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Kekely Klouyovo, Xuefen Le Bourhis, Chann Lagadec, Eric Adriaenssens. Role of H19 and the mir-675 in breast cancer tumor development and development of brain metastasis. Comité scientifique international (SAB), Jan 2024, Lille, France. hal-04548694

**HAL Id: hal-04548694**

**<https://hal.science/hal-04548694>**

Submitted on 16 Apr 2024

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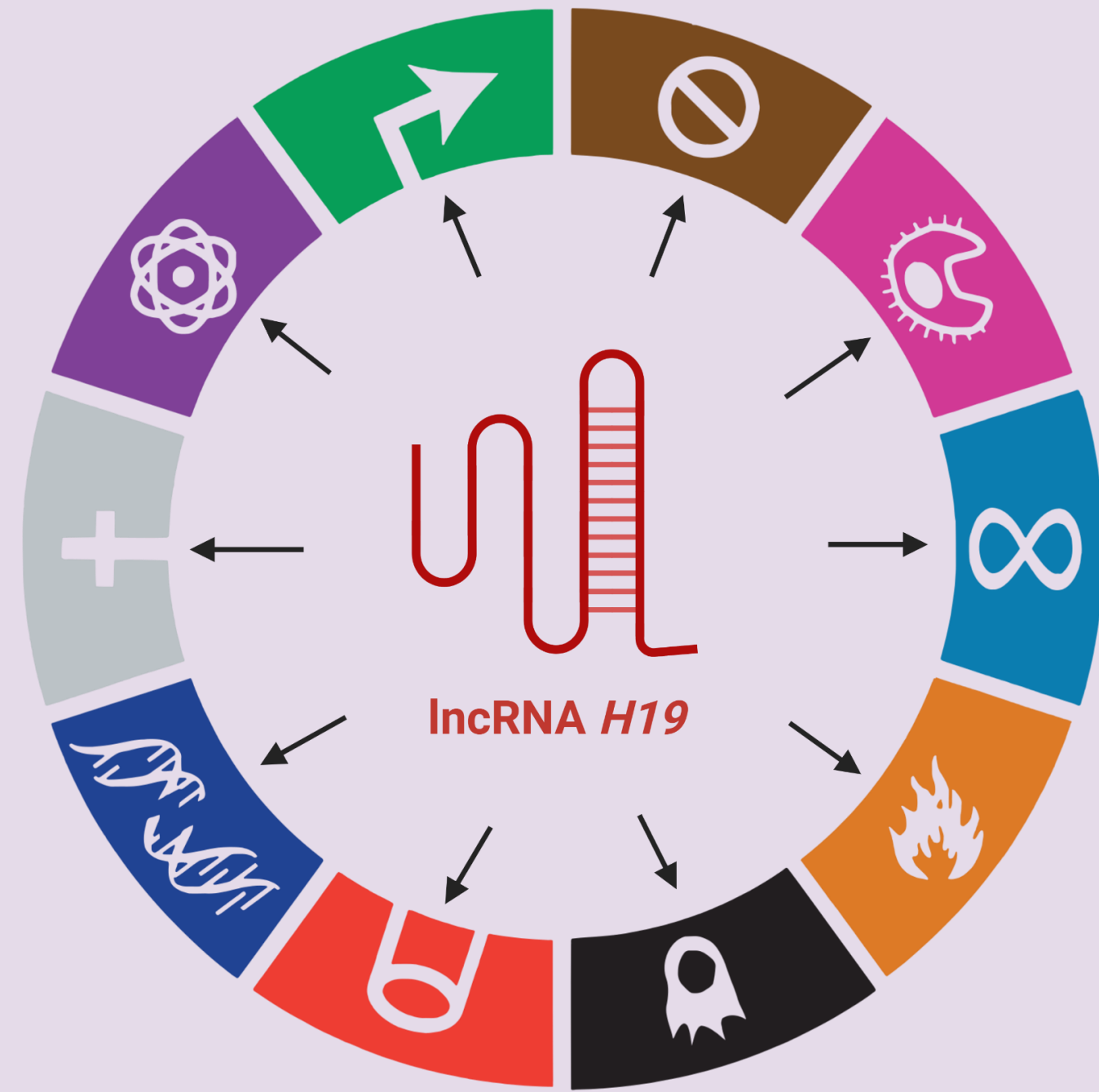
# Role of *H19* and the mir-675 in breast cancer tumor development and development of brain metastasis

