Next-Generation Sequencing (NGS) Center of Excellence

Avance Biosciences' NGS Center of Excellence is dedicated to delivering high-quality, CGMP/GLP-compliant sequencing solutions to support every stage of biopharmaceutical development, from discovery through clinical validation and testing.Our mission is to unite advanced sequencing expertise to maximize efficiency, foster innovation, provide cutting-edge support for drug development and manufacturing, ensuring we stay agile ina rapidly evolving industry.

Next-Gen and Third-Gen Sequencing Platforms

Equipped with leading platforms, including Illumina, PacBio, Oxford Nanopore, Element AVITI™, and 10x Genomics, we offer unmatched expertise in vector characterization, transgene expression, CRISPR analysis, biodistribution, and release testing. Our integrated approach ensures precise, reliable data to accelerate regulatory submissions, enhance product safety, and advance innovative therapies from research through commercialization.

Short-Read Sequencing

Illumina MiSeq

Illumina NextSeq 550

Element AVITI

Long-Read Sequencing

Nanopore MinION

PacBio Vega

Single-Cell Sequencing

10x Chromium X

Mission Bio Tapestri

NGS Library Automatic Preparation Platforms

Eppendorf epMotion

Tecan Air LiHa 100

Tecan Air LiHa 150

DNA Sequencing	RNA Sequencing	Epigenome
Whole Genome Sequencing (WGS)	Poly(A) / Transcriptomics (RNA-seq)	Whole Genome Bisulfite
Exome Sequencing	Total RNA Sequencing	Reduced Representation Bisulfite
Targeted / PCR-based Sequencing	Single-Cell Expression & Immune Profiling	Chromatin Immunoprecipitation (ChIP-seq)
Metagenomic Sequencing	Metatranscriptome Sequencing	RNA Immunoprecipitation
Plasmid/Vector Sequencing	Gene Therapy Vector Sequencing	Enzymatic Methyl
Digital Southern	Isoform Sequencing	ATAC-Seq
Integration Site Analysis	Long ncRNA Sequencing	
	Adventitious Agent Testing	
	mRNA-Based Therapy	

Bioinformatics Pipeline Portfolio

Comprehensive NGS-Based Solutions for Therapeutic Development and QC

Identity Testing – Rigorous verification of plasmids, viruses, sgRNAs, oligos, cDNA, and cell bank IDs using short- and long-read sequencing.Genome Editing Analysis – Quantification of on-target edits (rhAmpSeq, GUIDE-seq, SITE-seq, ITR-seq, amplicon sequencing), off-target event detection, and structural variant assessment.

Viral Vector & Integration Site Mapping – Single-cell viral transduction analysis, lentiviral insertional mutagenesis, GMP/GLP integration site studies, and random plasmid integration detection.

Adventitious Agent & Contamination Surveillance – Sensitive detection of bacteria, viruses, and phages; plasmid contamination QC; microbial profiling for biosafety assurance.

Functional Genomics & Expression – Global and targeted mRNA/miRNA expression profiling, oncogene screening in iPSCs, enhancer modification analysis (e.g., BCL11A).

Specialized Clinical-Grade Assays – Quantification of modified loci, NPM1 mutation detection, translocation analysis, potency assays, vector genome copy number, and regulatory-ready GMP pipelines.

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