generation bio™

Innovating durable, redosable genetic medicines

FOR PEOPLE LIVING WITH RARE AND PREVALENT DISEASES

NASDAQ: GBIO

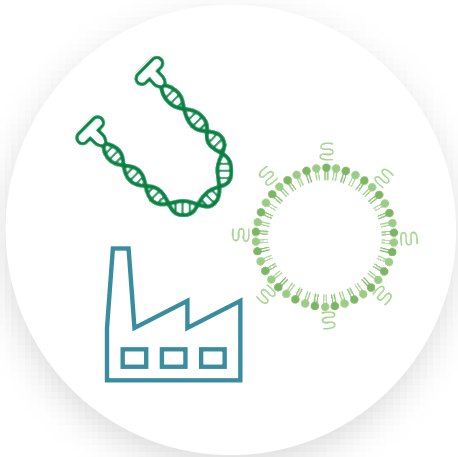
JULY 2021

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 platforms, our research and clinical development plans, the expected timing of the submission of IND applications and preclinical data, our manufacturing plans, our expectations regarding our new facility 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 timing and ability to complete the build-out of the Company's manufacturing facility and regarding the new manufacturing process; expectations regarding the timing of submission of IND applications; 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, including the funding of the new manufacturing facility; 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 press release 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.

Durable, redosable genetic medicines for rare and prevalent diseases

NOVEL, DISRUPTIVE TECHNOLOGIES



proprietary non-viral construct, delivery, and manufacturing

RAPID DEVELOPMENT & SCALING ENGINE

4-week research cycle, scale for hundreds of millions

BROAD PORTFOLIO, MULTIPLE TISSUES

wholly owned programs across rare and prevalent indications

Our proprietary non-viral genetic medicine platform

THREE CORE ELEMENTS

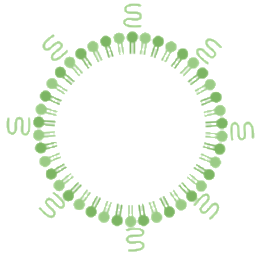
CONSTRUCT | DELIVERY | MANUFACTURING

ceDNA

CLOSED-ENDED DNA

DURABLE EXPRESSION OF LARGE GENETIC PAYLOADS

28 PATENT FAMILIES



ctLNP

CELL-TARGETED LNP

REDOSABLE DELIVERY TO MULTIPLE TISSUES

15 PATENT FAMILIES

MFG

ENZYMATIC MANUFACTURING

SCALE FOR HUNDREDS OF MILLIONS

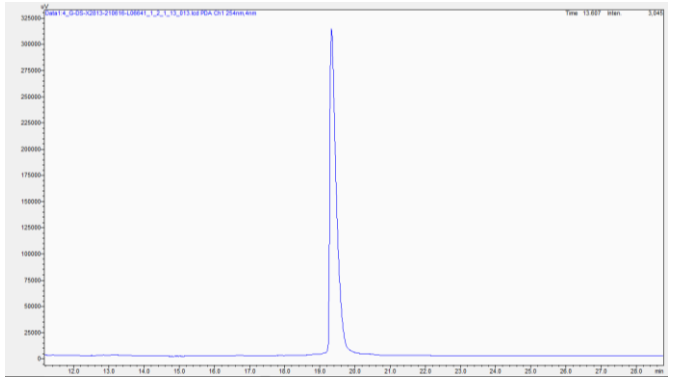
2 PATENT FAMILIES + TRADE SECRETS

Pending patent family numbers current as of July 14, 2021.

As of July 14, 2021 we do not own or exclusively license any issued patents in any jurisdiction.

Rapid enzymatic synthesis supports full scope and scale of the platform

Quality



IEX mass spec demonstrating high purity

- Consistently yields highly pure ceDNA
- Reduces variability of cell-based manufacturing

Scale

AAV 10,000

Biologics 1,000,000

mRNA 1,000,000,000

- Expands potential ceDNA manufacturing scale to hundreds of millions of doses
- Enhances development of programs for prevalent diseases

