

Bionano Corporate Overview

MAY 8th 2024

bionano™



Safe harbor statement - This presentation 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,” “should,” “believe,” “would,” “could,” “potential,” “outlook,” “guidance,” “goal” and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances and the negatives thereof) 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: (i) our expectations regarding product uptake, revenue growth, market development and adoption of OGM, including growth in publications highlighting the utility and applications of OGM; (ii) our growth prospects and future financial and operating results; (iii) growth of our OGM system installed base and sales of our flowcells; (iv) increase in the adoption and utilization of OGM; (v) the impact of our investment in R&D and commercial and educational initiatives, including timely and successful launch of our planned product developments and clinical study results; (vi) our ability to stay in front of competitors’ improvements; (vii) our estimates of anticipated market opportunity and underlying assumptions; (viii) our quarterly and annual revenue outlook; (ix) the anticipated benefits and success of our collaborations; (x) the anticipated benefits of our cost savings initiatives and our ability to realize the planned savings; and (xi) other statements that are not historical facts.

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: (i) the impact of global and macroeconomic events, such as recent and potential future bank failures, inflation, supply chain disruptions, and the ongoing Ukraine-Russia and Israel-Hamas conflicts and related sanctions, on our business and the global economy; (ii) challenges inherent in developing, manufacturing and commercializing products; (iii) our ability to further deploy new products and applications and expand the markets for our technology platforms; (iv) third parties’ abilities to manufacture our instruments and consumables; (v) our expectations and beliefs regarding future growth of the business and the markets in which we operate; (vi) the accuracy of our estimates; (vii) our ability to obtain financing to fund our operations and continue as a “going concern”; (ix) the success of our cost savings initiatives and our ability to realize the planned savings; (x) the success of products competitive with our own; (xi) changes in our strategic and commercial plans; and (xii) the application of generally accepted accounting principles which are highly complex and involve many subjective assumptions. We are under no duty to update any of these forward-looking statements after the date of this presentation to conform these statements to actual results or revised expectations, except as required by law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this presentation. Except as required by law, neither we nor any other person assumes responsibility for the accuracy and completeness of the forward-looking statements contained in this presentation.

More information about these and other statements, risks and uncertainties is contained in our filings with the U.S. Securities and Exchange Commission, including, without limitation, our Annual Report on Form 10-K for the year ended December 31, 2023 and in other filings subsequently made by us with the Securities and Exchange Commission. All forward-looking statements contained in this presentation 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 except as required by law.

To supplement our financial results reported in accordance with U.S. generally accepted accounting principles (GAAP), we have provided certain non-GAAP financial measures, including gross margin and operating expense in this presentation. A description of these non-GAAP financial measures as well as a reconciliation to the nearest GAAP financial measures are included at the end of the Company’s earnings release issued associated with this presentation, which has been posted on the investor relations page of the Company’s website. Because of the non-standardized definitions of non-GAAP financial measures, the non-GAAP financial measures as used in this presentation and the associated reconciliation table have limits in its usefulness to investors and may be calculated differently from, and therefore may not be directly comparable to, similarly titled measures used by other companies. For certain non-GAAP financial measures we do not provide guidance for the most directly comparable GAAP measures and similarly we cannot provide a reconciliation between our most directly comparable GAAP measures without unreasonable effort due to the unavailability of reliable estimates for certain components which are not within our control and may vary greatly between periods and could significantly impact our financial results calculated in accordance with GAAP.

We believe that non-GAAP financial measures in this presentation are useful to investors and analysts as a supplement to our financial information prepared in accordance with GAAP for analyzing operating performance and identifying operating trends in its business. We believe these measures allow for greater transparency with respect to key financial metrics we use in assessing our own operating performance and making operating decisions. These non-GAAP financial measures are not meant to be considered in isolation or as a substitute for comparable GAAP measures and should be read in conjunction with our consolidated financial statements prepared in accordance with GAAP.

Bionano is transforming the way the world sees the genome, starting with cytogenetics

Pioneered a method for structural variant (SV) detection called optical genome mapping (OGM)

- **OGM consolidates 3 legacy methods** into one assay
- **It complements sequencing** as a new tool
- **Consistently finds more actionable variants** in days vs. weeks at a substantially lower cost
- **Bionano provides end-to-end solution** for structural variant detection

Commercial stage, tools & Dx company selling a platform for genome analysis

- **Strategic focus on the adoption and utilization** of OGM
- **Targeting 3 segments of genomics market:** cancer, cell and gene therapy, and constitutional genetic disease
- **Estimated OGM market:** \$10B and 10K labs running ~10M samples/year; 2.4M samples for cell and gene therapy

Executive Team



Erik Holmlin, PhD
President and Chief Executive Officer
Joined 2011



Gülsen Kama
Chief Financial Officer
Joined 2023



Mark Oldakowski
Chief Operating Officer
Joined 2014



Alka Chaubey, PhD
Chief Medical Officer
Joined 2020

Traditional methods in use today for SV detection are outdated and leave a significant number of questions unanswered

