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### Meet the Inventors

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### Publication(s)

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### External Link(s)

• [From the lab of Dr. Kim Lyerly](#)  
• [From the lab of Dr. Zach Hartman](#)  
• [Tracking How a Breast Cancer Drug Works Points to a Possible New Therapy. The mainstay drug trastuzumab could benefit from another antibody to remove roadblocks](#)

## CD47/SIRP $\alpha$ checkpoint blockade in combination with HER2 antibody for the treatment of HER2-positive breast cancer

### Value Proposition

Approximately 20% of breast cancers overexpress the human epidermal growth factor receptor type 2 (HER2), which is recognized as an oncogenic driver of an aggressive cancer phenotype with a poor prognosis. The clinical benefit associated with trastuzumab, a humanized monoclonal antibody specific for patients with HER2-positive breast cancer remains heterologous and metastatic HER2-positive breast cancer remains incurable. Accordingly, there is a great need to dissect the precise mechanisms of the antitumor mechanisms of action of trastuzumab in order to improve outcomes in patients with HER2-positive breast cancer.

### Technology

Researchers at Duke have identified a novel strategy to overcome resistant to anti-HER2 therapy utilizing macrophage checkpoint blockade. Blocking the CD47-SIRP $\alpha$  checkpoint augmented trastuzumab therapeutic outcomes through enhanced antibody-dependent cellular phagocytosis of tumor cells. Human HER2-positive breast cancer xenografts treated with trastuzumab together with CD47 blocking antibody underwent complete tumor regression. Furthermore, CD47 blockade increased therapeutic efficacy of anti-HER2 monoclonal antibody and improved antitumor responses and prolonged survival in orthotopic murine model of HER2-positive breast cancer.

### Other Applications

CD47-SIRP $\alpha$  checkpoint blockade in combination with trastuzumab can be used to treat

other HER2-positive cancers, including gastric cancer.

### Advantages

- CD47 may be functioning in trastuzumab-treated breast cancer patients to mediate therapeutic resistance
- CD47 blockade can improve outcomes for HER2-positive breast cancer

