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Pan-HER-targeted approach for cancer therapy: mechanisms, recent advances and clinical prospect

Wang Manni, Yuzhu Hu, Yu Ting, Ma Xuelei, Wei Xiawei, Wei Yuquan

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Abstract

The Human Epidermal Growth Factor Receptor family is composed of 4 structurally related receptor tyrosine kinases that are involved in many human cancers. The efficacy and safety of HER inhibitors have been compared in a wide range of clinical trials, suggesting the superior inhibitory ability of multiple- HER-targeting blockade compared with single receptor antagonists. However, many patients are currently resistant to current therapeutic treatment and novel strategies are warranted to conquer the resistance. Thus, we performed a critical review to summarize the molecular involvement of HER family receptors in tumour progression, recent anti-HER drug development based on clinical trials, and the potential resistance mechanisms of anti-HER therapy.