METAVIVOR

Metastatic Breast Cancer Research, Support and Awareness

MBC 101: Understanding the Basics

Stage IV Stampede & Summit 2025

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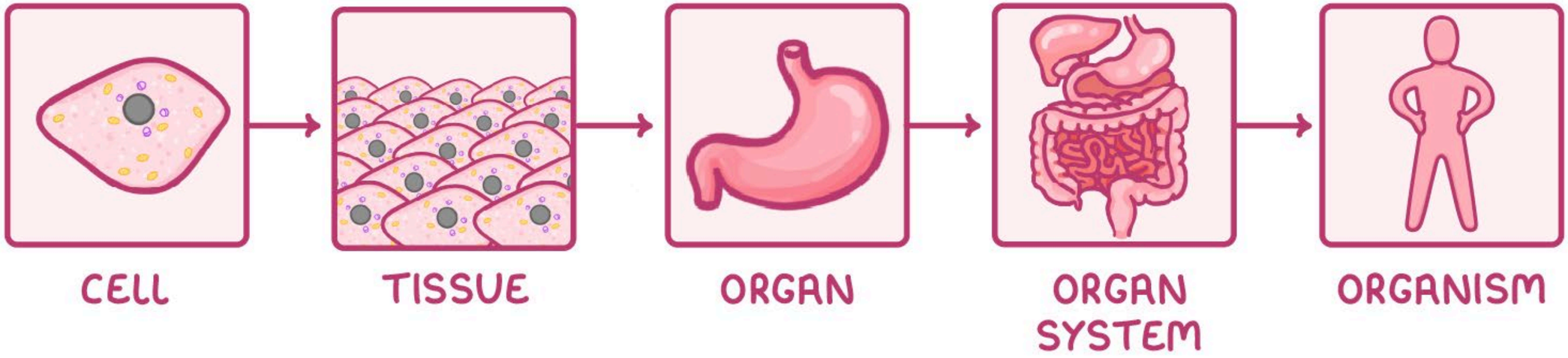
Pfizer

Let's Get Started

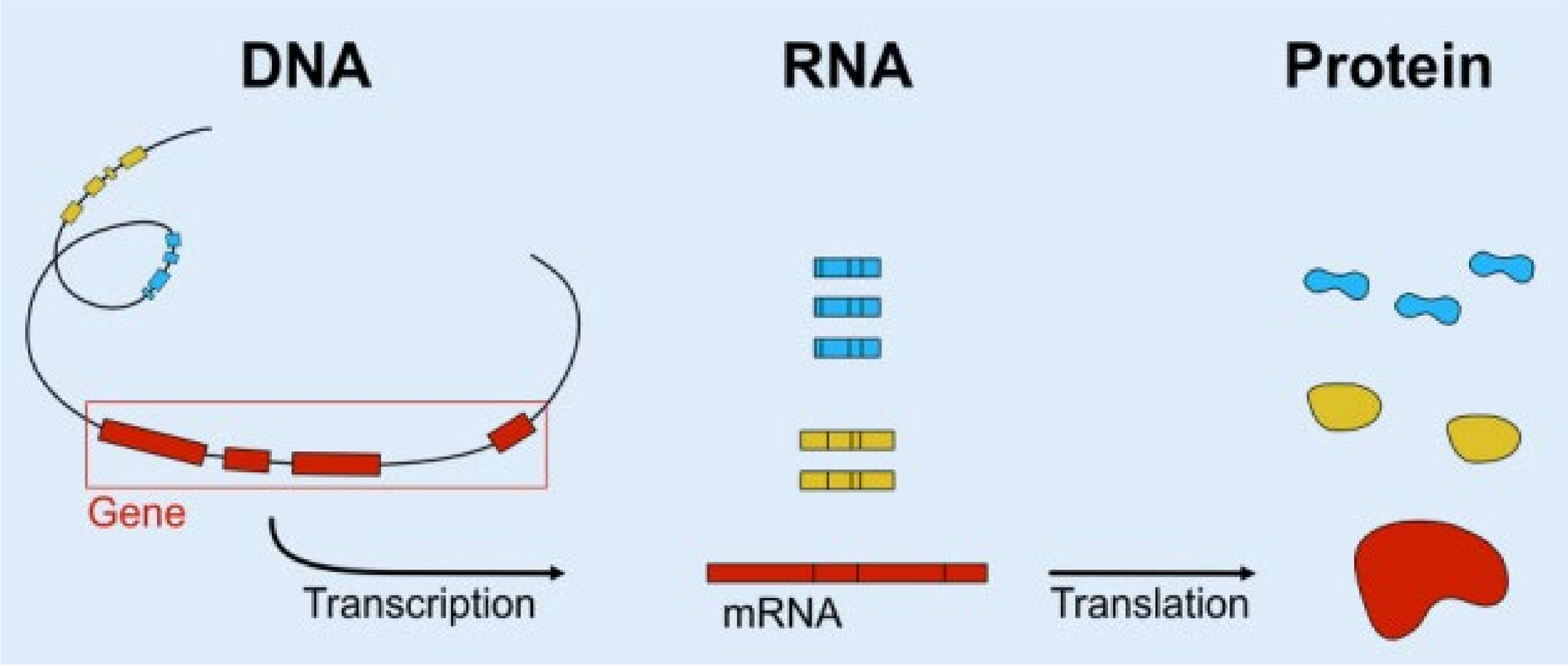
What You Need To Know

- Biology 101: become an expert in 7 easy minutes
- What is metastatic breast cancer (MBC) and how it differs from early stage disease?
- When and how does breast cancer spreads from the breast to different sites?
- The importance of subtype and other biomarkers to treatments
- How treatments are discovered and move to the clinic, including the importance of federal funding
- How common MBC is, other statistics, and challenges to knowledge in this area due to how the US collects data including SEER

