We're pushing the limits of genetic medicine

And our goal is no limits

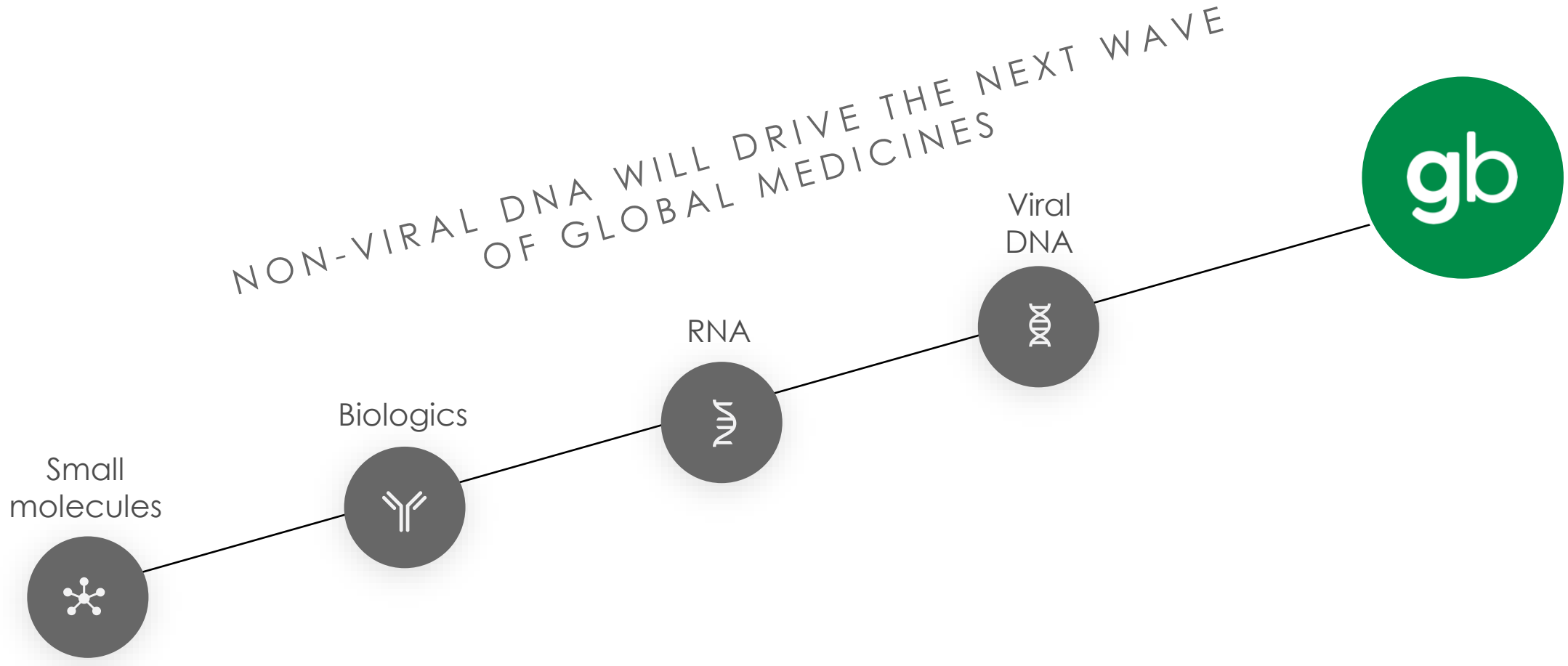
June 2023

generation bio™

Forward Looking Statements

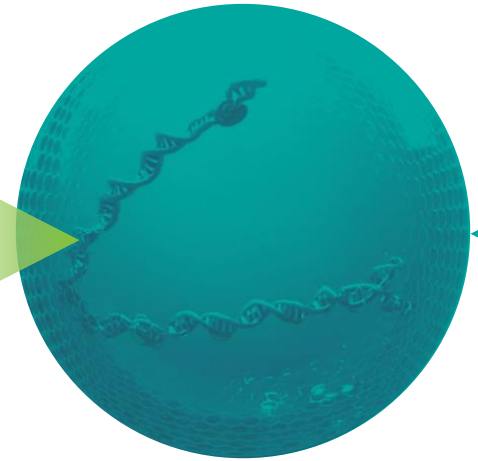
Any statements in this presentation about future expectations, plans and prospects for the company, including statements about our strategic plans or objectives, our technology platform, including our rapid enzymatic synthesis (RES) technology, our research and clinical development plans, and our preclinical data and other statements containing the words "believes," "anticipates," "plans," "expects," and similar expressions, constitute forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors, including: uncertainties inherent in the identification and development of product candidates, including the conduct of research activities, the initiation and completion of preclinical studies and clinical trials and clinical development of the company's product candidates; uncertainties as to the availability and timing of results from preclinical studies and clinical trials; whether results from preclinical studies will be predictive of the results of later preclinical studies and clinical trials; uncertainties regarding the RES manufacturing process; expectations for regulatory approvals to conduct trials or to market products; challenges in the manufacture of genetic medicine products; whether the company's cash resources are sufficient to fund the company's operating expenses and capital expenditure requirements for the period anticipated; the impact of the COVID-19 pandemic on the company's business and operations; as well as the other risks and uncertainties set forth in the "Risk Factors" section of our most recent annual report on Form 10-K and quarterly report on Form 10-Q, which are on file with the Securities and Exchange Commission, and in subsequent filings the company may make with the Securities and Exchange Commission. In addition, the forward-looking statements included in this presentation represent the company's views as of the date hereof. The company anticipates that subsequent events and developments will cause the company's views to change. However, while the company may elect to update these forward-looking statements at some point in the future, the company specifically disclaims any obligation to do so. These forward-looking statements should not be relied upon as representing the company's views as of any date subsequent to the date on which they were made.

