Development of a Clinical Trial Immunohistochemistry (IHC) Assay Using a Novel Antibody to CD38

Authors: [1]Karen Wakamiya, [1]Marsha Hudson, [1]Hayley Finkelstein, [1]Mai Nguyen, [1]Sara Alvarez, [1]Brad Neill, [1]Josette William, [1]Debra Hanks, [1]Malinka Jansson, [1]Adam Northrup, [2]John Alvarez, [1]Emin Oroudjev; [1]Agilent Technologies, Carpinteria, CA, USA, [2]Janssen Research & Development, LLC, Raritan, NJ, USA

Background:

CD38 is a type II transmembrane glycoprotein expressed on normal lymphoid and myeloid cells and can be highly expressed in hematologic malignancies. An IHC prototype assay was developed to detect CD38 expression in formalin-fixed, paraffin-embedded (FFPE) tissue specimens from three relapsed or refractory non-Hodgkin's lymphoma (NHL) subtypes: diffuse large B-cell lymphoma (DLBCL), follicular lymphoma (FL) and mantle cell lymphoma (MCL) for selection of patients for treatment with daratumumab in a Phase 2 clinical trial (NCT02413489).

Methods: This assay is based on EnVision FLEX IHC technology using CD38, clone DAK-CD38, primary antibody that has been developed and manufactured by Agilent Technologies. The assay staining protocol was developed for Dako PT Link and Autostainer Link 48. Specificity of DAK-CD38 staining was demonstrated by Western blot analysis of cancer cell lysates, as well as IHC on both normal and cancer tissue. Assay precision and robustness were evaluated using commercially procured FFPE DLBCL, FL and MCL specimens.

Results: CD38 IHC DAK-CD38 detected a broad range of CD38 expression in DLBCL, FL, and MCL specimens. FFPE specimens derived from cancer cell lines exhibited a range of IHC staining intensity and confirmed the reported expression of CD38 in the scientific literature. All precision and robustness results met acceptance criteria for both IHC intensity and percent positive cells staining.

Conclusion: Our studies demonstrate that the Dako CD38 IHC DAK-CD38 assay is sensitive, specific, precise, and robust for the detection of CD38 expression in DLBCL, FL and MCL. This assay may also have the potential to be used for the detection of CD38 in additional tumor types.