

ABOUT

At Illumina, our mission is to improve human health by unlocking the power of the genome. Our sequencing by synthesis chemistry is used to generate high-accuracy sequence data in studies around the globe. Our microarrays also provide accurate, high-throughput genotyping for a range of applications. The innovative products that we provide are facilitating breakthroughs in many scientific areas, including oncology, reproductive health, genetic disease, precision medicine, agriculture, microbiology, and beyond. The progress we see being made in genomics inspires us to push the boundaries of what is possible so we can create the next generation of genomics solutions.

INDUSTRY TALK



Dr. Christina Schäfer - Senior Technical Sales Specialist

Unlocking Biological Discovery Through Multiomics: The Illumina Insight Ecosystem

Biological systems are inherently complex, and answering today's most important research questions requires more than a single layer of information. Multiomics is transforming life science research by integrating genomic, epigenomic, transcriptomic, proteomic, single-cell, spatial, and liquid biopsy data to provide a more comprehensive understanding of biology and disease.

Recent Illumina innovations are expanding the reach of multiomics through a connected ecosystem that combines advanced assays, scalable sequencing platforms, analytics, and AI-powered interpretation. Researchers can generate and integrate insights across DNA, RNA, protein, and epigenetic layers through end-to-end research workflows spanning bulk tissue, single-cell, and spatial applications. Solutions including Illumina Single Cell, Illumina Spatial, 5-base genomic and epigenomic analysis, NGS-based proteomics, DRAGEN™ pipelines, and Illumina Connected Multiomics provide a unified framework for multimodal discovery. These capabilities are part of Illumina's broader vision to create an Insight Ecosystem that connects assays, sequencing, software, AI, and data.

A key differentiator of the Illumina approach is the ability to combine multiple biological modalities within a single analysis environment. By moving beyond isolated datasets, researchers can uncover relationships between genetic variation, gene expression, epigenetic regulation, protein abundance, and cellular context. Interactive visualizations, scalable workflows, robust statistical methods, and AI-assisted analysis accelerate the path from raw data to biological insight.

Illumina's vision extends beyond data generation to a connected ecosystem powered by large-scale multimodal datasets, AI-driven analytics, and foundation models. By integrating genomics, transcriptomics, epigenomics, proteomics, and advanced computational tools, researchers can achieve a more complete view of biology, accelerate biomarker and drug target discovery, and advance the future of precision medicine and human health.

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