THE TECHNOLOGY

The PacBio RS uses Single Molecule Real-Time (SMRT) technology. SMRT technology harnesses the natural process of DNA replication, which is a highly efficient and accurate process. The enzyme responsible for replicating DNA in nature is called the DNA polymerase. The DNA polymerase attaches itself to a strand of DNA to be replicated, examines the individual base at the point it is attached, and then determines which of four building blocks, or nucleotides, is required to replicate that individual base. After determining which nucleotide is required, the polymerase incorporates that nucleotide into the growing strand that is being produced. After incorporation, the enzyme advances to the next base to be replicated and the process is repeated. SMRT technology enables the observation of DNA synthesis as it occurs in real time.

THE PRODUCT

PacBio RS

The PacBio RS sequencing technology resolves single molecules in real time, allowing observation of structural and cell type variation not accessible with other technologies. The instrument features high performance optics, automated liquid handling, and an environmental control center, all directed through an intuitive touchscreen interface. Also included is a Blade Center, the computational brain responsible for primary data analysis and an informatics suite, for more advanced analyses. The instrument is designed with maximum scalability. This allows for seamless integration of performance enhancements through chemistry and software advances. The PacBio RS system is ideally suited for a variety of applications, from De Novo assembly and targeted sequencing to detecting base modifications.