



BRAF (V600E) Zeta-Antibody ZR6 in Human Neoplasms

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SUMMARY:

The mutationally activated BRAF encoding the constitutively active BRAF-V600E oncoprotein is the most frequent oncogenic driver in melanoma. The BRAF Zeta-Antibody clone ZR6 readily assesses the BRAF-V600E oncoprotein in formalin-fixed and paraffin-embedded tissue sections.

The RAF serine/threonine kinases have been delineated to feed-forward the MAPK signaling pathway mediating mitogenic cellular activity and cell division via the RAS/RAF/MEK/ERK/ELK cascade.^{1,2} Originally identified as *v-raf* in 1983, the oncogenic potential of RAF kinases became clear in 1984.² In 2002, frequent point mutations of the *BRAF* gene were reported in various human cancers at lower frequencies but in 66% of malignant melanoma wherein the BRAF (V600E) mutation accounted for 80% (Fig. 1).³

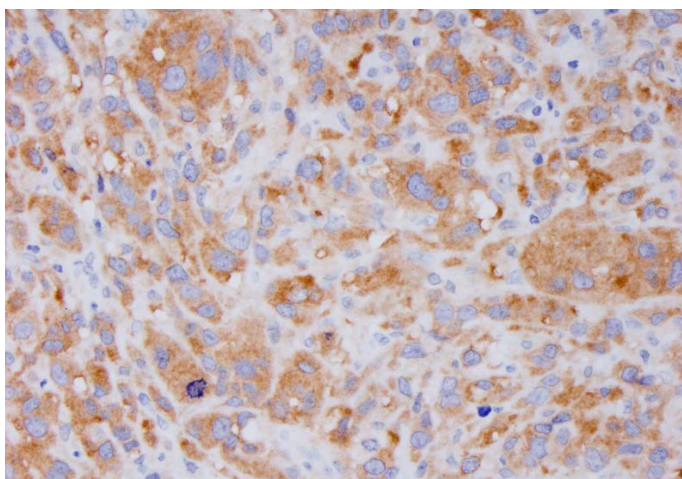


Figure 1: BRAF (V600E) Zeta-Antibody ZR6. IHC staining by BRAF (V600E) (ZR6) in human melanoma. Image property of Zeta Corporation.

In BRAF (V600E)+ melanoma, the upstream RAS kinase activity is not required for cellular division, indicating BRAF (V600E) as a distinct and defining driver of malignant disease progression in melanoma.³

Although BRAF (V600E)+ mutation in malignant melanoma is prevalent, the BRAF gene encoding the V600E mutant has been identified in other solid tumors such as thyroid cancer, bladder urothelial cancer, chronic lymphocytic leukemia, colorectal cancer, glioblastoma multiforme (GBM), head and neck squamous cell carcinoma, renal papillary cell carcinoma, hepatocellular carcinoma, lung adenocarcinoma, and lymphoma.⁴

The BRAF (V600E) Zeta-Antibody ZR6 recognizes the mutated valine V600 changed to the highly polar and acidic glutamate E sidechain $-\text{CH}_2-\text{CH}_2-\text{COO}^-$ typically physiologically ionized (Fig. 2).

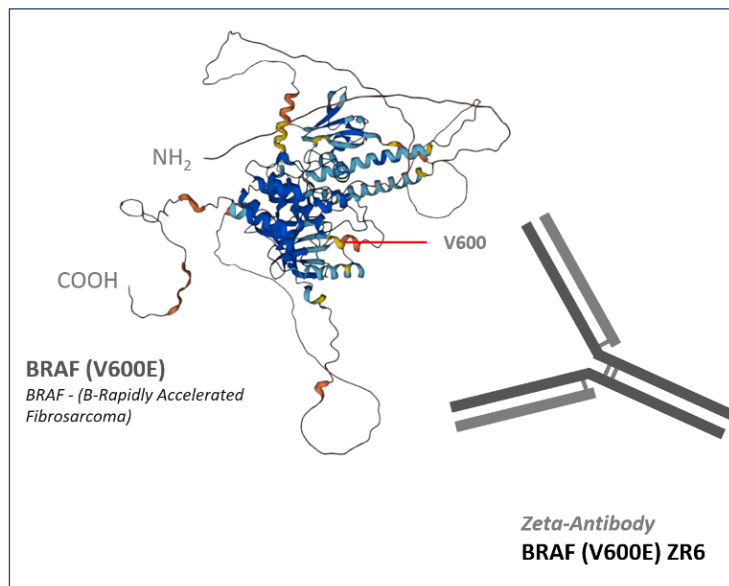


Figure 2: BRAF Zeta-Antibody ZR6 epitope mapping to BRAF (V600E). Antigen recognition by ZR6 illustrated. – Illustration courtesy of A. Herrmann.⁵

In the young history of BRAF (V600E) antibodies with the first one discovered in 2011,⁵ the Zeta BRAF (V600E) Antibody clone ZR6 represents a new and favorable option in the detection of BRAF (V600E) in malignant melanoma and other malignancies..

References:

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