

ABOUT

Covaris, a PerkinElmer Company, is a leader in sample preparation solutions across multiomics research and clinical applications. Powered by proprietary Adaptive Focused Acoustics[®] (AFA[®]) technology, our portfolio of advanced instruments, consumables, reagents, and kits for pre-analytical sample preparation deliver exceptional accuracy and reproducibility, enabling researchers to generate higher-quality data, develop novel assays, and drive breakthrough discoveries in life sciences. From academic labs to global biopharma organizations, Covaris is trusted by scientists who demand precision at every step of the analytical workflow. Learn more at www.covaris.com.

INDUSTRY TALK



Dr. Prasad Chikte, Senior Territory Sales Manager

Covaris AFA (Adaptive Focused Acoustics) technology beyond DNA fragmentation: Streamlined, scalable, and comprehensive sample preparation workflow solutions for multi-omic analyses from any sample type.

Reproducible genomic and proteomic analysis depends on reliable pre-analytical sample preparation, the most common source of uncontrolled variability in any validated workflow. Covaris addresses this bottleneck by pairing its proprietary Adaptive Focused Acoustics[®] (AFA[®]) technology with a scalable instrument line and an extensive family of application-specific reagent kits for optimized multi-omic sample preparations.

AFA mechanism is delivered through a tiered instrument line from single-tube handling, over mid-, to high-throughput and automatable devices. The R230, an on-deck focused-ultrasonicator designed for robotic integration, has become the anchor instrument for our workflow solutions.

Genomics. The truCOLLECT[®] Solution extends AFA-based sample preparation upstream to the point of collection. It pairs a Whole Blood Collection Kit enabling a metered 50 μ L

fingerstick capillary draw into a closed collection/extraction vessel with Covaris's proprietary chemistry, which immobilizes, desiccates, and stabilizes whole blood at ambient temperature, eliminating cold-chain shipping and storage. The companion truCOLLECT DNA Extraction Kit then uses the R230 and AFA to perform rehydration, cell lysis, and magnetic bead-based purification of genomic DNA from the desiccated sample, processing up to 96 samples per run. Covaris reports consistent DNA recovery in the range of 1,4ug DNA and 40kb across a 94-sample cohort using this workflow. Because truCOLLECT is explicitly designed to pair with truCOVER Library Preparation kits, it offers a continuous path from at-home or field blood collection through to sequencing-ready NGS libraries, aimed at decentralized and population-scale genomic studies.

truCOVER WGS DNA Library Prep Kit deliver high quality libraries from 10–500 ng of input across blood, saliva, FFPE, and microbial DNA in a PCR-free workflow. The accompanying Library Amplification Kit allows input down to 0.1ng DNA. The truCOVER Total RNA Library Prep Kit allows input of 10–500 ng of total RNA from any sample source, and is compatible with degraded FFPE-derived RNA down to DV200 values of 30%.

Covaris also provides solutions for epigenomic sample preparations. This includes workflows for methylation analyses (including TAPS like 5-base, TAPS+, DUET etc) The truChIP Chromatin Shearing Kit allows for reproducible chromatin shearing from cultured mammalian cells and, in an FFPE variant, fixed tissue.

Proteomics. The truPREP® product line brings AFA-energetics to enable streamlined workflows for extraction, lysis, and digestion for Mass Spec analyses. Again, the solutions are scalable and automatable over a range of AFA instruments, from single samples up to high-throughput in 384 format. For fixed tissue, the truPREP Protein FFPE Kit offers three modular options for the full workflow solution for sample preparation for MS.

FFPE samples. The truXTRAC® FFPE SMART Solutions use AFA to recover DNA, RNA, or protein from fixed and embedded tissues, achieving tissue rehydration, paraffin emulsification, and de-crosslinking without toxic solvents. This results in very high

recover as well as quality of bioanalytes. Paired with the truCOVER DNA/RNA library prep kits, Covaris has optimized the full workflows for genomic analyses.

Collectively, Covaris's technology stack constitutes a vertically integrated pre-analytical platform: a physical mechanism (AFA) for non-contact, temperature-controlled acoustic processing; a complementary mechanical mechanism (dry cryopulverization) for upstream tissue disruption; a scalable instrument line spanning single-tube research use through 384-well robotic automation; and an application-matched set of consumables and chemistries covering genomics, epigenomics, proteomics, cell biology, FFPE pathology, and decentralized blood collection. By addressing sample preparation as a controllable, reproducible, and automatable unit operation rather than a source of unavoidable pre-analytical noise, the platform aims to close the gap between raw biological specimens and the high-quality analytes required for downstream sequencing, proteomic, and diagnostic technologies.