Speed

28-day biologic production cycle

shortened to…

1-day enzymatic process

ENABLING

4-week research cycle

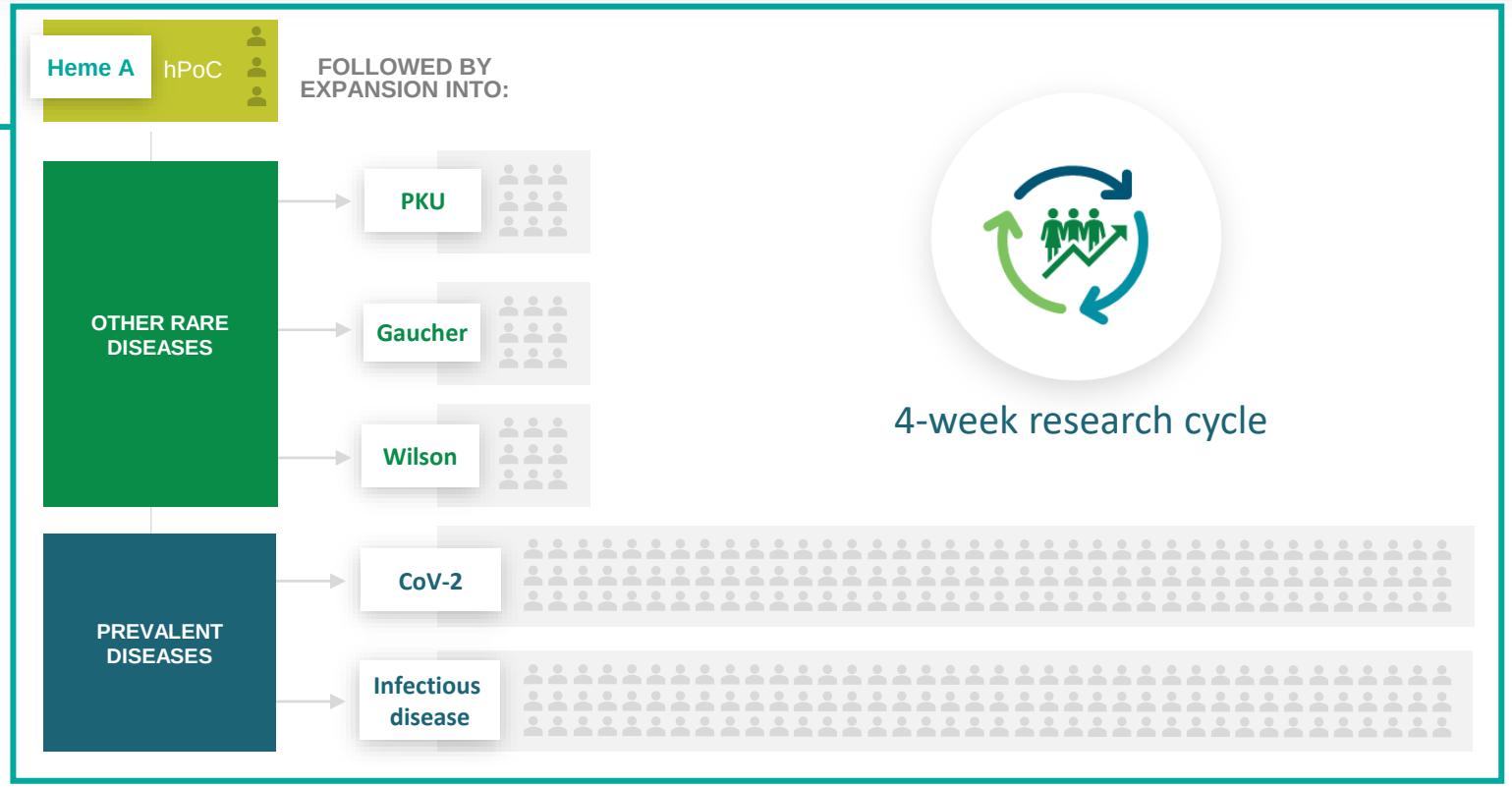
- Accelerates preclinical research and development

Our strategy: rapid expansion within therapeutic areas following proof of concept

Parallel development planned across a range of areas

- SECRETED TX
- INTRINSIC TX
- RETINA
- MUSCLE
- ONCOLOGY
- CNS

Rapid expansion to new rare and prevalent indications following early human proof of concept (hPoC)



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Advancing final ctLNP in NHP for our lead program in Hemophilia A

