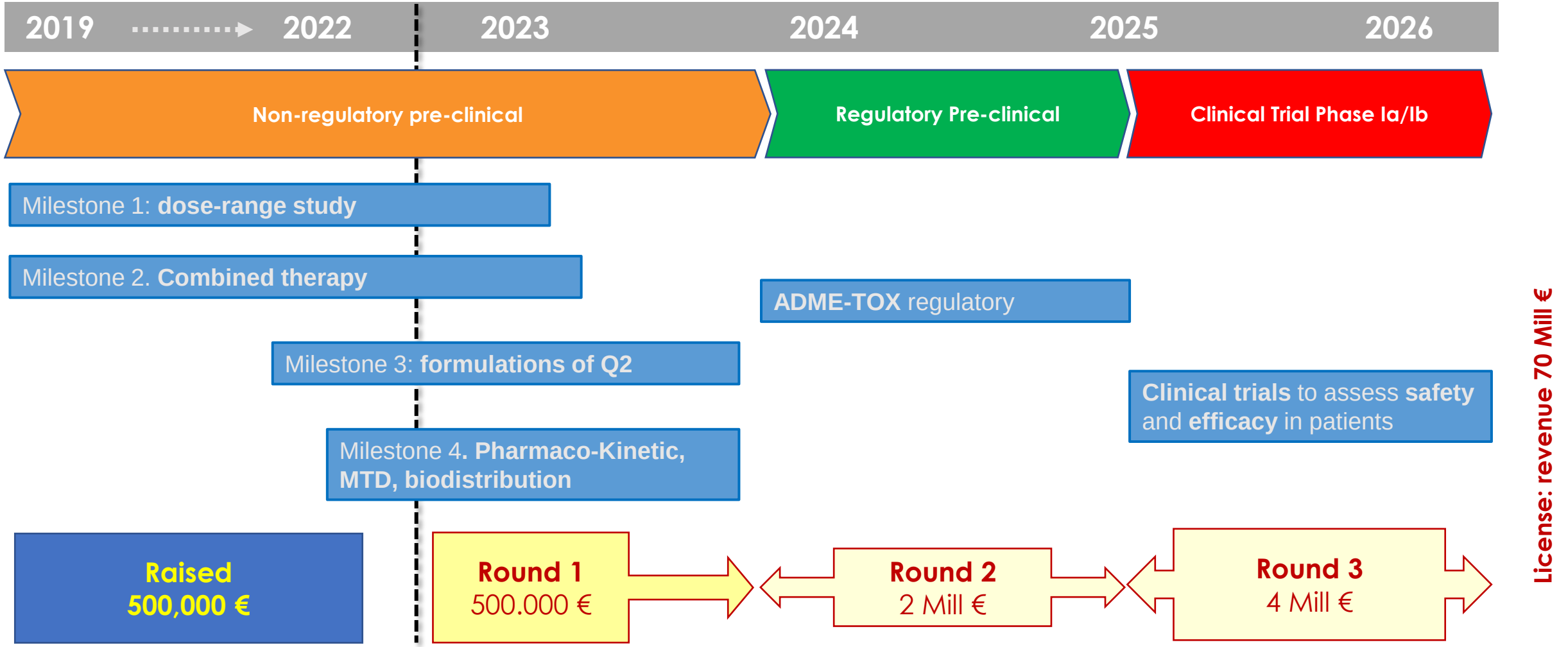
Current status of development



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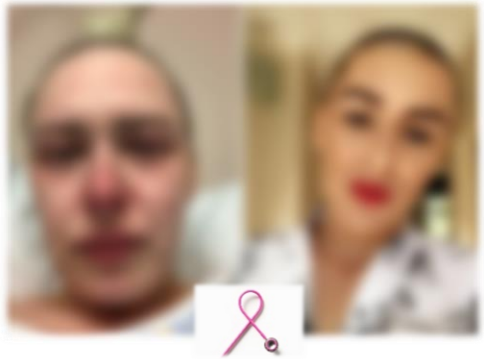
Q2 to deal with **resistances** in **breast cancer therapies**



Let's keep on working!!

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