Kekely KLOUYOVO<sup>1</sup>, Xuefen LE BOURHIS<sup>1</sup>, Chann LAGADEC<sup>1</sup> & Eric ADRIAENSSENS<sup>1</sup>

<sup>1</sup> Univ. Lille, CNRS, Inserm, CHU Lille, UMR9020-U1277 - CANTHER – Cancer Heterogeneity Plasticity and Resistance to Therapies, F-59000 Lille, France



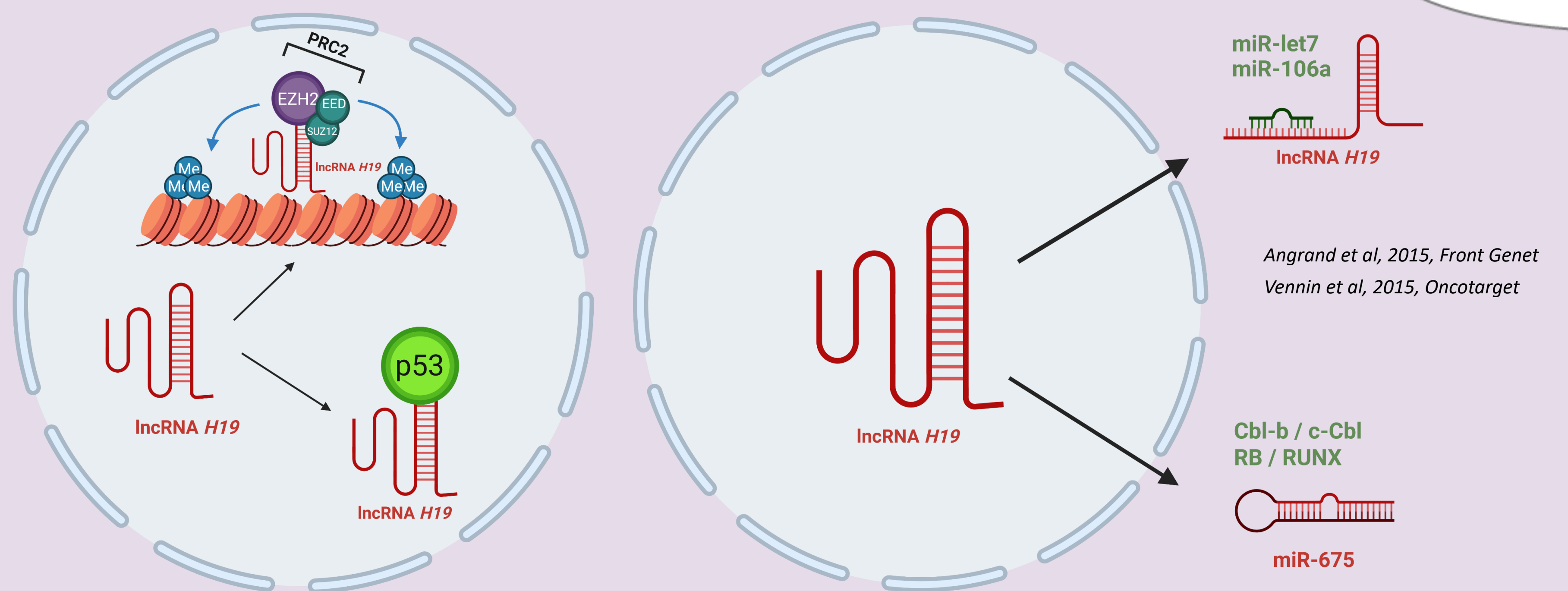
## 1 The long non-coding RNA *H19* in cancer