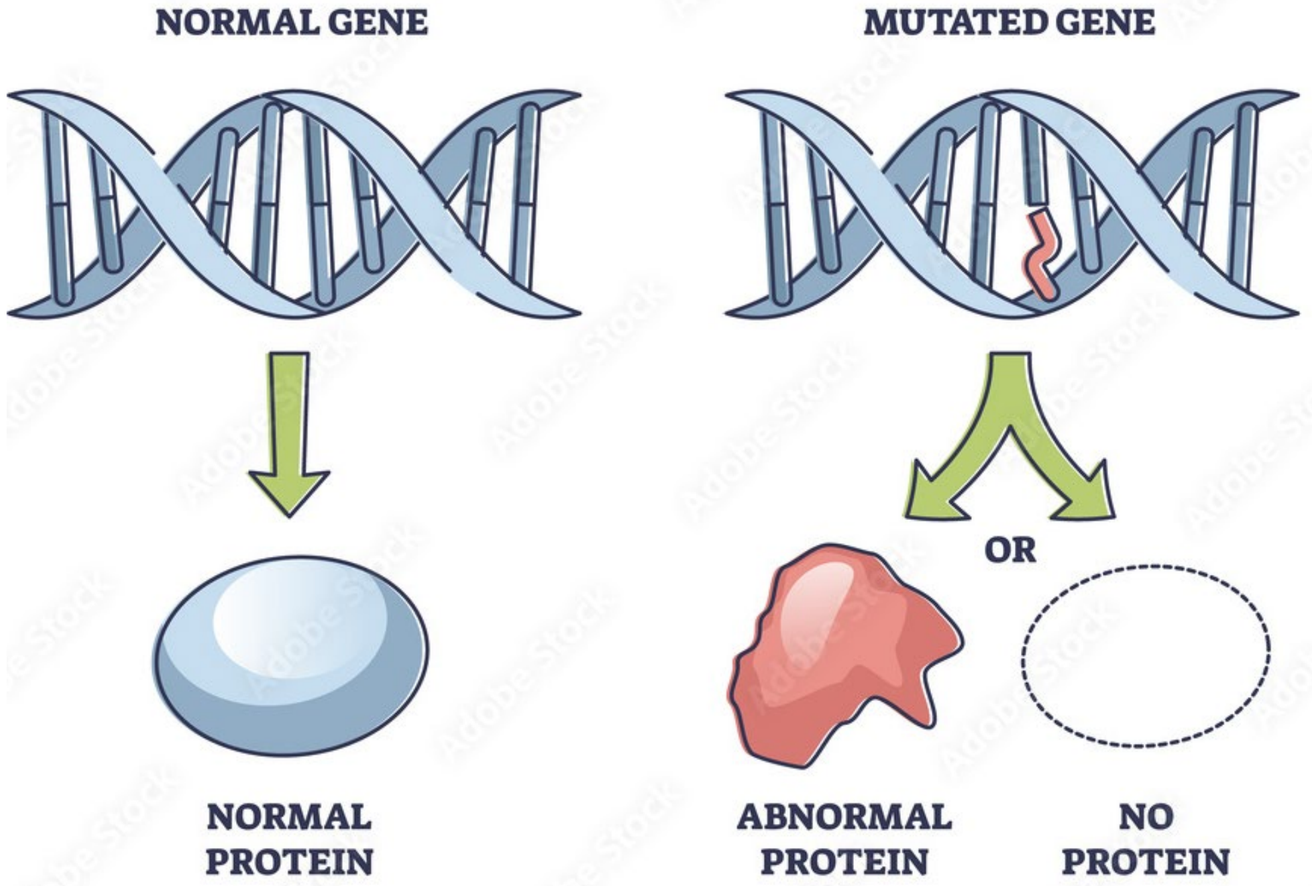
Biology 101: cells as building materials



Biology 101: genes as building instructions



Biology 101: mutations as instruction errors



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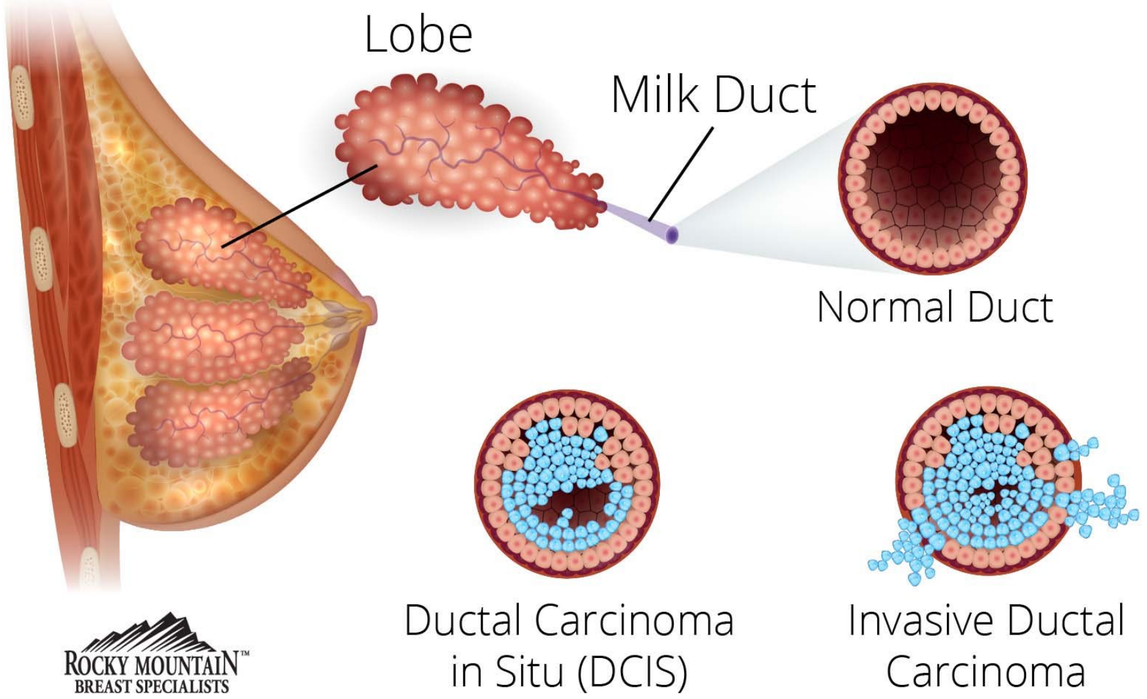
What is breast cancer?