Durability & redosing *in mice*

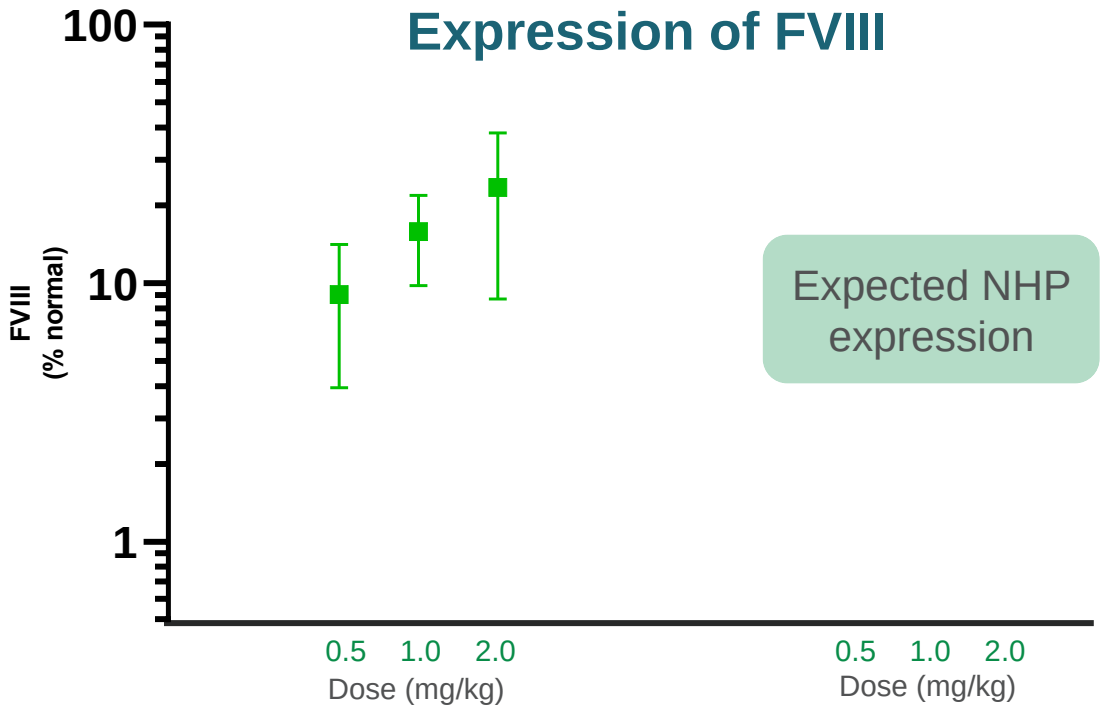
Target levels of factor VIII expression *in Hemophilia A mice*

Translation of expression across species *from mouse to NHP*

IND-enabling studies *Hemophilia A*

Upcoming Milestones

- NHP Factor VIII expression with RES-produced material by year end 2021
- IND filing in 2023



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Expanding patient populations: endogenous therapeutic antibody production (ETAP)