*H19* is involved in all cancer hallmarks

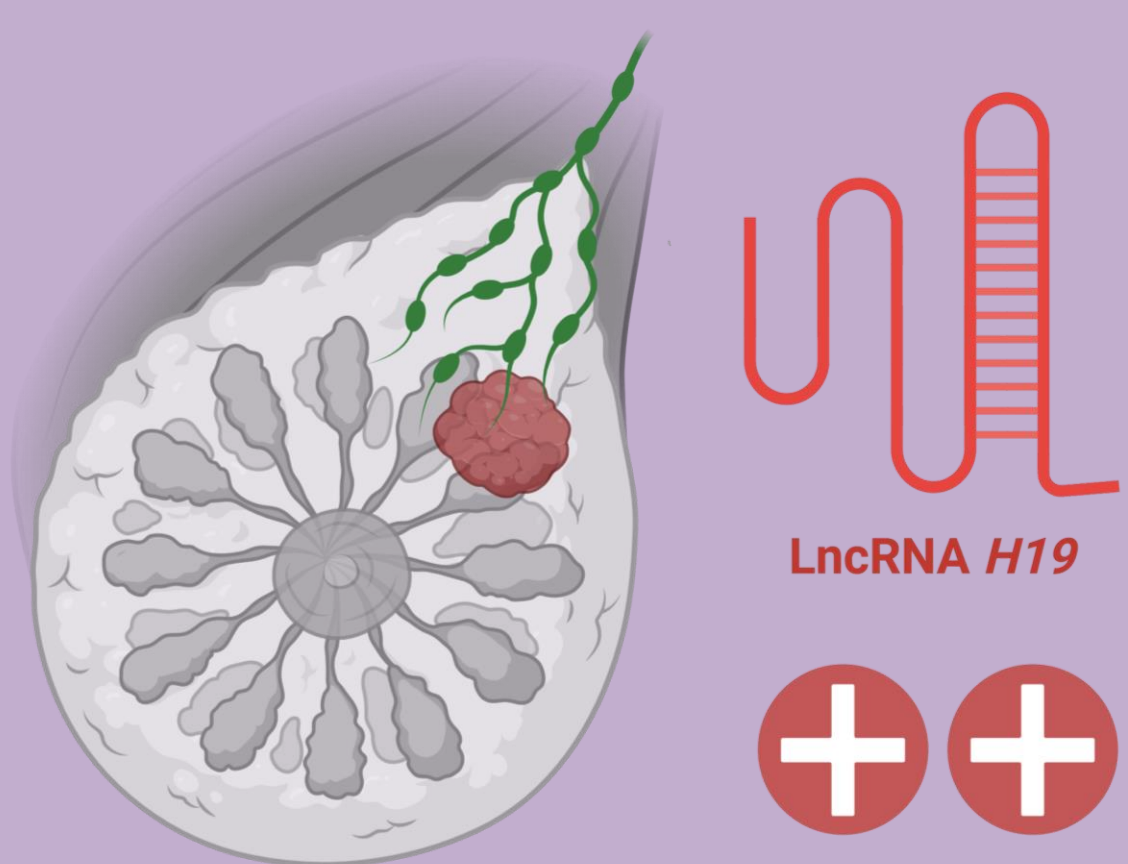
Hanahan and Weinberg, 2011, Cell  
Lecerf et al, 2018, Cell, CMLS

## 2 Mechanisms of action that promotes breast cancer



*H19* can interact with proteins like PRC2 complex or p53. It can also synthesize the miR-675 to target genes such as *Cbl-b* or capture other miRNAs like the let-7 family members.