We are the new modality leader for non-viral DNA therapeutics



Unique DNA and delivery make genetic medicines more drug-like

ceDNA
Closed-ended DNA Cargo



ctLNP
Non-viral Cell-targeted LNP Delivery

DURABLE
Gene expression for the life of the cell

REDOSABLE
Extend therapeutic benefit over the long term

TITRATABLE
Expression levels can be adjusted to meet each patient's need

SCALABLE
Manufacturing to support hundreds of millions of doses globally

Building scale to transform genetic medicines, globally

RES
Rapid enzymatic synthesis for ceDNA

Enables global scale

Enables rapid research cycle

New modality leader
Leading the rare disease field to durable cures

HEMOPHILIA A
30K
U.S. PATIENTS

Rare disease innovator
Developing a deep rare disease portfolio

RARE LIVER DISEASES
100K
U.S. PATIENTS

Prevalent disease disruptor
Global impact through proprietary & partnered programs

PREVALENT DISEASES
>100M
U.S. PATIENTS

generation bio™

Our focus is on our core liver portfolio, building from rare to prevalent indications

LIVER PIPELINE

New modality leader

Leading the rare disease field to durable cures

- Hemophilia A

Rare disease innovator

Developing a deep rare disease portfolio

- PKU*
- Wilson*
- Gaucher
- Undisclosed*

Prevalent disease disruptor

Global impact through proprietary & partnered programs

- ETAP
- Undisclosed*

Potential targets for collaboration with Moderna

Our lead indication is Hemophilia A

LIVER PIPELINE

New modality leader
Leading the rare disease field to durable cures

- Hemophilia A

Rare disease innovator
Developing a deep rare disease portfolio

- PKU*
- Wilson*
- Gaucher
- Undisclosed*

Prevalent disease disruptor
Global impact through proprietary & partnered programs

- ETAP
- Undisclosed*

Potential targets for collaboration with Moderna

We aim to transform the therapeutic landscape for Hemophilia A

TARGETING A HIGHLY DIFFERENTIATED CLINICAL & COMMERCIAL PROFILE

PATIENTS

- **Titration** to target expression level for each patient
- **Dosing in childhood** before disease progression
- **Redosing** to extend benefit over a lifetime

PHYSICIANS

- **Extend genetic medicine to all Hemophilia A patients**
- **Rescue** for undertreated AAV patients

PAYERS

- **More predictable** clinical outcome
- **Reimbursement** in current paradigm

HEMOPHILIA A

- ✓ Clear pre-clinical biomarkers
- ✓ Established regulatory path
- ✓ Significant unmet need
- ✓ Large global market

$8B+
Global Market

Our unique stealth ctLNP opens unprecedented extra-hepatic franchise opportunities

	New modality leader Leading the rare disease field to durable cures	**Rare disease innovator** Developing a deep rare disease portfolio	**Prevalent disease disruptor** Global impact through proprietary & partnered programs
LIVER PIPELINE	• Hemophilia A	• PKU* • Wilson* • Gaucher • Undisclosed*	• ETAP • Undisclosed*
NON-LIVER PORTFOLIO	Ligand optimization	**Immune cells** • Undisclosed*	**Skeletal muscle** **CNS**

Potential targets for collaboration with Moderna

Building ligand technologies through partnership

New modality leader
Leading the rare disease field to durable cures

Rare disease innovator
Developing a deep rare disease portfolio

Prevalent disease disruptor
Global impact through proprietary & partnered programs

LIVER PIPELINE

- Hemophilia A

- PKU*
- Wilson*
- Gaucher
- Undisclosed*

- ETAP
- Undisclosed*

NON-LIVER PORTFOLIO

Ligand optimization

Immune cells
- Undisclosed*

Skeletal muscle
CNS

moderna

Potential targets for collaboration with Moderna

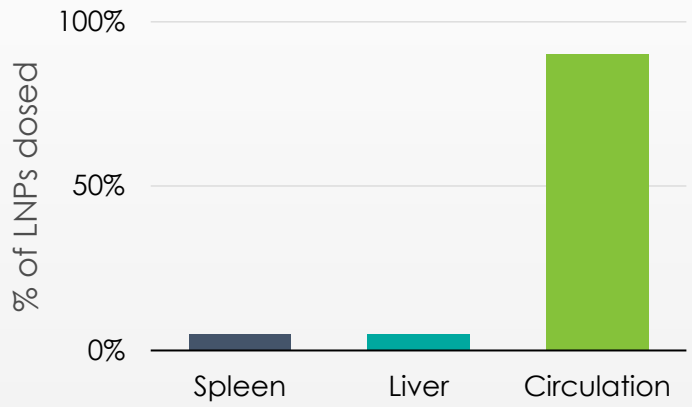
generation bio™

Stealth ctLNP is basis for immune cell targeting, and for other cell types and tissues

NON-LIVER PORTFOLIO

Ligand optimization

STEALTH LNP
typical biodistribution profile



Immune cells

MODERNA COLLABORATION
Developing immune cell targeting for stealth ctLNPs

ONCOLOGY
IMMUNOLOGY
INFECTIOUS DISEASE

New tissues

NEW CELL TYPES & TISSUES
to create new portfolios of partnered or wholly-owned programs outside of the liver

GENETIC MYOPATHIES

CNS DISEASES

The GBIO platform is designed to create extraordinary leverage

Rapid development of programs within tissues

Multiple first-in-class tissue franchises

Global scale for millions of patients

Drug-like profile in development and launch

Redosing paradigm familiar to payors

Thank You

June 2023

generation bio™