Traditional cytogenetics requires multiple methods that are labor intense, time-consuming, repetitive & costly



Karyotyping

Up to 4 weeks for results



FISH

(fluorescence *in-situ* hybridization)

4-6 different probes per sample & successive testing



Microarrays

Detect CNVs only

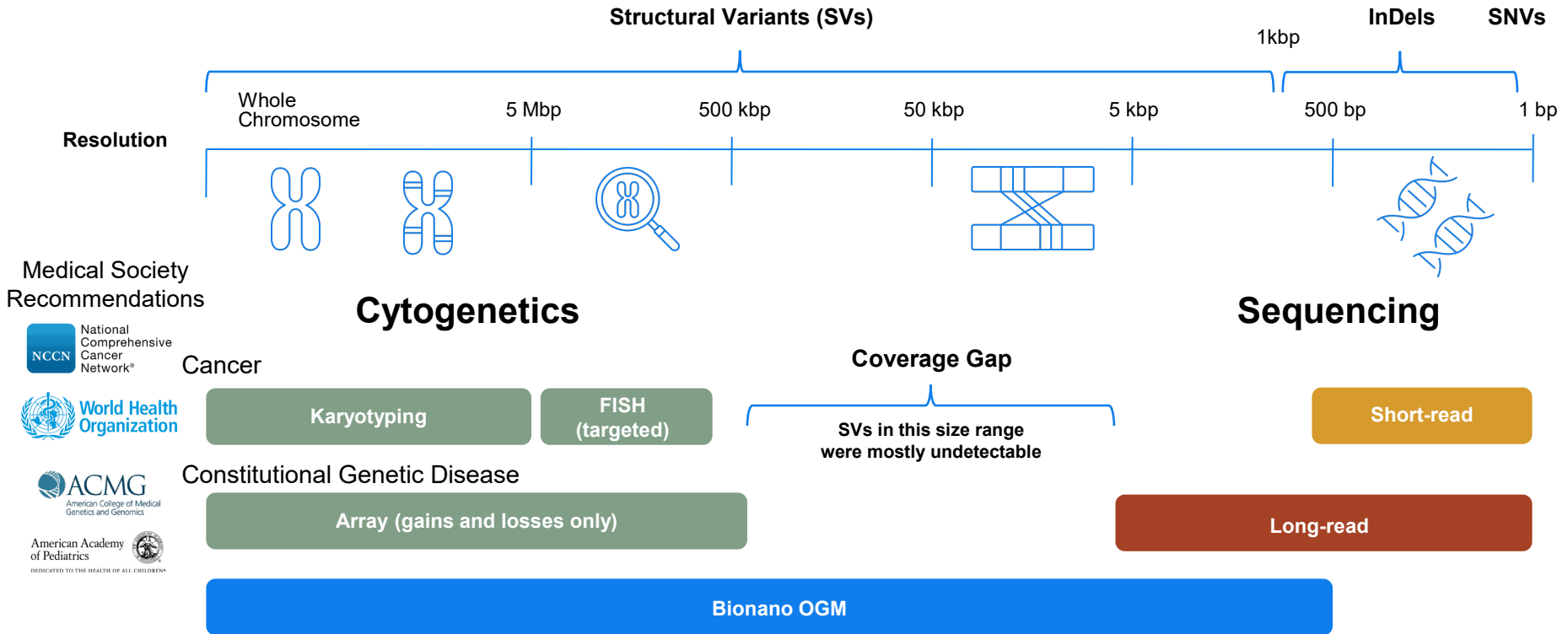
Clinical utility of traditional cytogenetic analysis is severely limited