Parallel development planned across a range of areas

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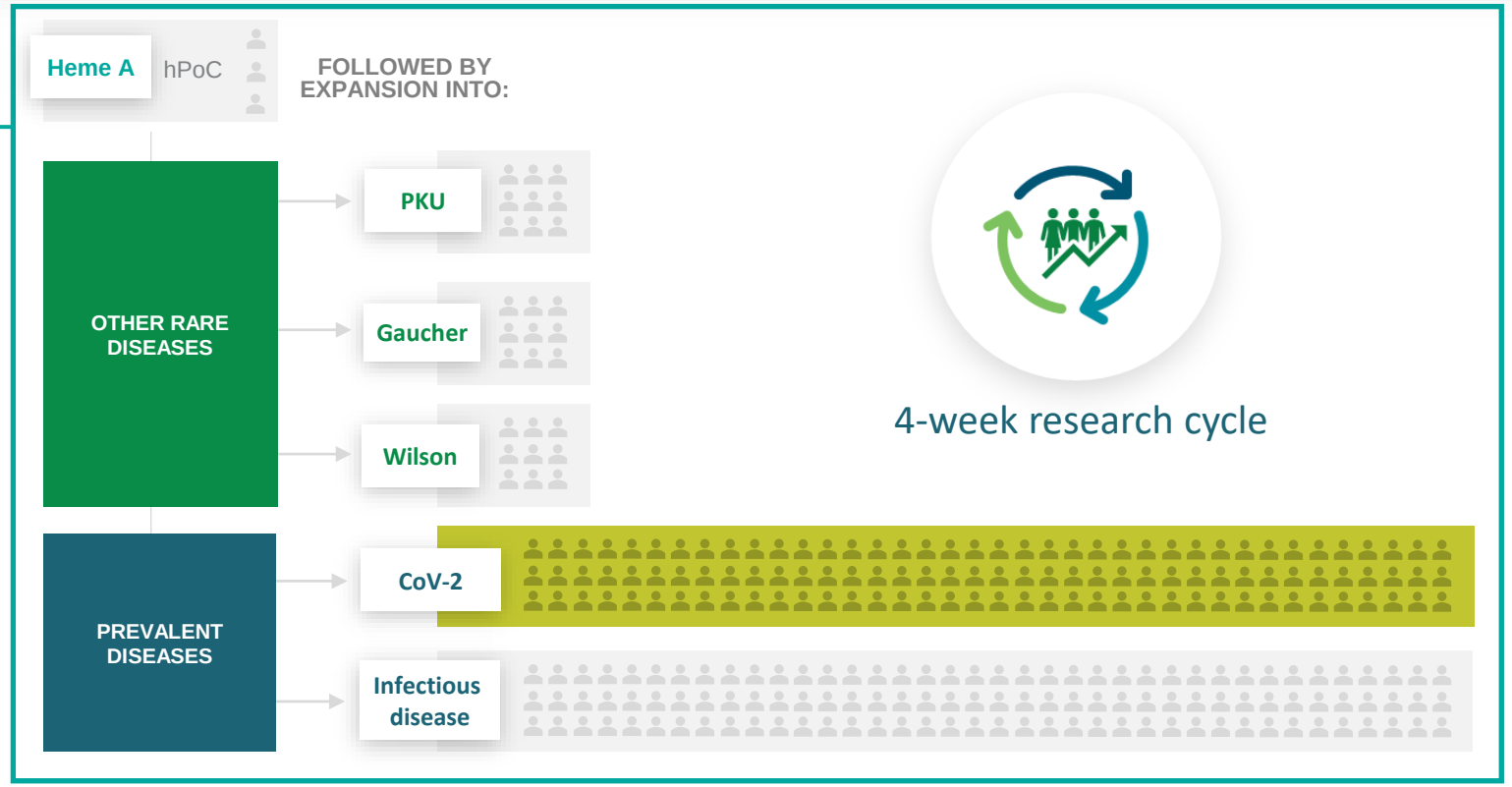

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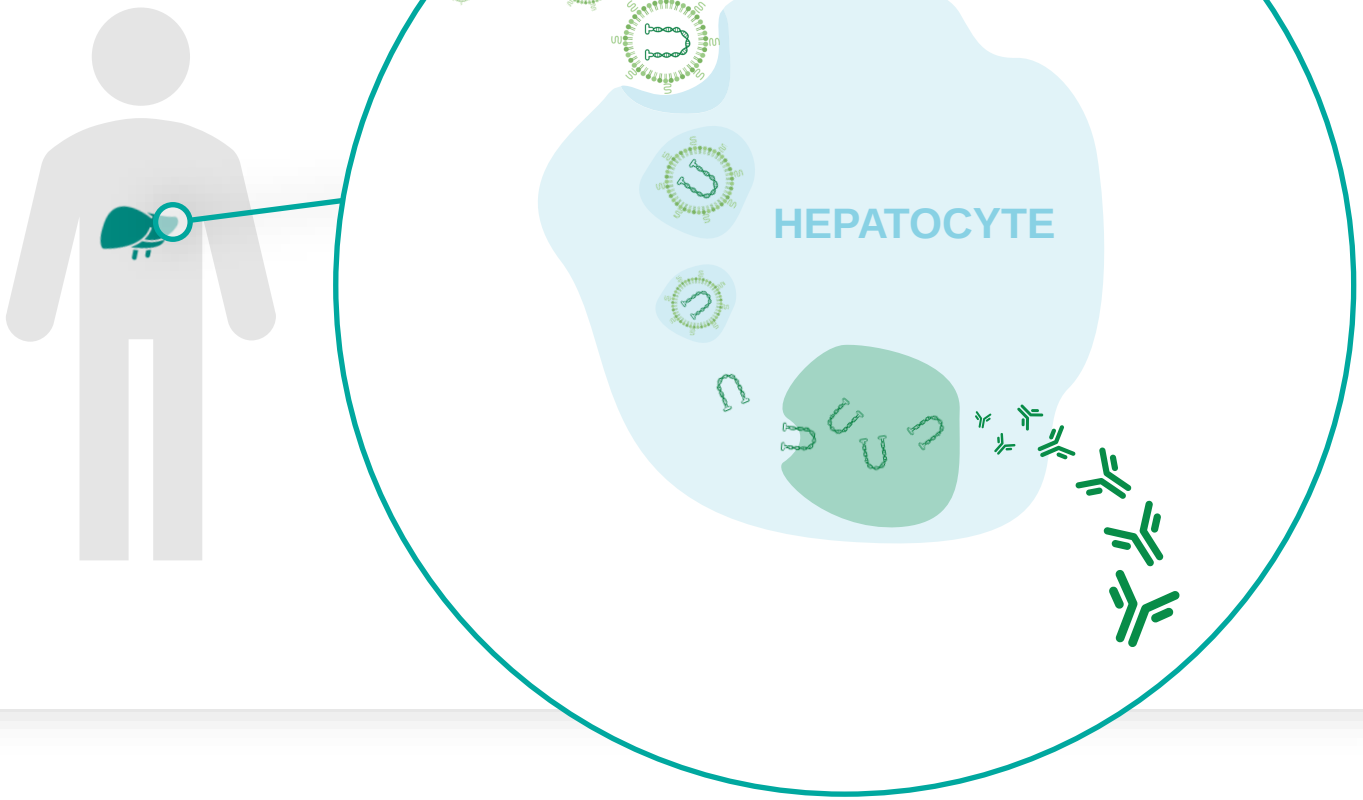
ETAP enables persistent hepatic expression and secretion of monoclonal antibodies

