

Cloudbreak Chemistry from Element Biosciences: Higher accuracy, shorter run times, simplified workflow

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In 2022, Element Biosciences launched the AVITI, a new DNA sequencing platform based on a new technology, avidity sequencing. Avidity sequencing was built on several key pillars, including novel flow cell surface chemistry with high signal to noise, polony generation with rolling circle amplification, advanced algorithms for polony detection, and avidite technology which enables base detection at 100-fold lower reagent concentrations. The combination of these advances enabled the platform to produce data at higher accuracy than SBS-based platforms at lower cost per gigabase. Element Biosciences is now releasing the next iteration of the AVITI sequencing reagents, Cloudbreak chemistry. With this new chemistry, avidity sequencing has been refined to further improve accuracy, reduce runtimes, and improve overall ease of use. First, a new enzyme improves accuracy at the end of read 2, laying the groundwork for a planned 2x300 cycle kit. Run configurations and cycle times have also been further optimized. Upfront indexing provides early demux reporting, allowing faster assessment of run quality. Shortened detection cycles reduce run times by 20%, such that 2x150 runs now complete in 38 hours. In addition, the AVITI system can now complete on-board circularization of AVITI-native Elevate libraries, with no increase to run times. Finally, the shelf life of reagents has been doubled to 12 months, easing inventory management. Overall, these chemistry and run configuration enhancements builds on the value proposition of providing higher accuracy data at lower cost with improved batching flexibility across a wide range of sequencing applications.