Only 50% of testing is useful for guiding therapy

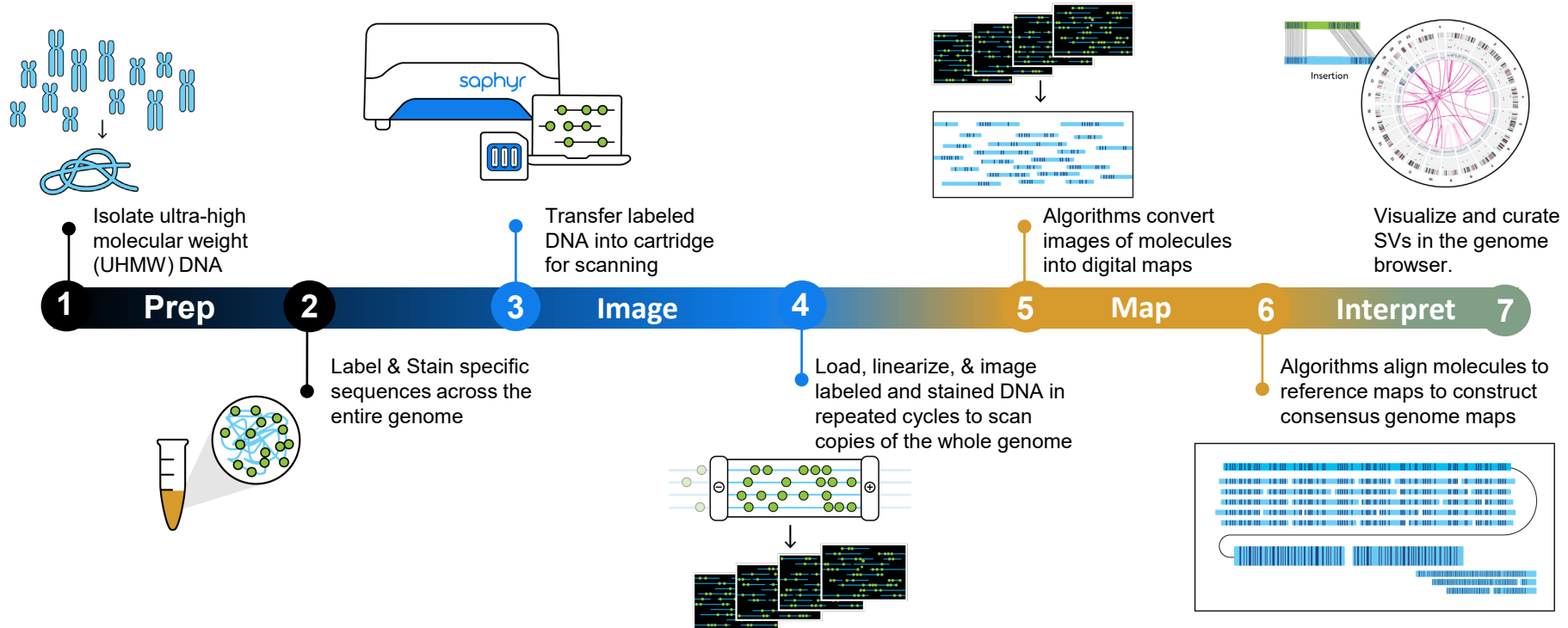
As many as 20% of prognostic scores for Rx selection may be wrong

86% of cell & gene therapy programs are halted, due partly to limitations in genome analysis tools

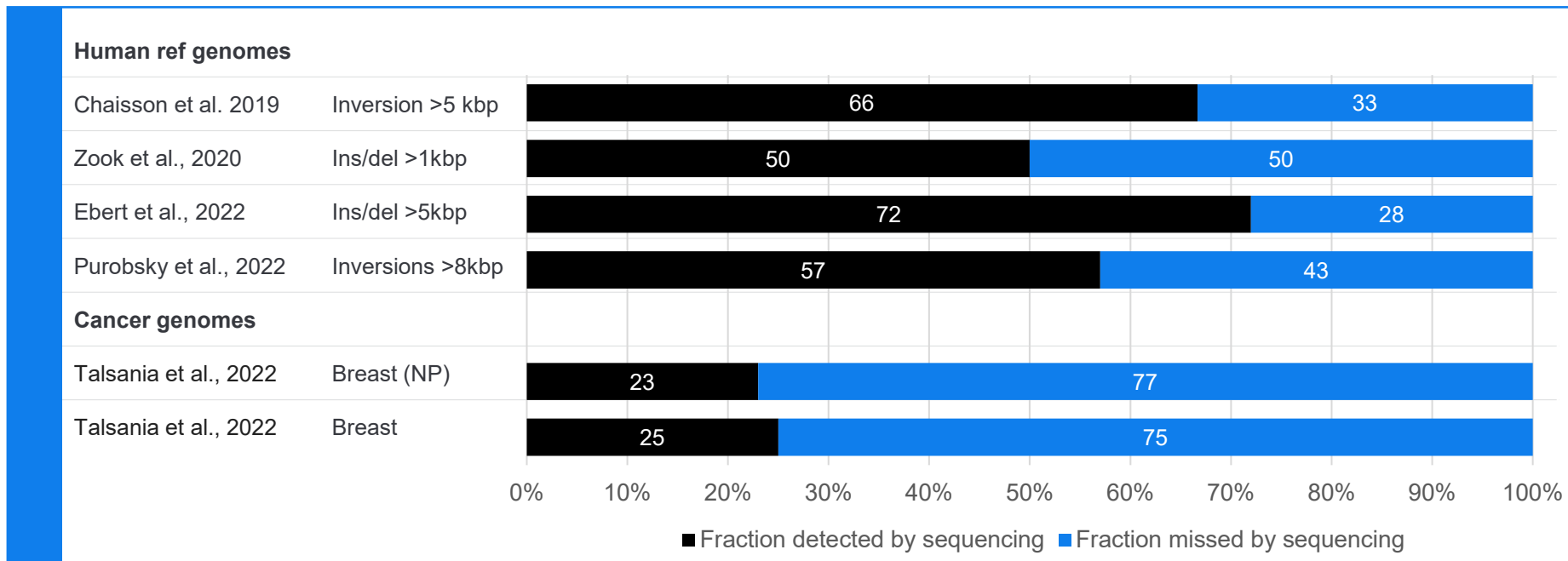
OGM detects all classes of SVs in one assay, replacing classical cytogenetics, and bridges the gap to sequencing