- Cancer: cells divide out of control, don’t die, and invade other tissues
- Breast cancer:
  - Cancer that starts in the breast



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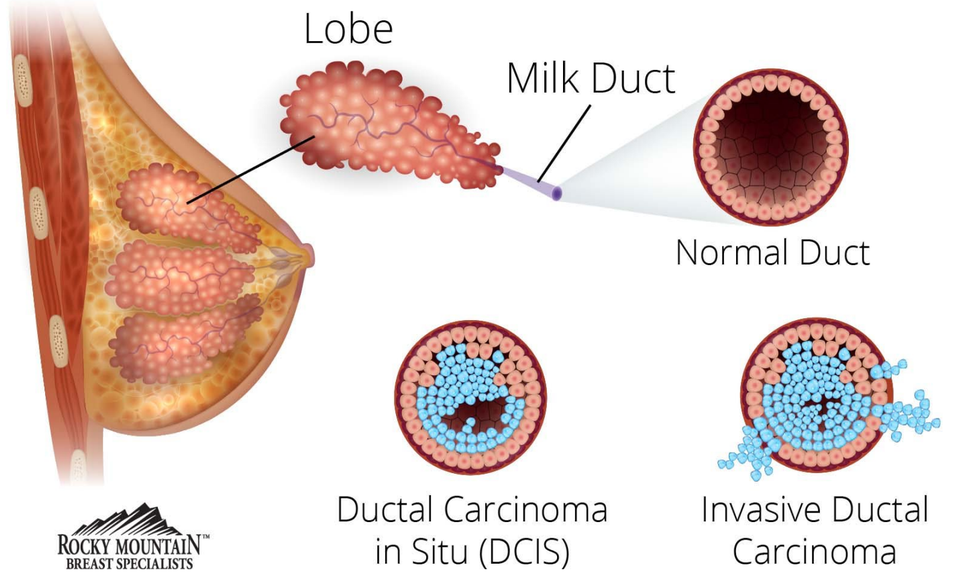
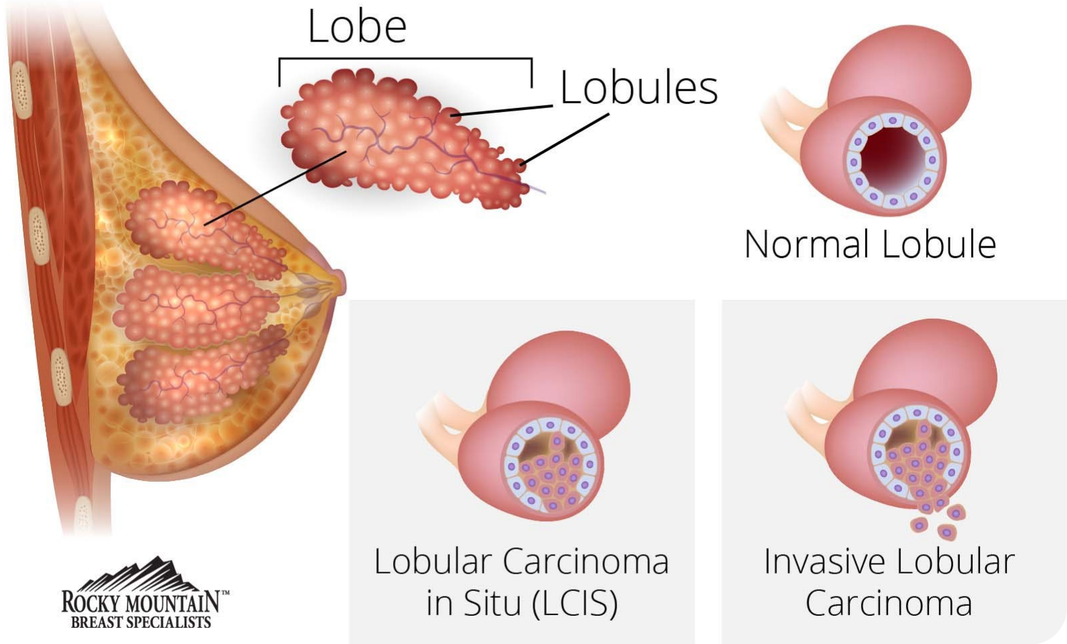
- Breast cancer:
  - Cancer that starts in the breast
  - Types:
    - Invasive ductal carcinoma: majority
    - Invasive lobular carcinoma: ~15%
    - Other, rarer types
- Early stage breast cancer
  - Stages 0-3
  - Has **not** spread to a distant site
  - Specific stage determined by invasiveness, tumor size, and local lymph node involvement