Antibody Sequence

gaaggatatt aaagagcacc
tgcaggaatt ttttaagggg
atgccggggg aagggcttga



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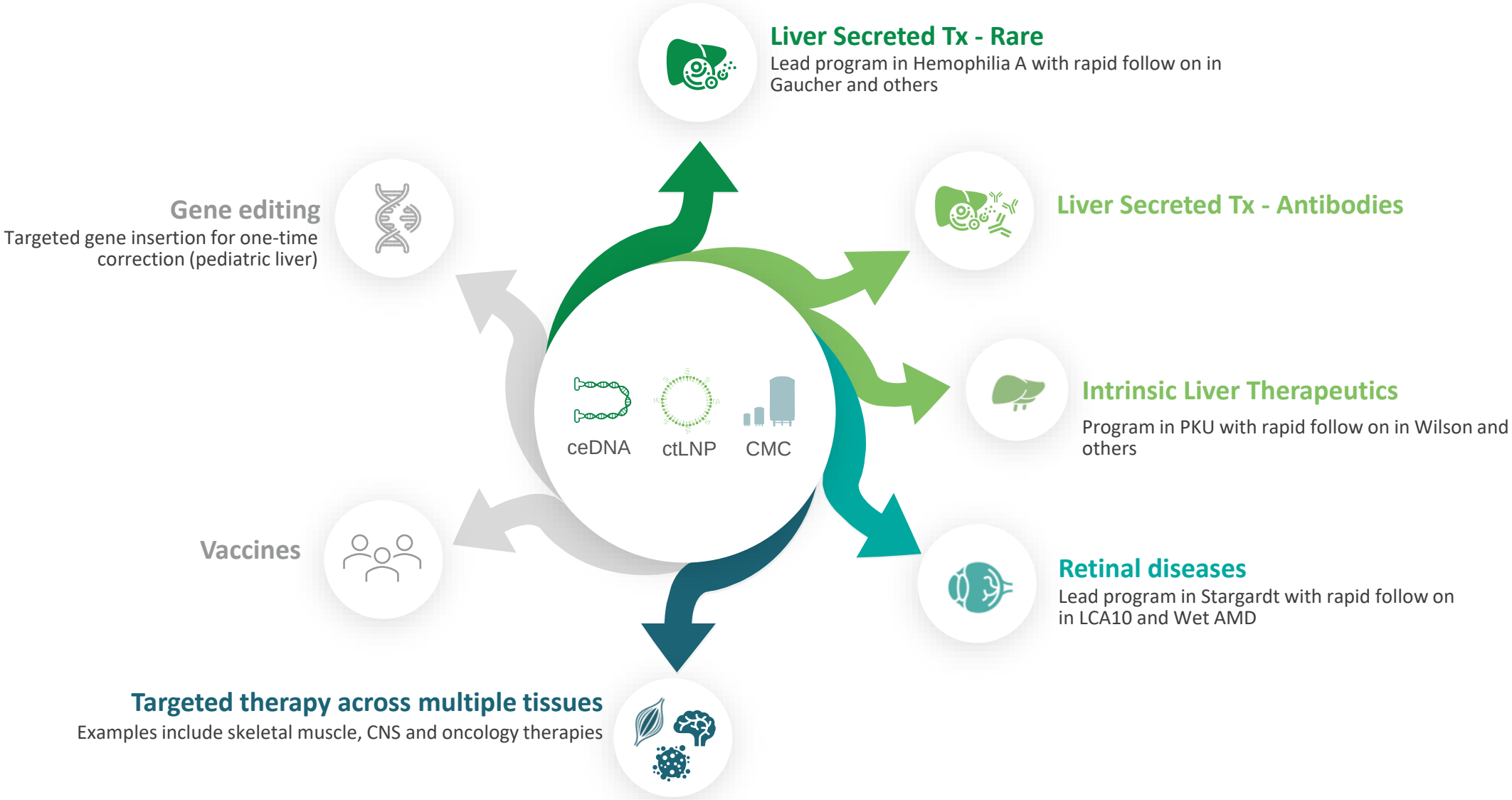
Genetic medicine platform with broad application space, today and in the future…