OGM uses single molecule imaging of sequence specific patterns on ultra-high molecular weight DNA to reveal SVs



Published studies consistently show that OGM outperforms long-read sequencing for detection of structural variations



Chaisson, et al. *Nat Commun.* 2019;10(1):1784., Zook, et al. *Nat Biotechnol.* 2020;38(11):1347-1355; Ebert, et al. *Science.* 2021;372(6537). Porubsky, et al. *Cell.* 2022;185(11):1986-2005.e26. Talsania, et al. *Genome Biol.* 2022;23(1):255.

Bionano provides an end-to-end solution for comprehensive structural variant detection with OGM



End -to- End Solution

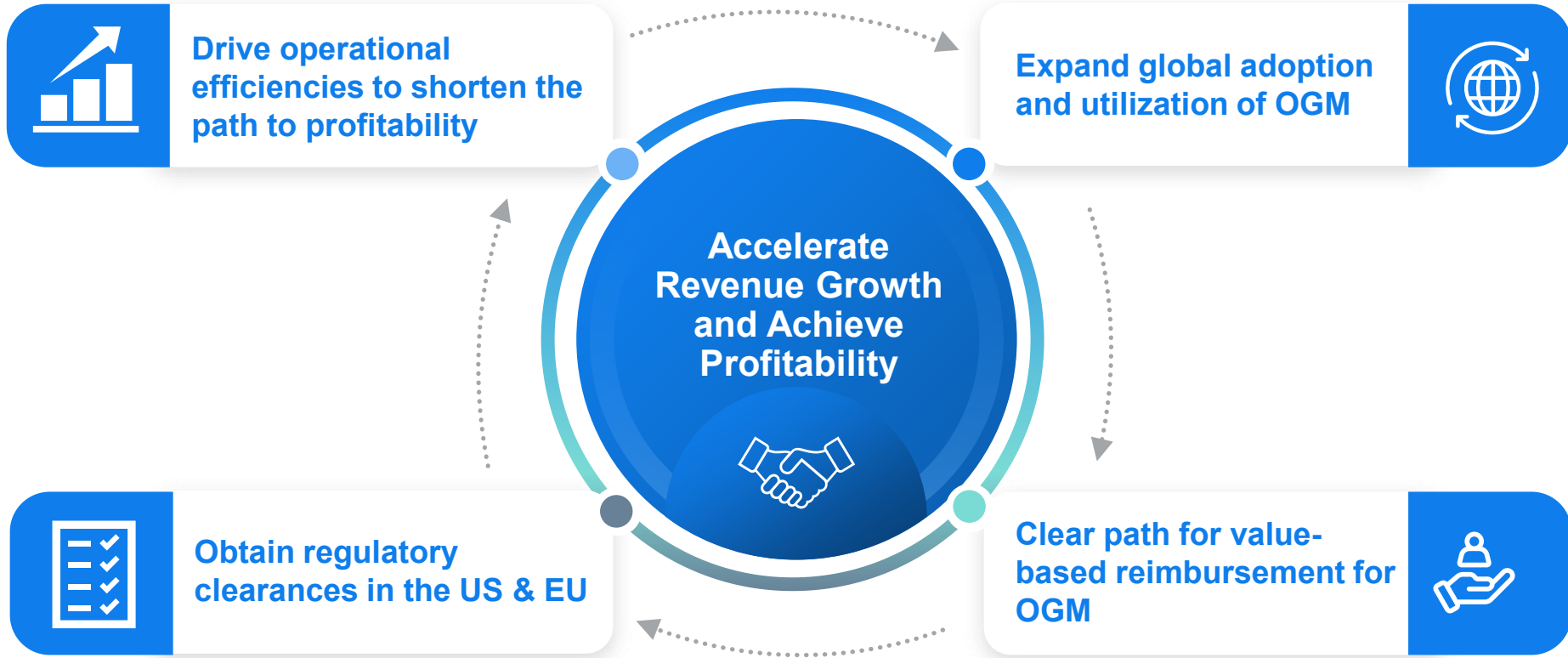
- Sample-to-interpreted report in as few as 3 days for up to 10,000 samples per year per instrument
- VIA™ software integrates OGM data for all classes of SVs together with NGS and array data in a single view
- Computation solutions developed in collaboration with NVIDIA
- Bionano sells and supports all components of the workflow



Strategy update: Our plan to succeed

bionano™

Our strategy is based on four pillars



Key publications show evidence of OGM as a superior alternative to traditional cytogenetic methods & sequencing (NGS or LRS) for SV detection

Heme malignancy

www.nature.com/leu Leukemia

ARTICLE OPEN [Check for updates](#)