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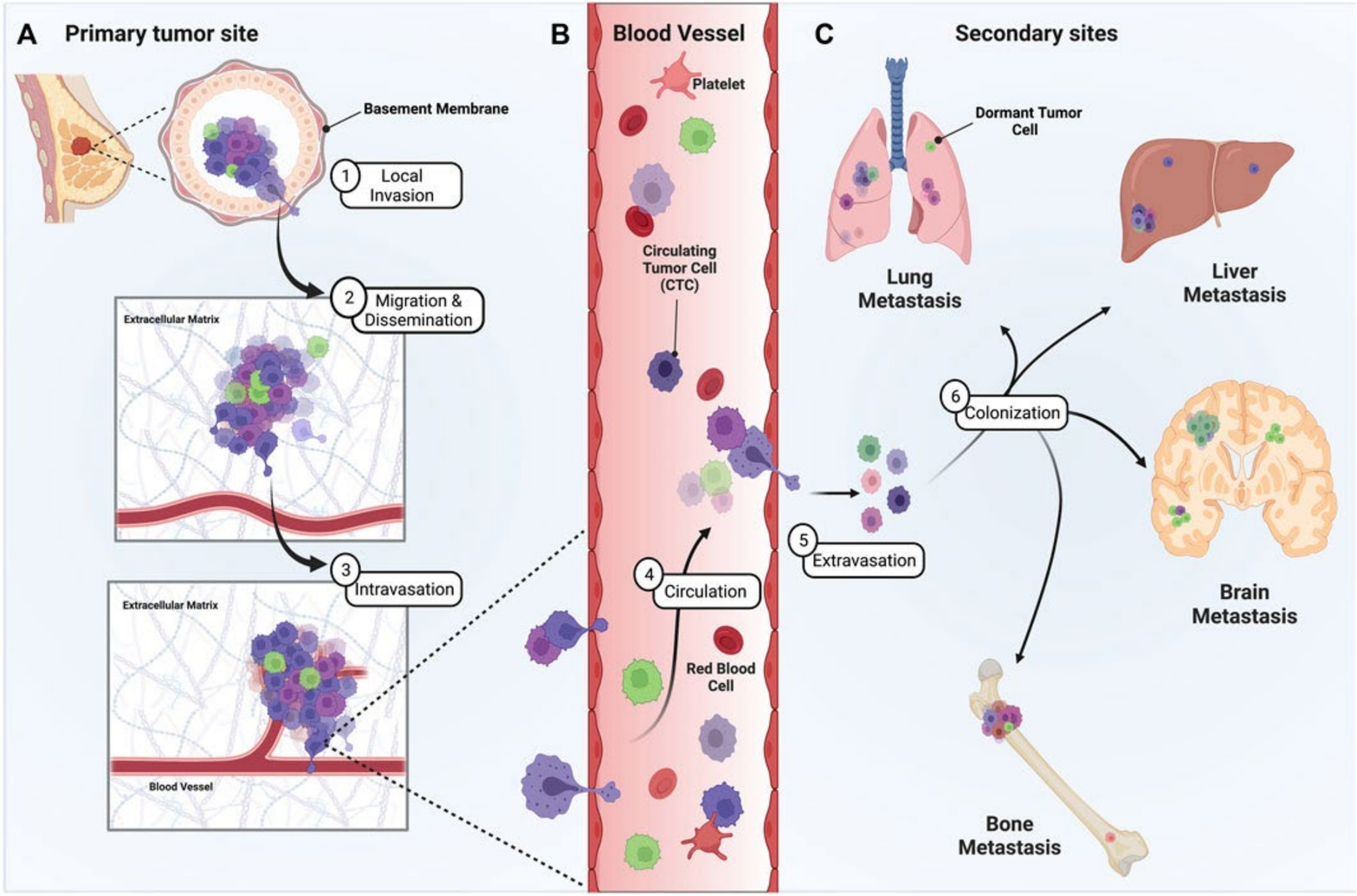
What is metastatic breast cancer?

- Cancer: cells divide out of control, don’t die, and invade other tissues
- Metastatic cancers: spread to sites distant from the original tumor & grow
- Metastatic (stage 4) breast cancer:
  - Cancer cells spread from primary breast tumor & grow
  - Can happen very early – before a tumor is detectable.
  - De novo MBC: no early stage diagnosis
  - Recurrent MBC: early stage diagnosis followed by MBC diagnosis



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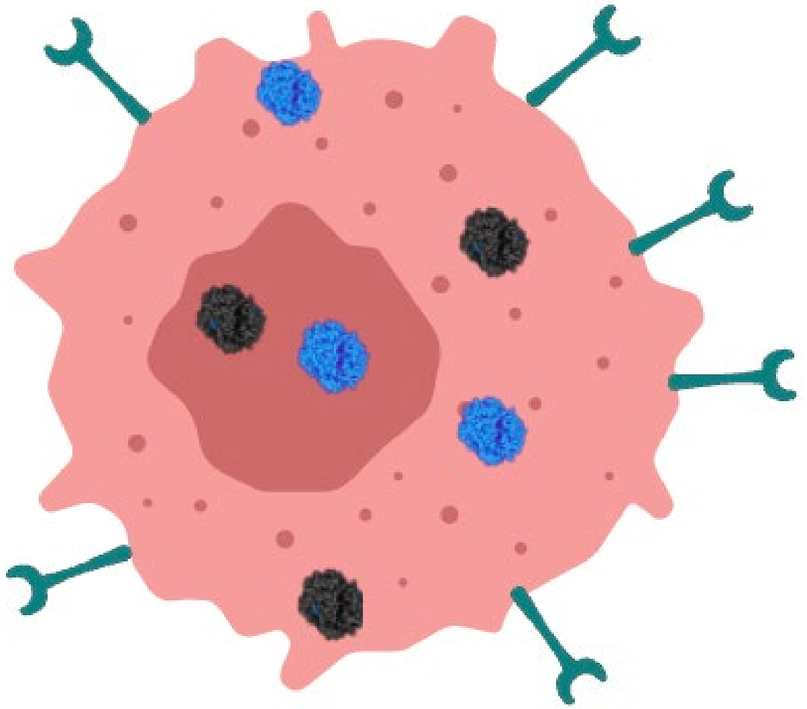
Not all MBC is the same

- Differs by **subtype**
  - Different subtypes respond to treatments differently, behave differently, and can have different prognoses
  - Three protein receptors determine subtype
    - Estrogen receptor
    - Progesterone receptor
    - HER2



