

## **SuperNova dye SNv650 conjugates performance on different sample types for various immunological and cellular studies**

**Introduction:** Beckman Coulter Life Sciences introduces SuperNova (SN) v650, the fourth addition to their SN dye family, which includes SNv428, SNv605, and SNv786. SNv650 has a maximum excitation of 414 nm and an emission maximum of 646 nm, detected using the 660/30 bandpass filters of a flow cytometer. SNv650 polymer dye conjugates are produced under manufacturing controls consistent with GMP. These dyes exhibit minimal non-specific staining due to their proprietary formulation, providing greater confidence in flow cytometry results. This study evaluates the performance of SNv650 dye conjugates in combination with other SuperNova dyes across different sample types and lysing conditions. The goal is to assess the compatibility of SNv650 conjugates with various workflows, supporting multiple immunological and cell-based research applications.

**Methods:** Three lots of SuperNova conjugates were produced and stained on whole blood specimens and were compared against commercially available polymer dye conjugates at their recommended doses. SNv650 conjugates were tested along with other SuperNova and classical dye conjugates in a multicolor panel to assess performance in both single-color and multicolor settings. Various workflows, fragile sample types, and processing reagents were tested with SNv650 conjugate-containing panels to evaluate the impact on performance. These studies were performed on a Beckman Coulter Life Sciences flow cytometer.

**Results:** Median fluorescence intensity, percentage recruitment of positive cells, stain index, and non-specific binding on negative populations were analyzed. All three lots of SuperNova conjugates showed significantly higher stain indices compared to commercial conjugates. SNv650 conjugates demonstrated equivalent performance in single-color and multicolor panels, including other fluorochromes like FITC, PE, etc., without affecting the characteristics of other markers. A distortion matrix was developed to guide users for compensation in multicolor panels. When SNv650 conjugates were tested on whole blood specimens using different Beckman Coulter Life Sciences lysing solutions, the lymphocyte purity was consistently over 75%, with no significant differences across protocols.

**Conclusion:** This study highlights the superior performance of SNv650 conjugates compared to other polymer dyes, showcasing their application in various workflows and panels. SuperNova conjugates offer enhanced brightness with minimal non-specific staining, improving the identification of low-intensity antigens and rare populations. With the addition of SNv650, we can now fill all 13 channels of the CytoFLEX flow cytometer, making a comprehensive range of reagents available for advanced flow cytometry applications.