MYELODYSPLASTIC NEOPLASM

High-resolution structural variant profiling of myelodysplastic syndromes by optical genome mapping uncovers cryptic aberrations of prognostic and therapeutic significance

Hui Yang¹, Guillermo Garcia-Manero¹, Koji Sasaki¹, Guillermo Montalban-Bravo¹, Zhenya Tang¹, Yue Wei¹, Tapan Kadla¹, Kelly Chien¹, Diana Rush¹, Ha Nguyen¹, Awadesh Kalia¹, Manjunath Nimmakayala¹, Carlos Bueso-Ramos¹, Hagop Kantarjian¹, L. Jeffrey Medeiros¹, Rajyalakshmi Luthra¹ and Rashmi Kanagal-Shamanna¹

© The Author(s) 2022



- OGM prognostic scores were different for **17 to 21%** of study subjects
- OGM revealed additional pathogenic variants in **13%** of study subjects

<https://www.nature.com/articles/s41375-022-01652-8#Abs1>

Constitutional

npj Genomic Medicine www.nature.com/npjgenmed

ARTICLE OPEN [Check for updates](#)

Application of full-genome analysis to diagnose rare monogenic disorders

Joseph T. Shieh^{1,2,3,4,5}, Monica Penon-Portmann^{1,2,3,4}, Karen H. Y. Wong^{1,2}, Michal Levy Sakai¹, Michelle Verheze¹, Anne Savelle^{1,2}, Renata C. Gallagher^{1,2}, Bryce A. Mendelsohn^{1,2}, Jessica Terrey¹, Daniel Bielefeld¹, Haeil Perry¹, Stephen K. Chow¹, Andrew G. Shams¹, Steven E. Brenner¹, Zhongxia Qi¹, Jingwei Yu¹, Ophir D. Klein^{1,2,3,4}, David Martin¹, Pu-Yan Kwok^{1,2,3,4} and Dario Boffelli^{1,2}

Current genetic tests for rare diseases provide a diagnosis in only a modest proportion of cases. The Full-Genome Analysis method, FGA, combines long-range assembly and whole-genome sequencing to detect small variants, structural variants with breakpoint resolution, and phasing. We built a variant prioritization pipeline and tested FGA's ability for diagnosis of rare diseases in a clinical setting. FGA identified structural variants and small variants with an overall diagnostic yield of 40% (20 of 50 cases) and 33% in exome-negative cases (8 of 23 cases). 4 of these were structural variants. FGA detected and mapped structural variants that are missed by short reads, including non-coding duplication, and phased variants across long distances of more than 180 kb. With the prioritization algorithm, longer DNA technologies could replace multiple tests for monogenic disorders and expand the range of variants detected. Our study suggests that genomes produced from technologies like FGA can improve variant detection and provide higher resolution genome maps for future application.

npj Genomic Medicine (2021) 6:77 | <https://doi.org/10.1038/s41525-021-00241-5>



- OGM findings resolved genetic diseases that were previously undiagnosed
- OGM resulted in incremental **increase in diagnostic yield of 12%** in rare disease cohort

<https://www.nature.com/articles/s41525-021-00241-5>

Gene therapy

Article

THE EMBO JOURNAL

Unbiased assessment of genome integrity and purging of adverse outcomes at the target locus upon editing of CD4⁺ T-cells for the treatment of Hyper IgM1

Daniele Canarutto^{1,2,3}, Claudia Asperti¹, Valentina Vavassori¹, Simona Porcellini¹, Elisabetta Rovelli¹, Marianna Paulis^{1,2}, Samuele Ferrari^{1,2}, Angelica Varesi^{1,2}, Martina Fiumara¹, Aurelien Jacob¹, Lucia Sergi¹, Ilaria Visigalli¹, Francesca Ferrua^{1,2}, Luis Ignacio González-Granado⁴, Vassilios Lougaris¹, Andrea Finocchi¹, Anna Villa^{1,2}, Marina Radrižani¹ & Luigi Naldini^{1,2,3}



- OGM detected **11 nonrecurring SVs** outside of the target locus
- OGM analysis showed that **20-50%** of the edited cells expressing the rescued gene did not undergo precise editing

<https://www.embopress.org/doi/epdf/10.15252/embj.2023114188>

Strategic assemblance of end-to-end OGM workflow



Q1' 2017

Commercial launch of Saphyr® system



Q4' 2021

Acquires BioDiscovery software solution NxClinical™ for genome-wide variant analysis from NGS and microarray data types

Q1' 2024

Full commercial launch of Stratys™ system, which offers high throughput capabilities for new clinical and translational research applications



Q1' 2018

Introduces DLS chemistry, method for improving its single-molecule optical genome maps



Q4' 2022

Acquires Purigen Biosystems - automated nucleic acid extraction and purification solutions using proprietary isotachopheresis (ITP) technology on the Ionic® system; OGM kit anticipated second half 2024