## 3 Context and aims



Overexpression of *H19* in 70% of breast cancer<sup>1</sup>

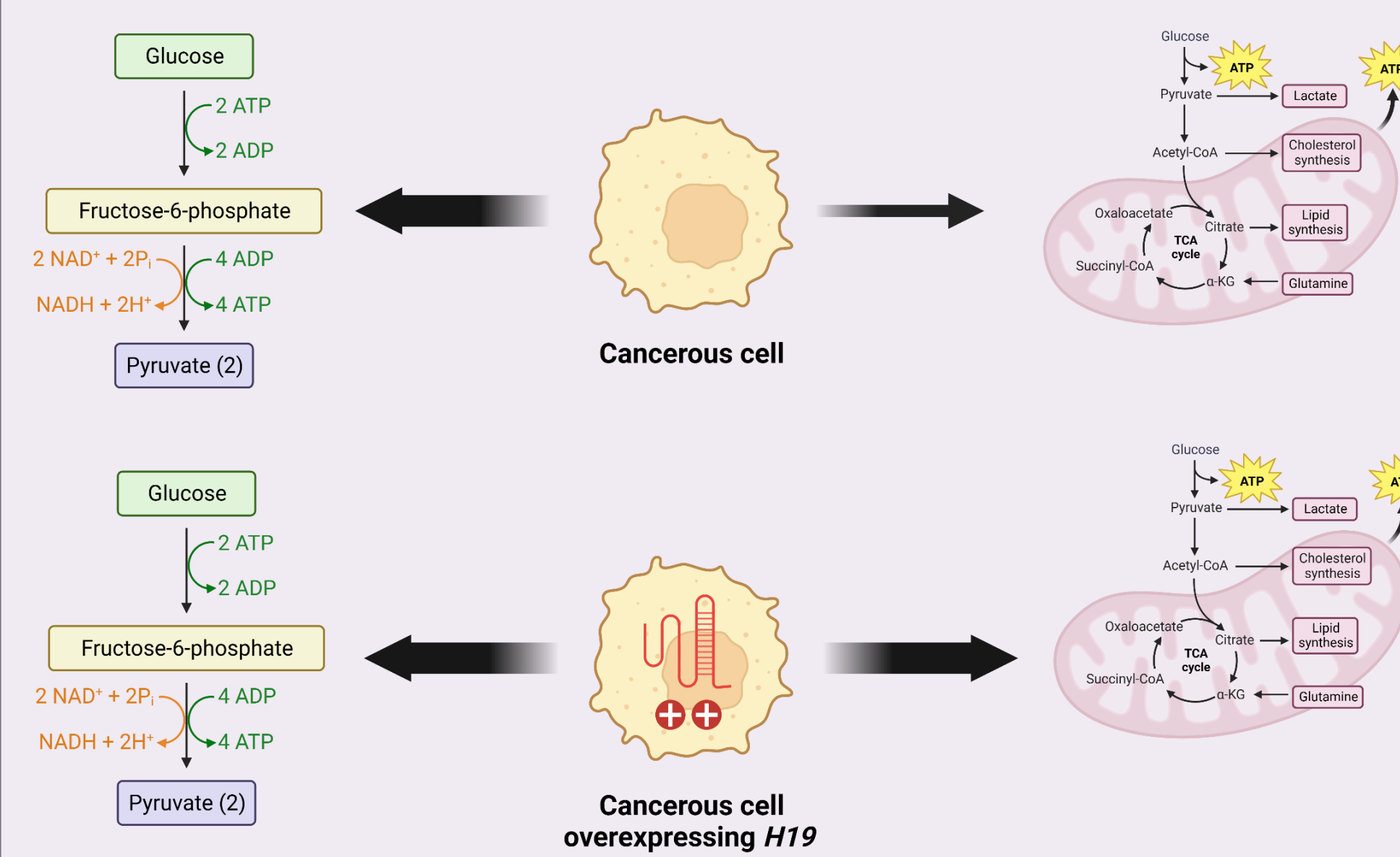
**ATP**  
1. Metabolism deregulation  
Effect of *H19* and miR-675 overexpression on glycolysis and mitochondrial respiration

2. Brain metastasis formation  
Effect of *H19* overexpression in cell capacity to cross the BBB and growth in brain parenchyma