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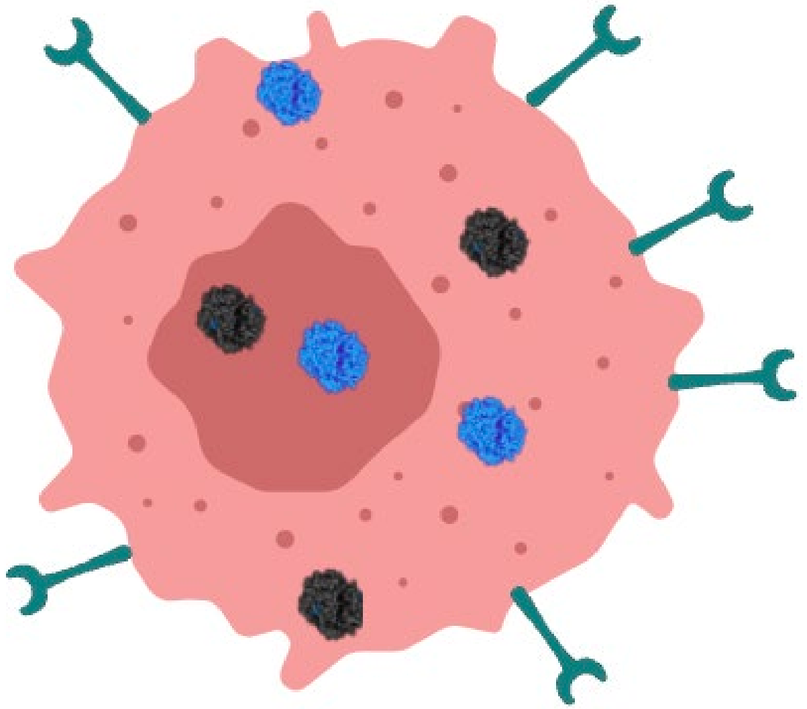
  - Leads to
    - Hormone receptor positive (ER+ and/or PR+)
    - HER2 positive (HER2+)
    - Triple positive (ER+ PR+ HER2+)
    - Triple negative (ER- PR- HER2-)



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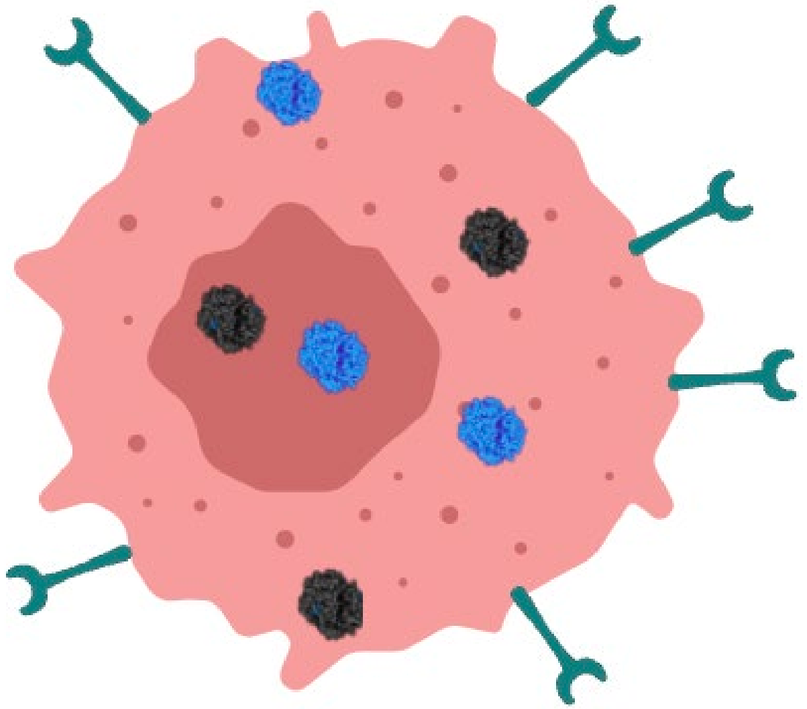
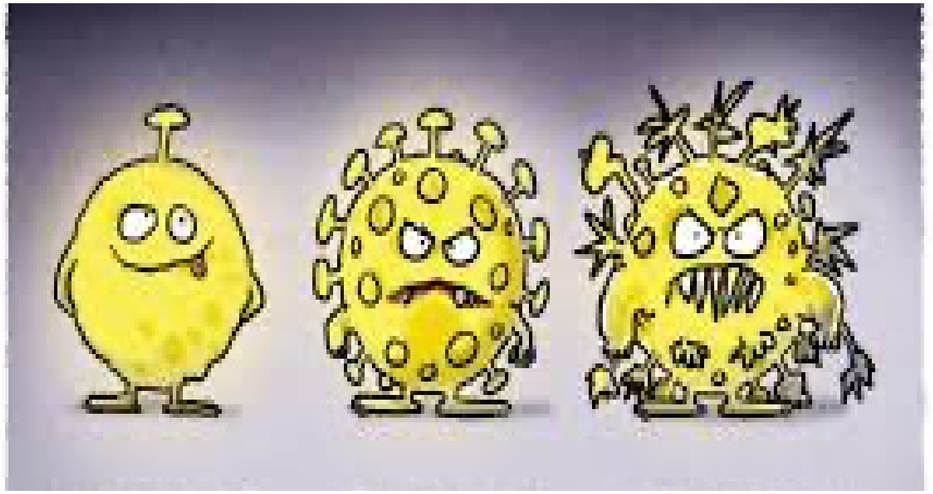
  - Some nuance
    - HER2 low & ultralow
    - ER low positive
  - Can change over time and by tumor location
  - How do I know my subtype? Ask oncologist, see pathology report(s)



