

Sanger DNA Sequencing for Research

Trusted partner for superior long read capillary sequencing data



Still the gold standard technique for decoding DNA, Sanger sequencing remains irreplaceable for a number of specific experimental needs. Beckman Coulter Genomics is dedicated to fulfilling researchers Sanger sequencing needs with its superlative, high-throughput Sanger pipeline. This automated pipeline enables rapid delivery of long reads of the highest quality. Sanger sequencing services are available for applications ranging from QuickLane rapid turnaround sequencing to sequencing for SNP discovery to whole genome finishing with publication quality results.

The Process

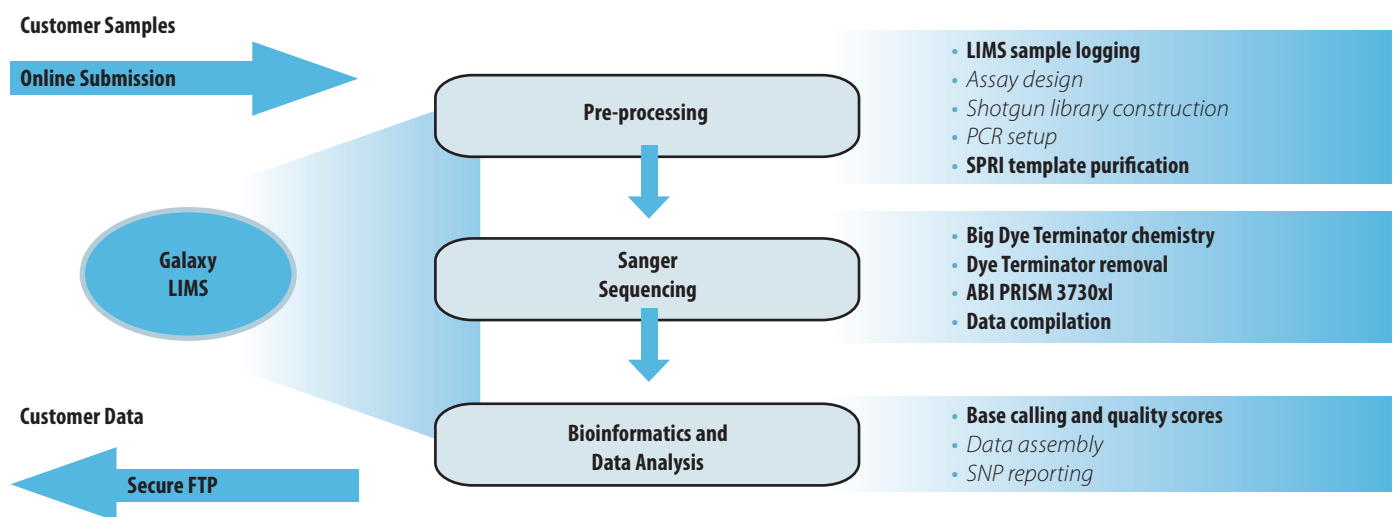
Beckman Coulter Genomics brings together the expertise and capacity of Agencourt Bioscience and Cogenics and provides customers worldwide with highly-automated Sanger sequencing pipelines in Beverly, Massachusetts and Takely, England. Upstream processes are powered by Beckman Coulter automation and patented Solid Phase Reversible Immobilization (SPRI) paramagnetic bead-based technology. SPRI solutions facilitate the routine delivery of very high quality Sanger sequencing data and process automation allows the delivery of cost savings to customers. Capillary sequencing is performed using Big Dye* Terminator chemistry and sequences are delineated with Applied Biosystems 3730xl platforms.

Beckman Coulter Genomics Galaxy LIMS system tracks samples from submission to data delivery for uncompromised sample and data integrity. Every project is assigned a dedicated Project Manager for the life cycle of the project to oversee the successful and timely completion of the project and to provide customer support. Data, including base-calling and quality score reports, is delivered via secure FTP site.

Sanger Sequencing Services

Beckman Coulter Genomics offers a full range of sequencing services for individual samples and high-throughput projects.

- QuickLane Rapid Turnaround Sequencing
- Primer Walking and Genome Finishing
- Large and Small Insert Sequencing
- BAC and Fosmid Insert and End Sequencing
- SNP Discovery and Resequencing
- cDNA Transcript Sequencing



Items in italics are project specific and may not apply to all services.