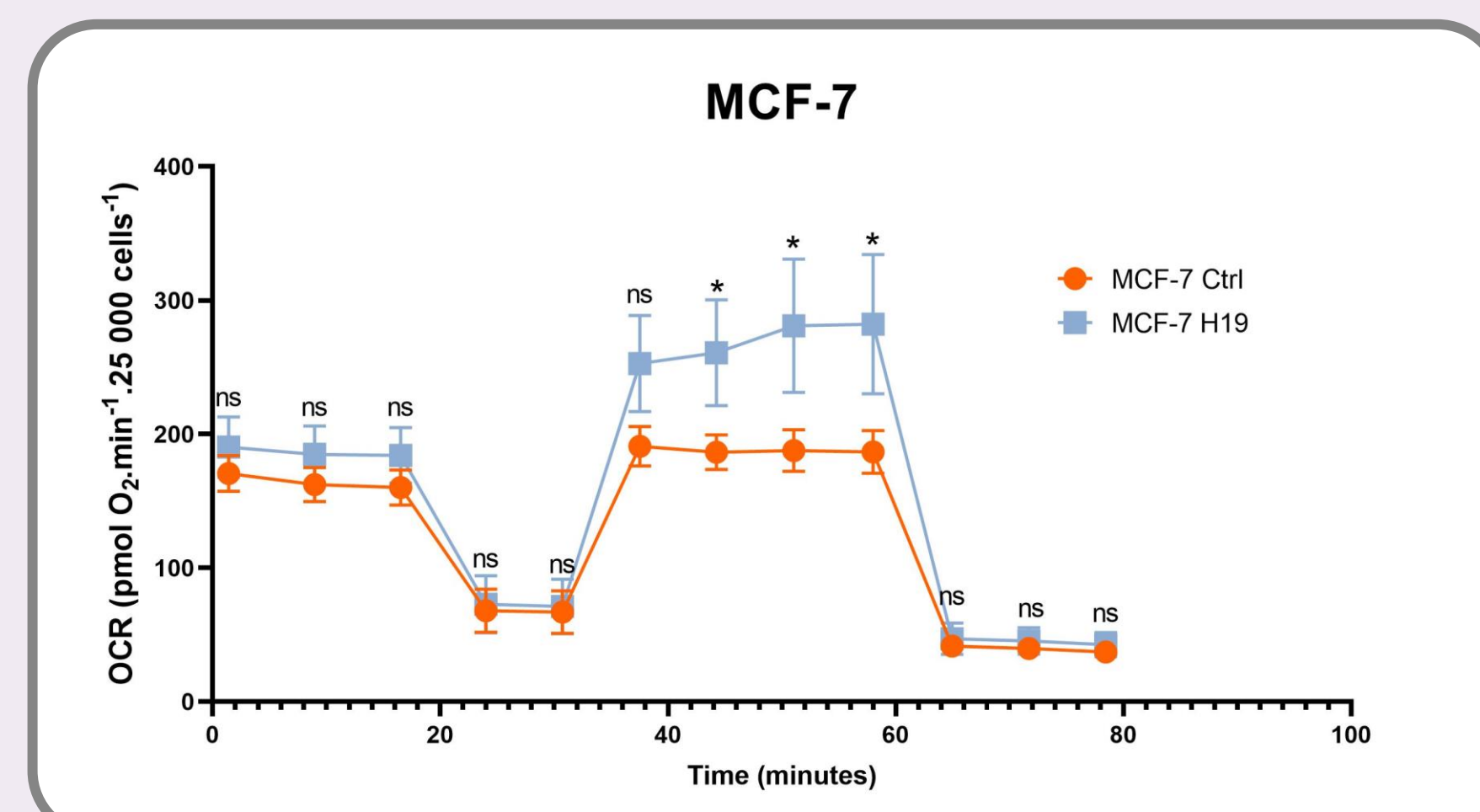
3. Breast cancer aggressiveness  
Effect of *H19* and miR-675 overexpression in phenotypes associated with tumor aggressiveness such as epithelial-mesenchymal transition, migration and invasion.