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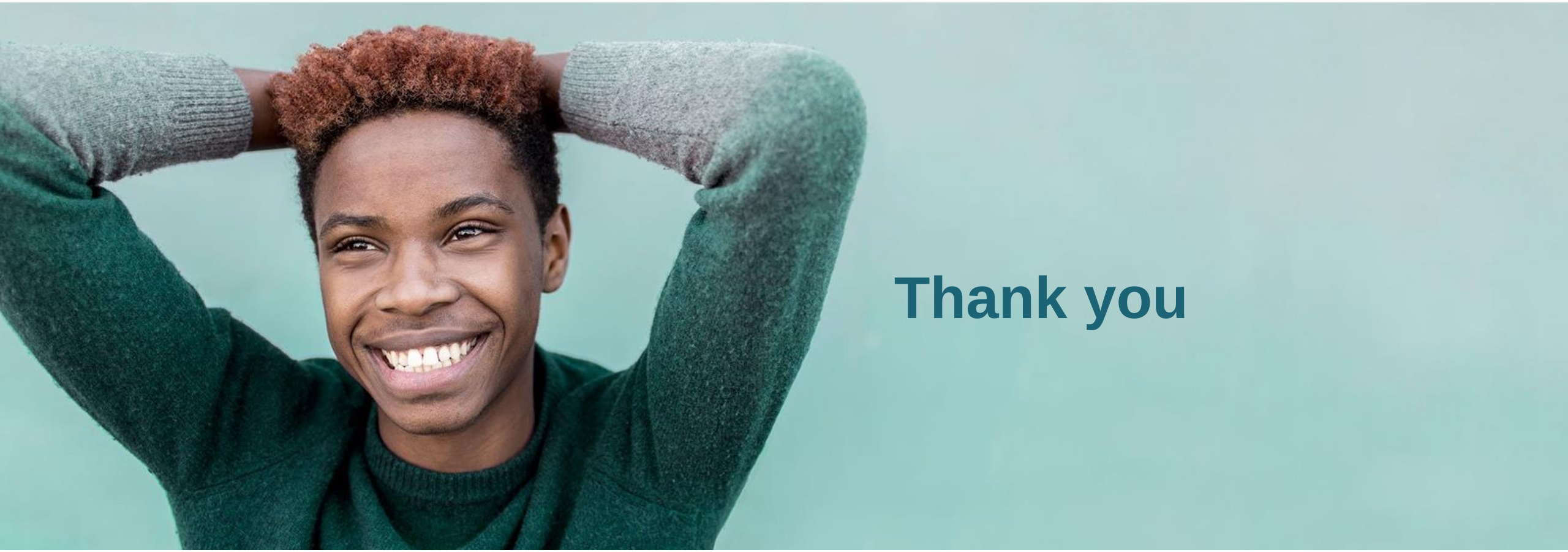

Thank you