Q2' 2023

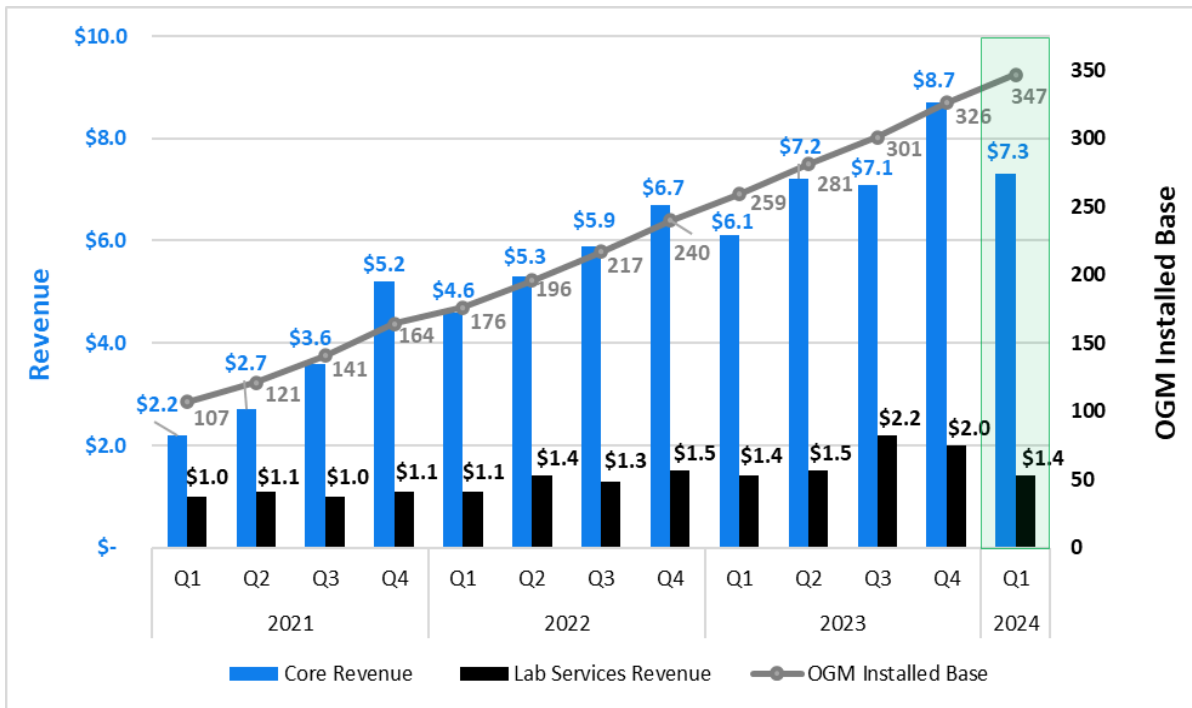
Launch of VIA™ software, a new platform for visualization, interpretation and reporting across OGM, microarray and NGS data types. Version with expanded capabilities released in May 2024



Financial Review

bionano™

Q1 2024 Financial Highlights



- Q1 revenues: \$8.8M (+18% vs Q1'23)
 - Q1 core revenues: \$7.3M (+21% vs Q1'23)
- GAAP gross margin of 32%; non-GAAP gross margin 34%
- GAAP OpEx \$33.9M; non-GAAP OpEx \$24.7M
- Q1 OGM installed base: 347 (+34% vs Q1'23)
- Q1 flowcells sold: 8,249 (+58% vs Q1'23)

\$53.2M* Cash, Cash Equivalents, and Available-for-Sale Securities at End Q1 2024

Important steps to help ensure we can deliver against our vision

Debt Restructuring

- Debt modification agreement in February 2024 took debt outstanding from \$52M to \$24.3M
- Debt outstanding May 8, 2024 is \$15.3M

Equity Financing

- Registered direct offering priced at-the-market under Nasdaq rules in April 2024, with gross proceeds of ~\$10M

Reductions in Force

- ~200 completed and planned role reductions since May 2023

Projected Cost Savings

- \$65M to \$75M projected cumulative annual operating expense reduction (May & October 2023/March 2024)

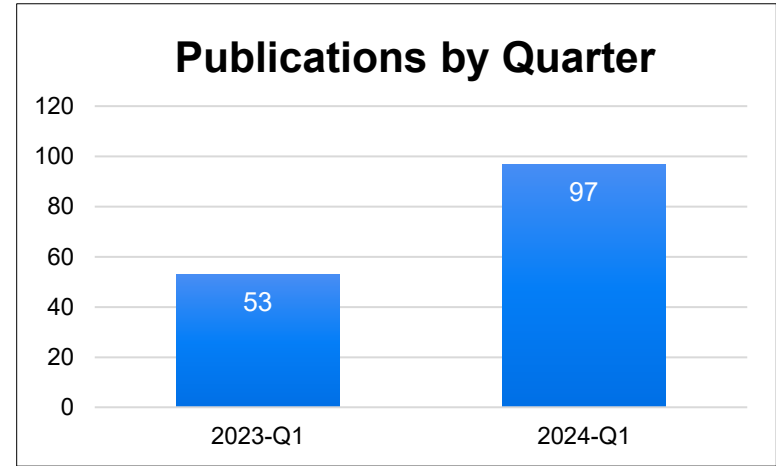
Operating Cash Burn Excluding Interest & Debt Retirement Fees

