Bionano Genomics Hosts Final Day of 2022 Symposium with Presentations Demonstrating the Combined Detection Power of OGM and NGS

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SAN DIEGO, Jan. 13, 2022 (GLOBE NEWSWIRE) -- Bionano Genomics, Inc. (BNGO), pioneer of optical genome mapping (OGM) solutions on the Saphyr® system and provider of N_XClinical™, the leading software solutions for visualization, interpretation and reporting of genomic data, capped off the last day of 2022 Symposium, the Company's premiere event showcasing OGM research applications across key clinical areas of constitutional genetic disease, hematologic malignancies, solid tumors and OGM combined with next-generation sequencing (NGS).

Today's presentations demonstrated that the combination of OGM and NGS can reveal more answers than NGS alone, with cost-effective, scalable, sensitive, accurate and comprehensive genome analysis for genetic disease and cancer research. NGS is unable to accurately measure structural variants (SVs), which can be overcome by the complementarity of OGM to enable accurate detection of variants from single base pairs to full chromosomes.

The combined approach of OGM and NGS changed the way researchers approached workflows for evaluation of hematologic malignancies. In his presentation, Dr. Ravindra Kolhe, from the Medical College of Georgia at Augusta University, shared a unique approach that added value to the existing NGS workflow by combining OGM with a 523-gene panel on NGS. The combination resulted in additional information beyond what a smaller 54-gene panel, karyotype and fluorescent in situ hybridization (FISH) could detect, including single-nucleotide variants (SNVs), copy number variants (CNVs) and translocations. Dr. Kolhe also shared one of the first visualizations of the combination of OGM and sequencing data using BioDiscovery's N_XClinical software, which enables a streamlined interpretation for both data types in an integrated simplified view for faster time to results.

In her presentation, Dr. Gordana Raca, from Children's Hospital Los Angeles, shared how OGM and capture-based transcriptome sequencing (RNA-Seq) enabled an increase in variant detection and molecular subtyping for previously unknown cases in pediatric B-cell acute lymphoblastic leukemia (B-ALL). Use of these techniques allowed discovery of novel fusions associated with pediatric B-ALL and helped elucidate the chromosomal mechanism through which these abnormal fusions were generated.

In a third presentation, Dr. Rashmi Kanagal Shamana, from MD Anderson Cancer Center, discussed a comprehensive assessment of a large myelodysplastic syndrome (MDS) cohort using OGM and a targeted NGS panel. Results showed that the high throughput whole genome structural variant profiling enabled by OGM revealed a much higher frequency of SVs in MDS, half of which were not detected by conventional karyotyping. These cryptic clinically significant SVs were seen in approximately 30% of MDS patients in her research study and resulted in change in the prognostic category for 10% of the subjects.

Applications of OGM + NGS to investigations of genetic disease revealed new disease-causing variants and showed improved performance over other methods. Dr. Kornelia Neveling, from Radboud University Medical Center, presented on how OGM and long-read HiFi genome sequencing helped to identify different types of hidden structural variants in three subjects with inherited retinal diseases.

Dr. Laila El-Khattabi, from Assistance Publique–Hôpitaux de Paris (AP-HP), presented findings from her study using OGM to characterize apparently balanced SVs found in people with developmental disorders. Their molecular characterization is essential to establishing proper genotype-phenotype correlations, which is not possible with current cytogenetic techniques. Short-read whole genome sequencing (srWGS) is capable of detecting balanced rearrangements, at a resolution down to one base pair, but has a high failure rate. Dr. El-Khattabi's results suggested that OGM may allow for a higher detection rate of SVs and complement srWGS in developmental pathologies for a more complete analysis of the genome.

In cancer research, OGM + NGS were used to characterize both germline and tumor genetic aberrations. During her presentation, Dr. Mariangela Sabatella, from Princess Máxima Center for Pediatric Oncology, described a case in which OGM revealed an underlying germline mutation in a family with two siblings who were neonatally diagnosed with atypical teratoid rhabdoid tumor (ATRT). This rare pediatric tumor is associated with biallelic inactivation of SMARCB1. Routine analysis did not identify any clear pathogenic SMARCB1 variants. OGM was the only method used by Dr. Sabatella that could identify the ATRT predisposing insertion of an SVA-E retrotransposon element of ~2.8 kb.