<sup>1</sup>Adriaenssens et al, 1998, Am. J. Pathol

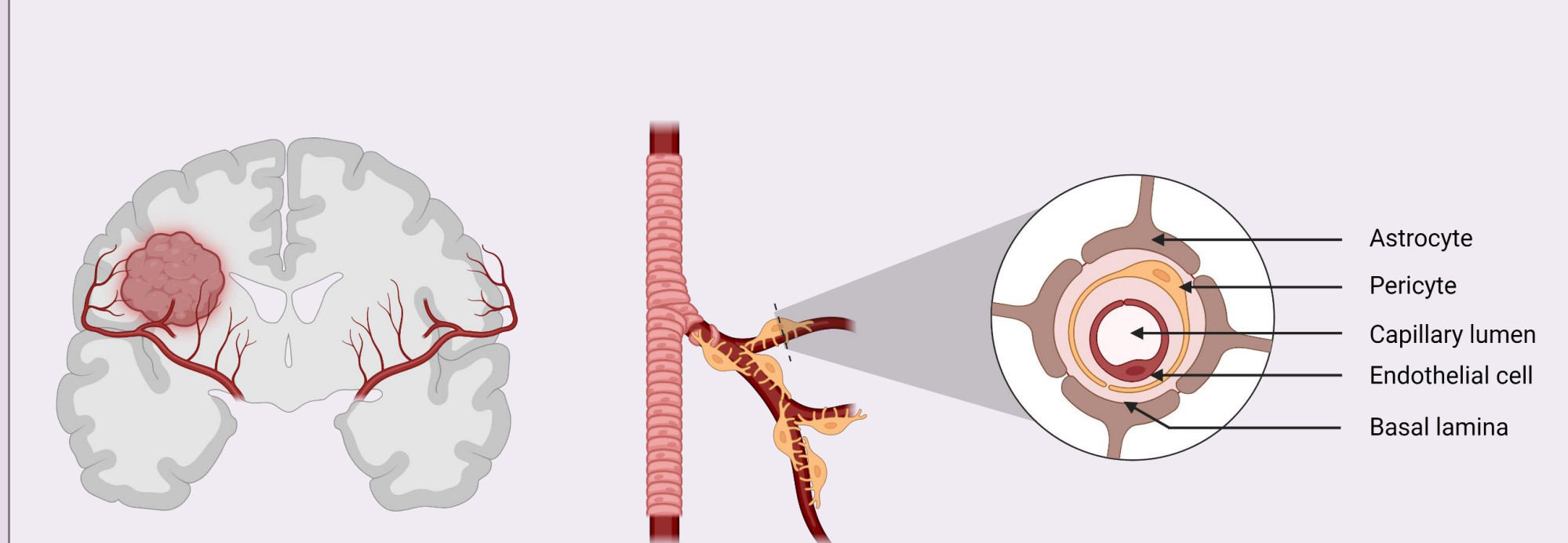
## 4 Metabolism deregulation



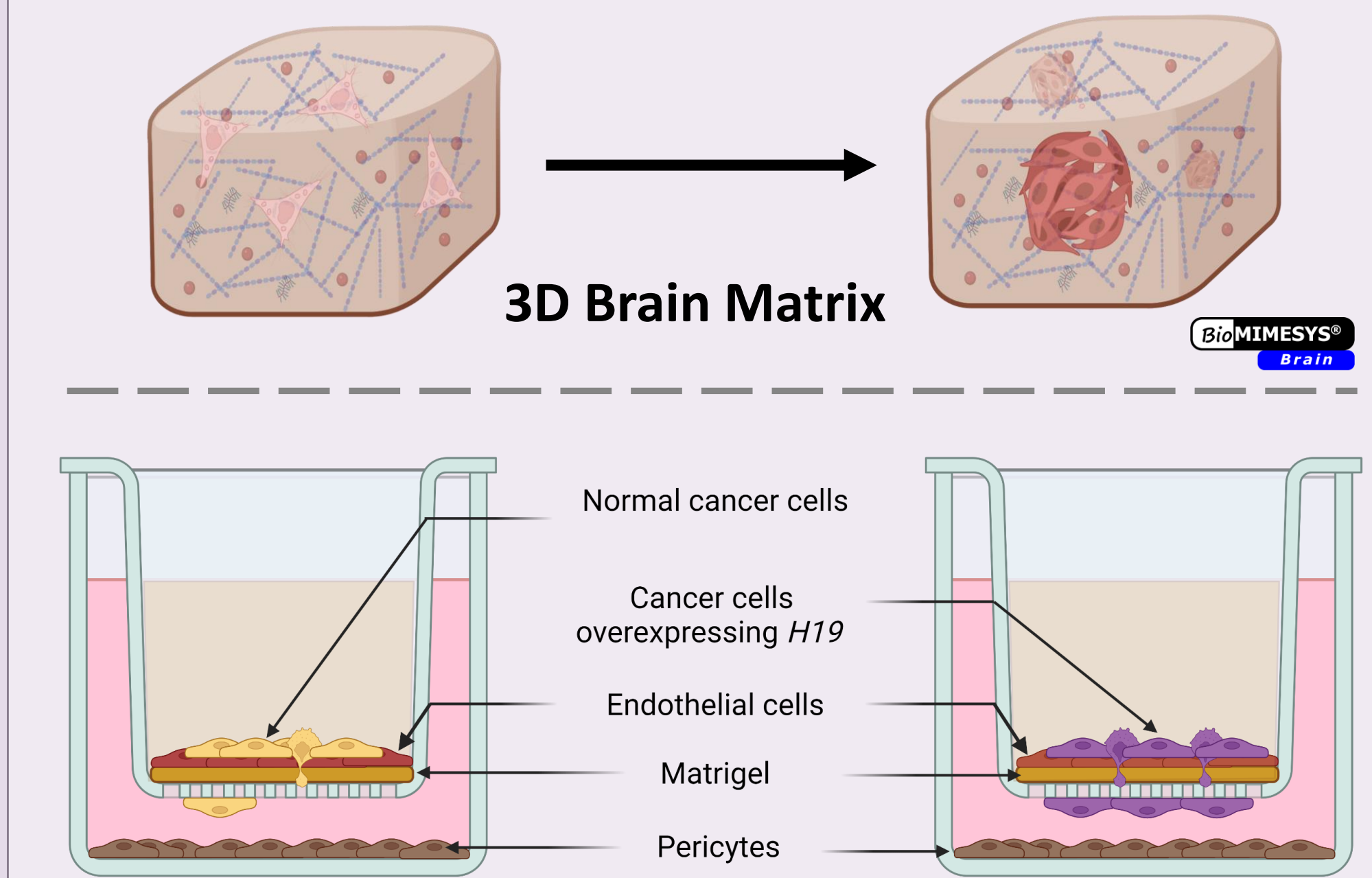
Overexpression of *H19* could induce an increase of mitochondrial respiration in breast cancer cells



