National Human Genome Research Institute (NHGRI)

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Human Melanoma Cell Lines with ERBB4 Mutations

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Key Words

Melanoma, Protein Tyrosine Kinases, Small Molecule Inhibitors, Cell Lines, ERBB4

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Summary

Protein tyrosine kinases (PTKs) are frequently mutated in a variety of cancers, including melanoma. Using high throughput gene sequencing, NHGRI researchers have analyzed PTKs in melanoma and identified several novel somatic alterations, including those in PTK ERBB4 (v-erb-a erythroblastic leukemia viral oncogene homolog 4, also called HER4). These mutations were found to increase the sensitivity of cells in which they reside to small molecule inhibitors, such as lapatinib. Cell lines harboring these mutations have also been developed and can be used to identify specific inhibitors to ERBB4, as well as to improve existing melanoma treatments.

Potential Commercial Applications

The developed cell lines could be used to further understand the biology of ERBB4, such as its effects on growth, motility, invasion, and metabolite production. They could also serve as a platform for high throughput drug screening to identify and test ERBB4 inhibitors, which, in turn, could be used as cancer (e.g., melanoma) therapeutics. Additionally, these cell lines could assist in the development of diagnostic assays for the detection of ERBB4 mutations.

Related Article

Prickett et al., *Analysis of the Tyrosine Kinome in Melanoma Reveals Recurrent Mutations in ERBB4*, 41 Nature Genetics 1127 (2009).
http://www.nature.com/ng/journal/v41/n10/pdf/ng.438.pdf