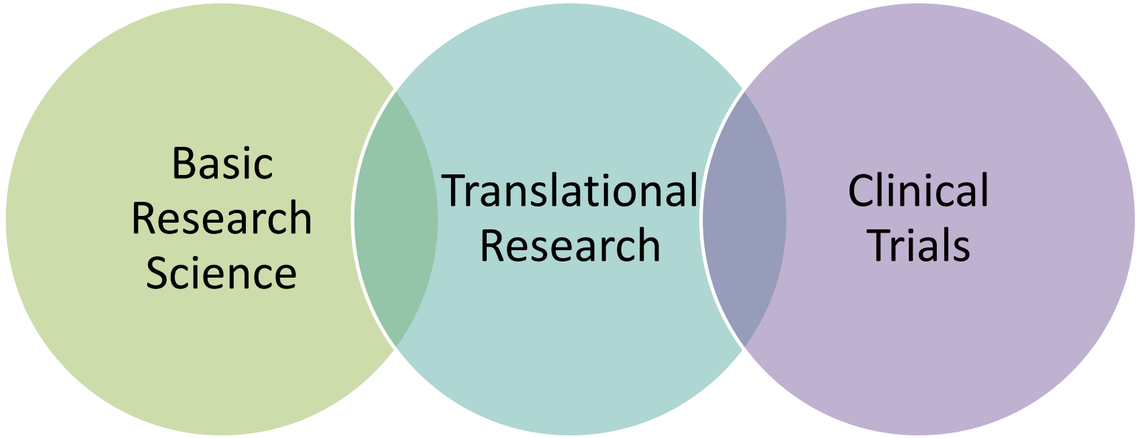
Not all MBC is the same

- Differs by **mutations**
  - Mutations: changes in the DNA sequence that can lead to changes in proteins & cell behavior
    - Inherited mutations (genetic testing)
      - Inherited from biological parent(s)
      - In all your cells
      - Can be passed on to biological children
      - Examples: BRCA 1 & 2 mutations, CHEK2 mutations etc.
    - Acquired mutations (genomic or biomarker testing)
      - Cancer cells pick these up over time
      - Can’t be inherited or passed on to children
      - Examples: ESR1 mutations, PIK3CA mutations



Treatments: from the lab to the clinic …

- Basic research science
  - Provides the foundation, "whys" and "hows"
- Translational research
  - Pivot point between the bench and the bedside, "whats" can be done
  - Preclinical research
    - In cells
    - In mice and other animals
    - In computers
- Clinical trials – in humans
  - Phase 1: safety & dosing
  - Phase 2: side effects & effectiveness
  - Phase 3: side effects & comparison to currently approved therapy
- FDA approval



Treatments: from the lab to the clinic …

- The role of basic research science
- Translational research
  - Preclinical research
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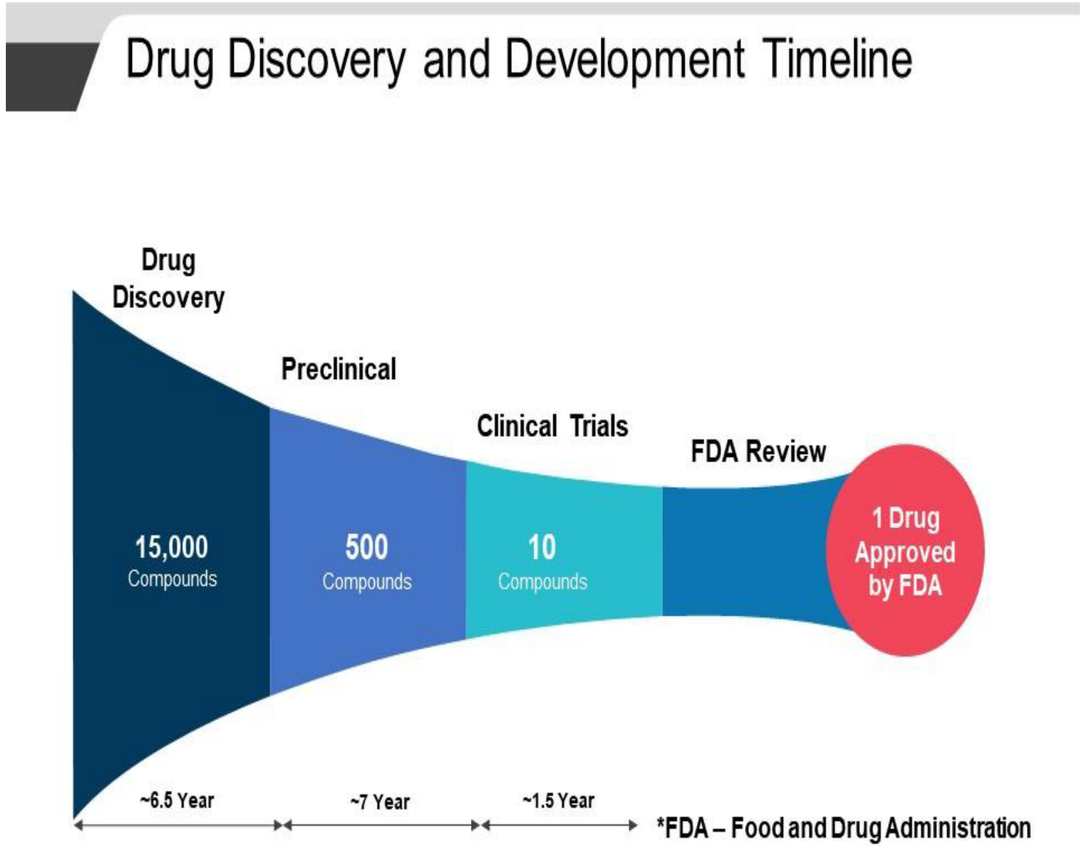