- Q1 2024 operating cash burn, excluding interest and debt retirement fees, was \$19M compared to \$32M in the same period of 2023

A highly disciplined approach will position company for future streamlined growth

Bionano Business Highlights

- **Key component of end-to-end workflow, Stratys™ system, brought to market;** advancements to VIA™ software planned for May 2024 and to Stratys™ Compute 2H 2024
- **ITP for OGM with Ionic® system launch planned for 2H 2024;** 3 customer sites will evaluate pre-commercial systems in the field
- **83% year-over-year increase in OGM publications;** highest recorded quarter to date with 97 publications in Q1'24



Bionano is focused on accelerating revenue growth, operating efficiently, and raising capital that will allow us to extend our cash runway

Streamlined Business Focus



- Phase out some clinical services products
- Ramp commercialization of Stratys & drive adoption of VIA software
- Advance heme clinical trial & publish study data from constitutional trials
- Support ongoing initiatives for OGM reimbursement by 3rd party payors
- Release ITP for OGM on Ionic system

2024 Guidance Reiterated



OGM FY'24 Total Revenue Guidance:
\$37 – \$41M



OGM Installed Base YE'24:
381 – 401 systems



2Q'24 Revenue Guidance:
\$7.8 – \$8.2M

Thank you.

bionano™



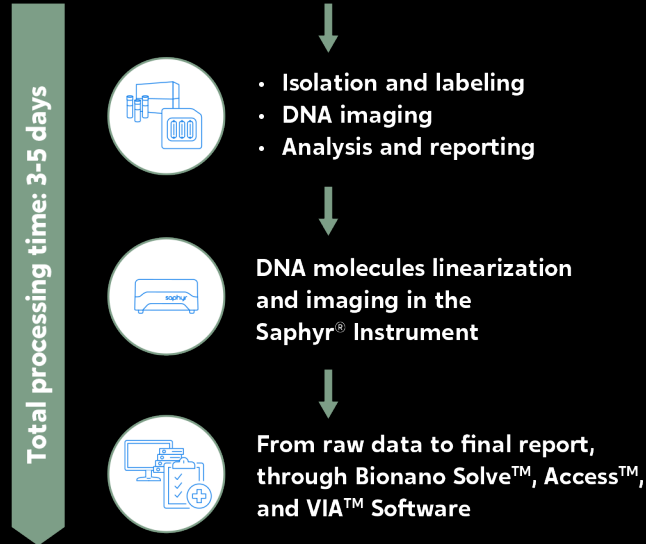
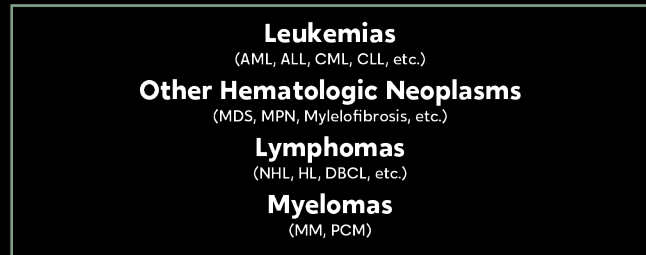
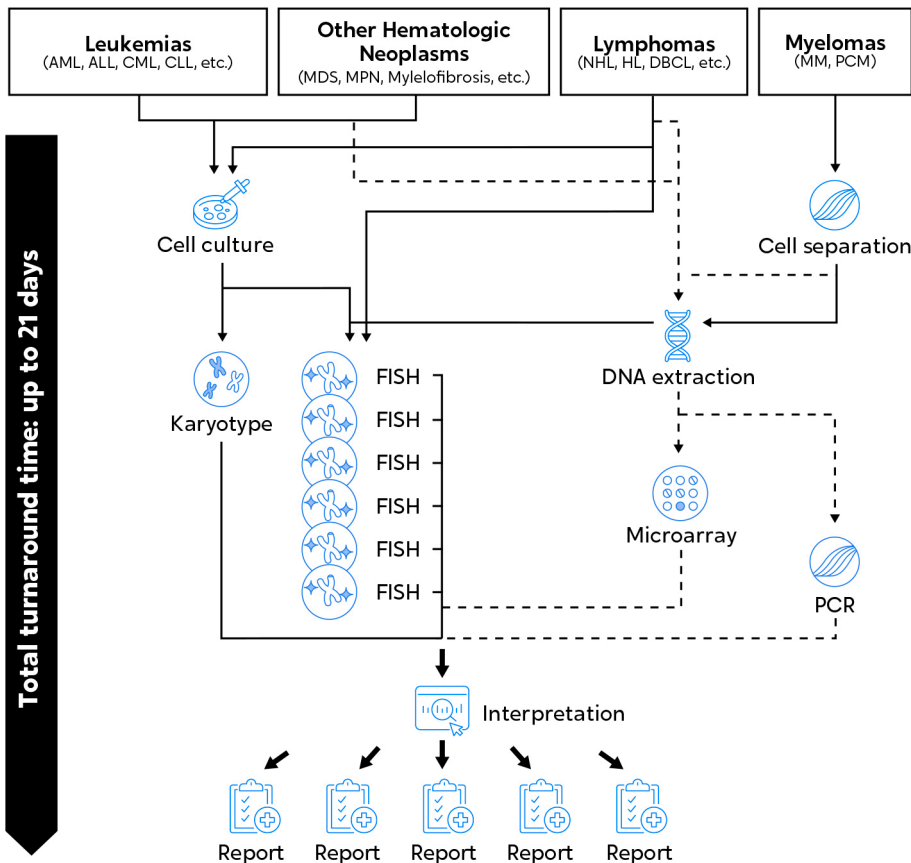
Primary Appendix

