

THE TECHNOLOGY

The PaBio *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.

Patents	US 5,867,266, US 6,214,246
Issued	Feb 2, 1999, Apr 10, 2001
Inventor	Harold Craighead
Patents	US 6,635,163, US 7,427,343, US 7,918,979
Issued	Oct 21, 2003, Sep 23, 2008, Apr 5, 2011
Inventors	Harold Craighead & Jongyoon Han
Patent	US 6,438,279
Issued	Aug 20, 2002
Inventors	Harold Craighead, Mathieu Foquet & Warren Wright
Patents	US 6,753,200, US 7,316,769, US 7,833,398
Issued	Jun 22, 2004, Jan 8, 2008, Nov 16, 2010
Inventors	Harold Craighead & Stephen Turner
Patents	US 7,056,661, US 7,033,764, US 7,052,847, US 7,056,676, US 7,361,466,
	US 7,416,844, US 7,943,307, US 7,485,424, US 7,943,305
Issued	Jun 6, 2006, Apr 25, 2006, May 30, 2006, Jun 6, 2006, Apr 22, 2008,
	Aug 26, 2008, May 17, 2011, Feb 3, 2009, May 17, 2011
Inventors	Harold Craighead, Mathieu Foquet, Jonas Korlach,
	Michael Levene, Stephen Turner & Watt Webb
Patents	US 6,917,726, US 7,013,054, US 7,181,122, US 7,292,742
Issued	Jul 12, 2005, Mar 14, 2006, Feb 20, 2007, Nov 6, 2007
Inventors	Harold Craighead, Jonas Korlach, Michael Levene, Stephen Turner & Watt Webb
Licensee	Pacific Biosciences of California, Inc.



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.