Using validated methods to produce high-quality raw data
 Transform high-quality raw data into biologically meaningful information

We Get It.

Results

Phred 20 read lengths depend on the template type and electrophoresis conditions, but typically range between 550 and 800 bases with pass rates between 85 and 95% (PCR† based reads are limited by amplicon length). Data delivery is overseen by a Beckman Coulter Genomics Project Manager. Compiled data is available in FASTA, .AB1, SCF and .QUAL formats.

Strategically Applying Sanger Sequencing to Research QuickLane Sequencing

- Only Sanger sequencing supports the rapid turnaround of data for individual research samples. Beckman Coulter Genomics QuickLane sequencing pipeline allows for the fast and reliable generation of sequence data from purified PCR products and both low copy and high copy plasmid templates using customer-provided primers or free universal primers. High quality sequencing reads with accompanying quality score reports are delivered via FTP site within 24 hours of sample receipt.

Whole Genome Finishing: Fosmid Sequencing and Primer Walking

- Sanger DNA sequencing remains an invaluable tool in whole genome sequencing. Beckman Coulter Genomics experts have shown that supplementing Next Generation genome sequencing with 1x coverage of fosmid sequencing leads to significantly improved assemblies. Proven Sanger genome finishing strategies remain imperative to achieving gap closure, publication quality sequence or a finished genome sequence. Custom primer walking and directed paired end Sanger sequencing maximizes the resolution of repeat sequences and level of contig ordering.

SNP Discovery and Resequencing - The goal and scope of a SNP detection project is often best met by coupling Beckman Coulter Genomics unmatched experience in SNP assay design with its high-throughput Sanger sequencing pipeline. The >95% success rate of Beckman Coulter Genomics fully-automated software for candidate gene driven assay design is just part of a SNP sequencing solution that allows results to be delivered in a timely and cost effective manner. All Sanger SNP templates undergo bi-directional sequencing to aid in the analysis of insertion/deletions and microsatellite mutations; two challenging mutation types when analyzing Next Generation SNP data.

* Trademarks are property of their respective owners.

† The PCR process is covered by patents owned by Roche Molecular Systems, Inc., and F. Hoffman-La Roche, Ltd.

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For more information, please visit our website at www.beckmangenomics.com or contact your local sales representative.

Demonstrated Expertise

Beckman Coulter Genomics has contributed high quality Sanger sequencing data to the Human Genome Structural Variation Project, the Mammalian Gene Collection (MGC) and the Cancer Genome Anatomy Project (CGAP) as well as eleven major genome projects, including human.

Collaborative efforts between Beckman Coulter Genomics and world-renowned scientists at Johns Hopkins University leveraging our high-throughput Sanger SNP sequencing pipeline to sequence the entire human exome have led to ground-breaking publications in cancer research:

Core signaling pathways in human pancreatic cancers revealed by global genomic analyses. *Science*. 2008 Sep 26;321(5897):1801-6.

An integrated genomic analysis of human glioblastoma multiforme. *Science*. 2008 Sep 26;321(5897):1807-12.

The genomic landscapes of human breast and colorectal cancers. *Science*. 2007 Nov 16;318(5853):1108-13.

The consensus coding sequences of human breast and colorectal cancers. *Science*. 2006 Oct 13;314(5797):268-74.

Regulated Sequencing

Beckman Coulter Genomics also offers Sanger solutions for projects requiring regulated sequencing. The Beckman Coulter Genomics facility in Morrisville, North Carolina provides a full spectrum of CLIA-compliant sequencing services to support the efforts of re-sequencing and discovery and validation of SNPs, and is GLP and GMP certified for FDA submissions. If you have a sequencing project requiring regulatory compliance please contact your Beckman Coulter Genomics sales representative or visit www.beckmangenomics.com for details.

Complete Solutions from Discovery to Validation

Combine Sanger DNA sequencing with other Beckman Coulter Genomics services for complete research solutions. Apply your SNP discovery data to large scale Genotyping studies. Use your newly sequenced reference transcriptome to design high-throughput microarray experiments. Initiate your experiment with DNA and RNA extraction services. Contact Beckman Coulter Genomics to discuss complete solutions for your research project.

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