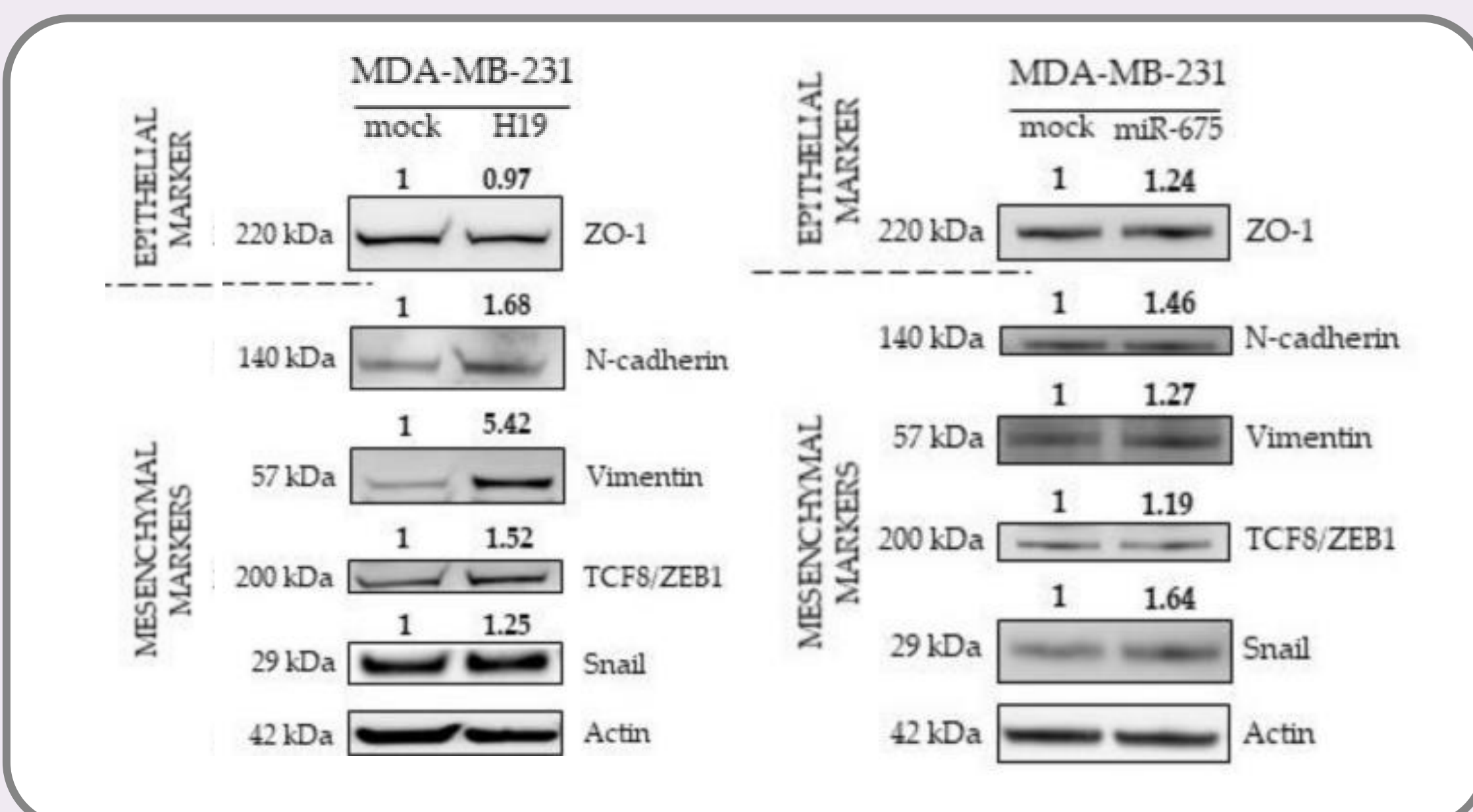
## 6 Brain metastasis formation



To induce brain metastasis, *H19* could facilitate cell capacity to cross the blood-brain barrier and to grow in the brain parenchyma