bionano™

Traditional Cytogenetic Lab Workflow

Vs.

The OGM Workflow



OGM Has a Unique Position in the Genomics Market

NGS Landscape



illumina
Solexa



ULTIMA
GENOMICS
UG 100



Element
Biosciences
AVITI



PacBio
Onso



SINGULAR
GENOMICS
G4



illumina
Novaseq

LRS Landscape



Oxford
NANOPORE
PROMETHION
24



Revio

OGM Landscape



Saphyr system



Stratys system

bionano

Clinical Trial Sites and PIs Influence Guidelines and Reimbursement



Brynn Levy, PhD
Columbia

Board ISPD, Co-Editor Prenatal
Diagnosis, CGC Founding Member



Aaron Bossler, MD, PhD
University of Iowa

AMA CPT Editorial Committee
Member



Rashmi Kanagal-Shamanna
MD Anderson

AMP BOD, CGC BOD, NCCN Liaison



AUGUSTA
UNIVERSITY

Ravindra Kolhe, MD, PhD
Augusta University

US and Canadian CAP, AACR/ASCO
visibility, NCI match PI, TSO500
driver for Illumina



Adrian Dubuc, PhD
Harvard

Former CGC president, and Harvard



Barb Dupont, PhD,
Greenwood Genetic Center

Constitutional (Agilent validation, Affy
validation, Illumina FDA sequencing
validation consortium)



Jim Broach, PhD
Penn State Medical College

Track record of success with
Bionano technology



Gordana Raca, PhD
CHLA

CGC President, NCCN Liaison
ACMG Technical Standards



Saurabh Gupta, PhD
Quest – Med Fusion

Quest, high volume



Anwar Iqbal, PhD
University of Rochester

CGC Founder, NY state



Yasmine Akkari, PhD
Nationwide Childrens

AMCG lab QA, AMP training and
ed chair, CGC President



Ulrich Broeckel, MD
Medical College of Wisconsin

NIH initiatives on clinical
pharmacogenomics



Stephen C. Peiper, MD
Chairman & Senior Vice President of
Enterprise Pathology



Roger Stevenson, MD
Founder of Greenwood
Genetic Center

World renowned geneticist



Aleksandar Rajkovic, PhD, MD
UCSF Chief Genomics Officer

Stuart Lindsay Distinguished Professor in
Experimental Pathology



Teresa Smolarek, PhD
Cincinnati Children's Hospital

Director, Genetics and Genomics
Diagnostic Laboratory



Peter Bui, PhD, FACMG
Quest Diagnostics

National Chief Director,
Cytogenetics



James S Blachly, MD
Comprehensive Cancer Center OSU

National Comprehensive Cancer
Network

Recent Publications from Our Clinical Trials Span our Target Markets

REFERENCE	COHORT SIZE	Genetic Disease			Cancer				
		FSHD	Prenatal	Postnatal	AML/CML//MP N/MDS	ALL/CLL	Lymphoma	MM/PCM	Solid Tumor
University of Iowa Stence, et al., 2021	351	●							
University of Augusta Sahajpal, et al., 2023	114		●						
Ningbo Women & Children Xie, et al., 2024	204		●						
Multisite trial Iqbal, et al., 2023	404			●					
Multisite trial Broeckel, et al., 2024	597			●					
Radboud University Neveling et al., 2021	52				●	●		●	
Multi-site Pang et al. 2022	80				●	●	●	●	
Augusta, Emory Sahajpal et al. 2022	69				●		●	●	
M.D. Anderson Yang et al., 2022	101				●				
Cancer Genomics Consortium Levy et al., 2022	100				●				
Hannover Medical School Lühmann et al., 2023	142					●			
Penn State Med Goldrich et al., 2021	20								●

● Peer-reviewed