## A Novel Method for Treating Drug-Resistant Lung Cancer Using a Combination of Antibodies (Yeda)

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Yosef Yarden, Biology, Biological Regulation

## Summary

A novel method for treating tyrosine kinase inhibitor (TKI)-resistant cancer, by using a combination of three different antibodies.Lung cancer is known as one of the most fatal forms of cancer. Notably, standard treatments for other cancer types (e.g. TKIs and mAbs), have shown only a limited effect on this specific malignancy. The reason is that lung cancer cells regularly acquire resistance through multiple compensatory mechanisms, including secondary (new) mutations in receptors which block the effects of TKIs; up-regulation of specific genes; or rewiring of signaling networks. The current technology works around these compensatory mechanisms by using a mixture of antibodies that function in a synergistic manner, to effectively and specifically target lung cancer cells, without affecting healthy cells.

## Applications

Treatment of non-small cell lung cancer (NSCLC). A method for augmenting currently available TKIs.

## Advantages

**Specificity** - treatment was able to target EGFR-mutated NSCLC cancer cells, and showed no effect on healthy cells. **Effective** - able to strongly inhibit NSCLC cancer cell lines and inhibit xenografted NSCLC cells in a mouse model. **Novel Approach** - utilizing data derived from both clinical and laboratory research to devise a method for counteracting compensatory mechanisms of cancer cells.

## Technology's Essence

Prof. Yosef Yarden and his group have discovered that by simultaneously inhibiting multiple receptors, namely HER2 and HER3 along with EGFR, they could effectively circumvent the compensatory mechanisms and inhibit NSCLC cell growth. This was determined using a combination of clinical, in vitro, and in vivo data. In addition, in vivo experimental work included xenograted mouse models where only the triple combination of antibodies effectively reduced tumor volume relative to standard mAb treatments.

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