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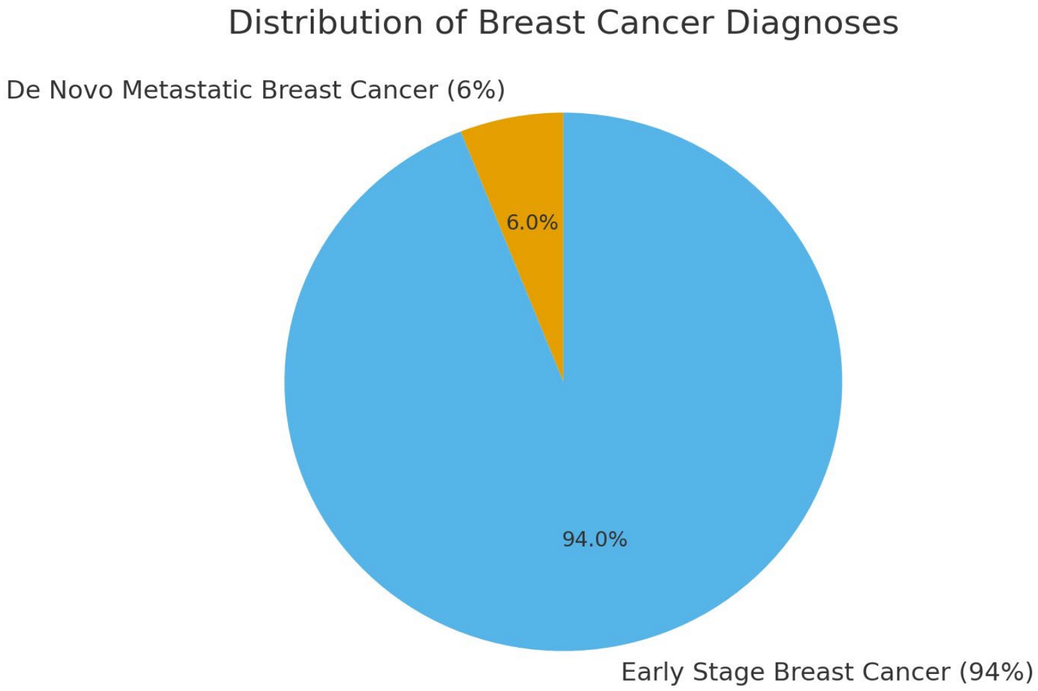
2011-2020 According to report by Biotechnology inniovations https://go.bio.org/rs/490-EHZ-999/images/ClinicalDevelopmentSuccessRates2011_2020.pdf

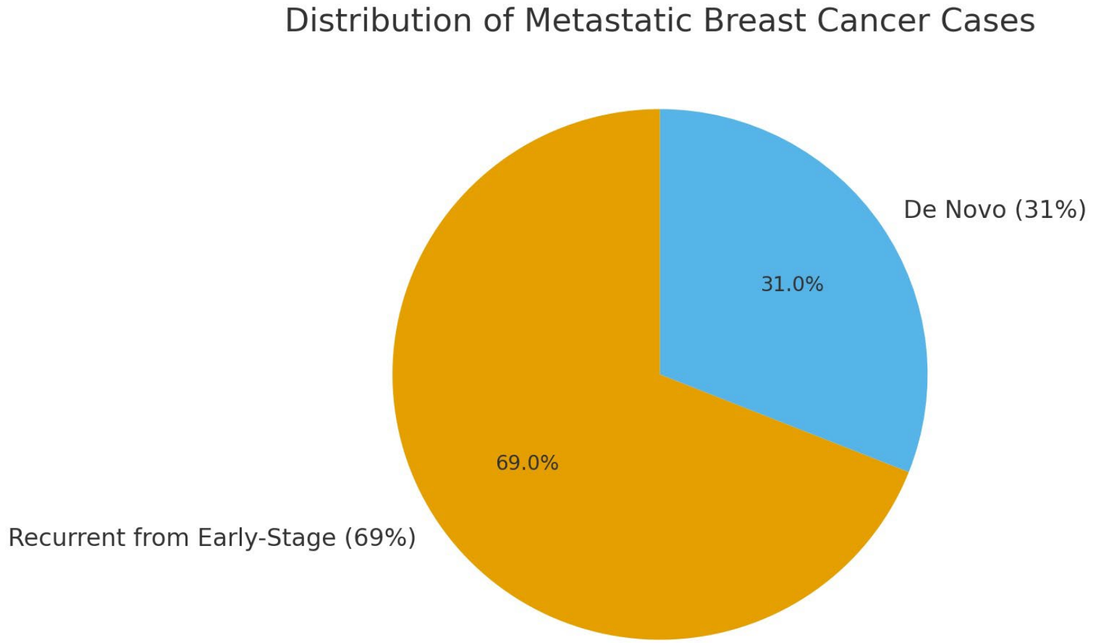
Some statistics – these are all for reference

- Breast Cancer is the most common cancer among women in the world and the second leading cause of death from cancer in the United States. (Giaquinto et al., 2022)
- In the US in 2024, approximately 42,250 women and 530 men will die of breast cancer. This is equivalent to ~117 people per day. (ACS 2024, Giaquinto et al., 2024)
- In the US there are 150,000-160,000 women living with MBC. (Gallicchio et al., 2022; Mariotto et al., 2017; Giaquinto et al., 2022)
- Only about 30% of MBC patients in the US live longer than 5 years. (ACS 2024, Mariotto et al. 2017)
- The median survival of people diagnosed with MBC in 2019 was estimated at 3.2 years. (Caswell-Jin et al., 2021)
- An estimated 1 in 4 early stage breast cancer will become metastatic. However, this varies greatly from about 10-40% due to large differences in risk of distant recurrence by stage at diagnosis and the biology of the disease itself. (Early Breast Cancer trials Collaborative Group, 2024)
- Breast cancer can recur as MBC from several months to 25+ years after early-stage treatment. (After Breast Cancer Diagnosis, 2020)



Of all **breast cancer diagnoses,** 6% are initially diagnosed with stage 4, or de novo, disease.

Of all cases of **metastatic breast cancer,** 69% are recurrent from a prior early stage diagnosis and 31% are de novo, or initially diagnosed as metastatic.



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How common is breast cancer? MBC?