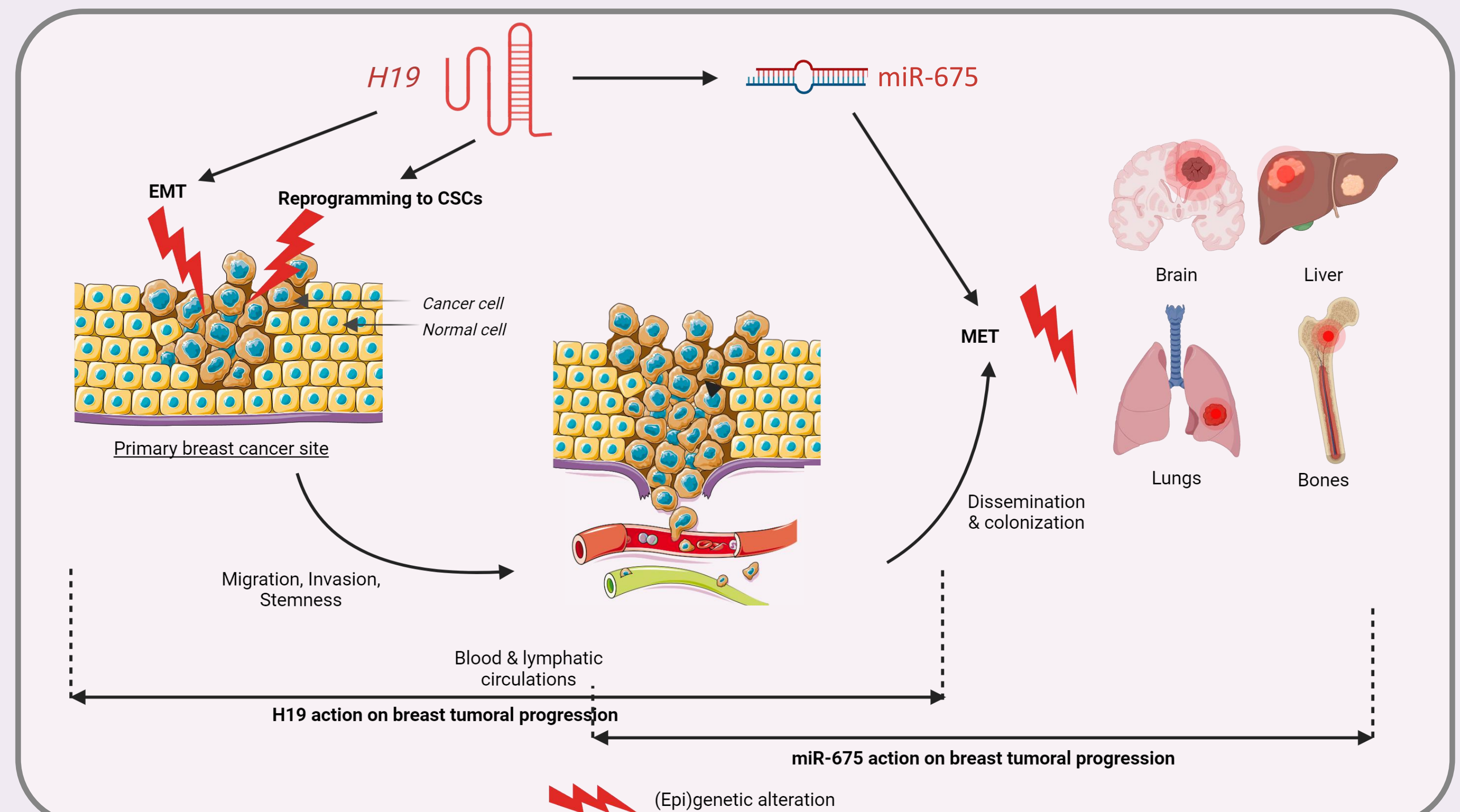


## 4 Breast cancer aggressiveness



*H19* and miR-675 promotes breast cancer through different mechanisms<sup>2</sup>

<sup>2</sup>Peperstraete et al, 2020, Cancers



## Acknowledgments/Fundings



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