Dr. Jens Luebeck, from University of California San Diego, presented on how combining OGM and NGS revealed the complex structures of circular extrachromosomal DNA (ecDNA) and other genomic focal amplifications in cancer genomes, especially in tumors. These genetic changes are associated with lower patient survival and enhanced tumor evolution. Using a combination of OGM and NGS, Dr. Luebeck was able to reveal megabase-scale maps of ecDNA, ecDNA-derived homogenous staining regions (HSRs), and other focal amplifications in multiple cancer cell lines, demonstrating the combined power of these methods.

"We believe the combination of OGM with NGS demonstrates how structural variant detection can add key information to our understanding across multiple clinical areas, as today's sessions reflected," remarked Alka Chaubey, PhD, FACMG, Chief Medical Officer of Bionano. "As 2022 Symposium closes, we are so excited by all of the science shared and look forward to ongoing collaborations with our colleagues."

"Today's sessions support our belief that OGM can be performed side-by-side with NGS in multiple applications for a scalable and more comprehensive detection of genetic variants," commented Erik Holmlin, PhD, President and Chief Executive Officer of Bionano. "The quality of the research shared this week demonstrates the continued impactful application of OGM. Once again, I'd like to express my sincere gratitude to our customers for their continued collaboration and feedback."

The online conference center for 2022 Symposium will be available for the entire year so register now to view all the content! Symposium

registration is open to all and free, so everyone can experience all of the recorded presentations and posters from the event. Register today at https://www.labroots.com/ms/virtual-event/bngo2022.

About Bionano Genomics

Bionano Genomics is a provider of genome analysis solutions that can enable researchers and clinicians to reveal answers to challenging questions in biology and medicine. The Company's mission is to transform the way the world sees the genome through OGM solutions, diagnostic services and software. The Company offers OGM solutions for applications across basic, translational and clinical research. Through its Lineagen business, the Company also provides diagnostic testing for patients with clinical presentations consistent with autism spectrum disorder and other neurodevelopmental disabilities. Through its BioDiscovery business, the Company also offers an industry-leading, platform-agnostic software solution, which integrates next-generation sequencing and microarray data designed to provide analysis, visualization, interpretation and reporting of copy number variants, single-nucleotide variants and absence of heterozygosity across the genome in one consolidated view. For more information, visit www.bionanogenomics.com, www.lineagen.com or www.biodiscovery.com

Forward-Looking Statements of Bionano Genomics

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Words such as "may," "will," "expect," "plan," "anticipate," "estimate," "intend" and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances) convey uncertainty of future events or outcomes and are intended to identify these forward-looking statements. Forward-looking statements include statements regarding our intentions, beliefs, projections, outlook, analyses or current expectations concerning, among other things, the benefits of combining OGM with NGS, including cost-effectiveness, scalability, accuracy and comprehensiveness; the ability of the combination of OGM with NGS to accurately measure SVs; OGM's ability to complement srWGS; and the ability of structural variant detection to add to clinical findings in multiple areas. Each of these forward-looking statements involves risks and uncertainties. Actual results or developments may differ materially from those projected or implied in these forward-looking statements. Factors that may cause such a difference include the risks and uncertainties associated with: the impact of the COVID-19 pandemic on our business and the global economy; general market conditions; changes in the competitive landscape, including the introduction of competitive technologies or improvements in existing technologies; failure of future study results to support those demonstrated during the presentations referenced in this press release; changes in our strategic and commercial plans; our ability to obtain sufficient financing to fund our strategic plans and commercialization efforts; the ability of medical and research institutions to obtain funding to support adoption or continued use of our technologies; and the risks and uncertainties associated with our business and financial condition in general, including the risks and uncertainties described in our filings with the Securities and Exchange Commission, including, without limitation, our Annual Report on Form 10-K for the year ended December 31, 2020 and in other filings subsequently made by us with the Securities and Exchange Commission. All forward-looking statements contained in this press release speak only as of the date on which they were made and are based on management's assumptions and estimates as of such date. We do not undertake any obligation to publicly update any forward-looking statements, whether as a result of the receipt of new information, the occurrence of future events or otherwise.

CONTACTS
Company Contact:
Erik Holmlin, CEO
Bionano Genomics, Inc.
+1 (858) 888-7610
eholmlin@bionanogenomics.com

Investor Relations:
Amy Conrad
Juniper Point
+1 (858) 366-3243
amy@juniper-point.com

Media Relations:
Michael Sullivan
Seismic
+1 (503) 799-7520
michael@teamseismic.com

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