- Breast Cancer is the
  - Most common cancer among women in the world
  - Most common cancer among women & the second highest cause of death from cancer in the United States (after lung cancer).

- In the United States there are
  - Over 4 million people who are currently in treatment or have completed treatment for breast cancer
  - Approximately 150,000-160,000 women living with MBC.

Females	
New cases	
Breast	268,600
Lung	111,710
Colorectum	67,100
Uterus	61,880
Melanoma	39,260
Deaths	
Lung	66,020
Breast	41,760
Colorectum	23,380
Pancreas	21,950
Ovary	13,980

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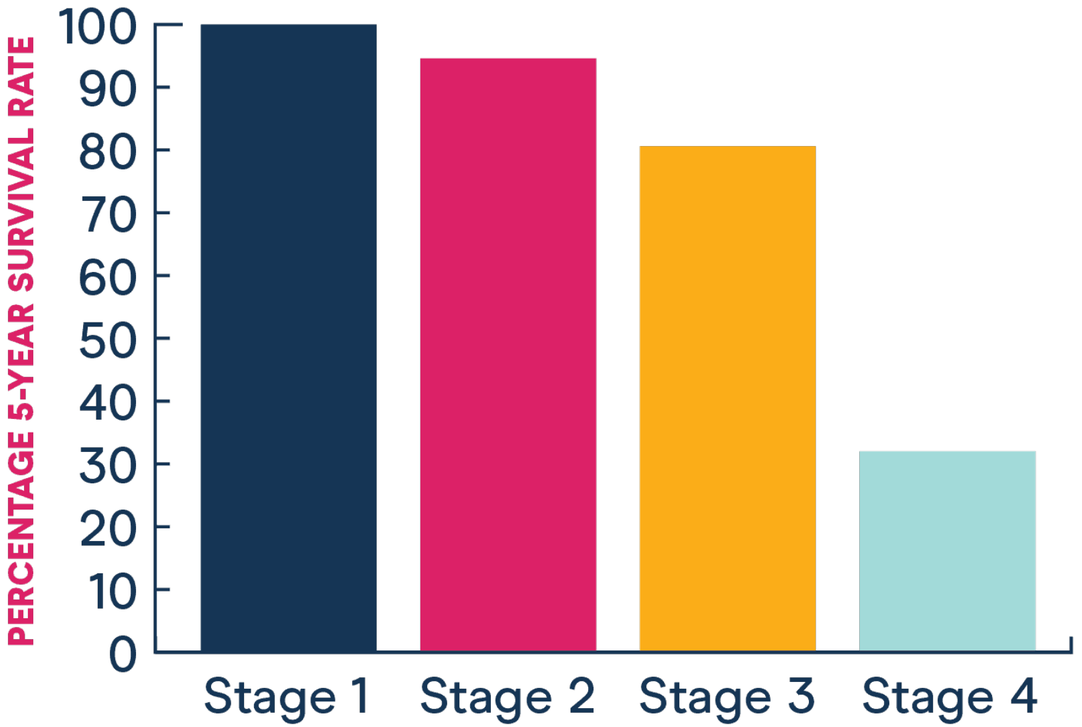
Breast cancer deaths & MBC survival statistics

- In the US in 2024, approximately 42,250 women and 530 men will die of breast cancer. This is equivalent to ~117 people per day.
- Only about 30% of MBC patients in the US live longer than 5 years.
- The median survival of people diagnosed with MBC in 2019 was estimated at 3.2 years.

5-year breast cancer survival rate for women by stage at diagnosis



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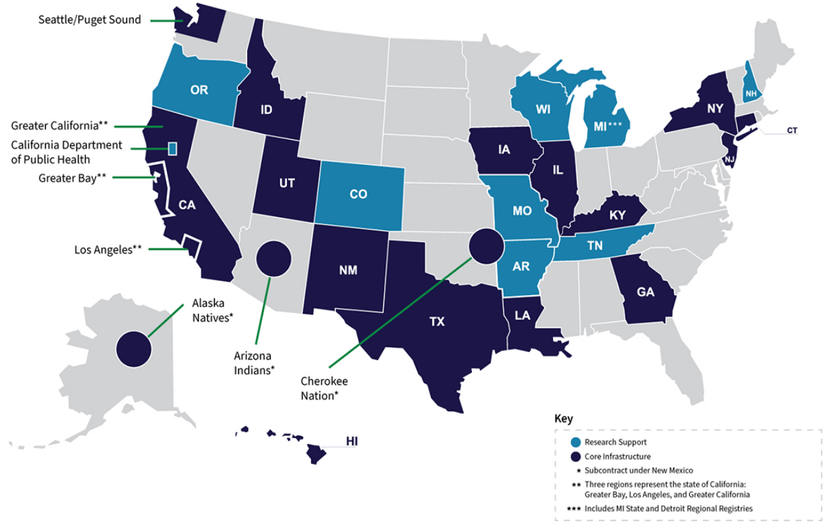
SEERing is believing

- What is SEER?
- What facts and statistics can we get from SEER and which require other methods?
  - Of **all breast cancer diagnoses**, 6% are initially diagnosed with Stage 4 or de novo metastatic disease.
  - In the US in 2024, approximately 42,250 women and 530 men will die of breast cancer. This is equivalent to ~117 people per day.
- What information can we not get directly from SEER? And why not?
- SEER needs modernization, which requires investment



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Show me the money

- Just **13%** of breast cancer research dollars go toward MBC research.
- While funding for MBC is increasing, we have a long way to go and is still greatly UNDER FUNDED.
- Calculating breast cancer research dollars going to MBC can be done in different ways and is complex! And is why you may see various numbers.
  - What is included?
    - Research on already metastatic?
    - Research on dormant cells?
    - Research on preventing metastasis?

- Knowledge is power
- You know more about MBC than the people you are meeting on Capitol Hilll – **you** are an expert in the lived experience of cancer
- Present the facts, which we hope we've given you
- Questions??

THANK YOU!

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