The Use of IL-6 Targeted Therapies in Overcoming Trastuzumab Resistance

Technology #5193

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As a fifth leading cause of cancer-related death, 1 out of 8 U.S. women will develop invasive breast cancer over the course of her lifetime. Among all breast cancer cases, 20% to 25% make too much of protein known as human epidermal growth factor receptor 2 (HER2). These breast cancers are known be fast growing and much more aggressive than other types of breast cancer. Treatment using Trastuzumab, which blocks HER2 action, is the most common therapeutic option for HER2-positive breast cancer. Although this drug therapy is believed to be the most significant advance in breast cancer therapeutics, 70% of the HER2-positive breast cancer patients develop resistance to Trastuzumab. Therefore solving de novo Trastuzumab resistance is most critical in curing HER2-positive breast cancer.

Controlling drug resistance solves aggressive breast cancer cases

Due to the prevalence of Trastuzumab resistance in HER2-positive breast cancer, controlling the drug resistance would be the most effective strategy to solve invasive breast cancer cases. Based on the recent research, increase of interleukin-6 (IL-6), a pro-inflammatory molecule, causes Trastuzumab resistance. Therefore, regulating IL-6 level can effectively prevent the drug resistance. This technology enables early detection of IL-6 level as an indicator of Trastuzumab resistance, and using combination of an IL-6 antibody and other inhibitors for cell growth can bring an effective therapeutic solution for patients who will become resistant to Trastuzumab.

Advantages

• The new technology complements the most commonly practiced drug treatment for breast cancers by early detection and prevention of drug resistance
• Combination of IL-6 antibody treatment with other cell growth inhibitors is a stronger tumor suppressor

Applications

• A drug therapy for breast cancers
• A cure and prevention for Trastuzumab resistance
• The strategy behind the invention can be used as a treatment option for other types of cancers that show pathological increase of HER2
Inventors

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