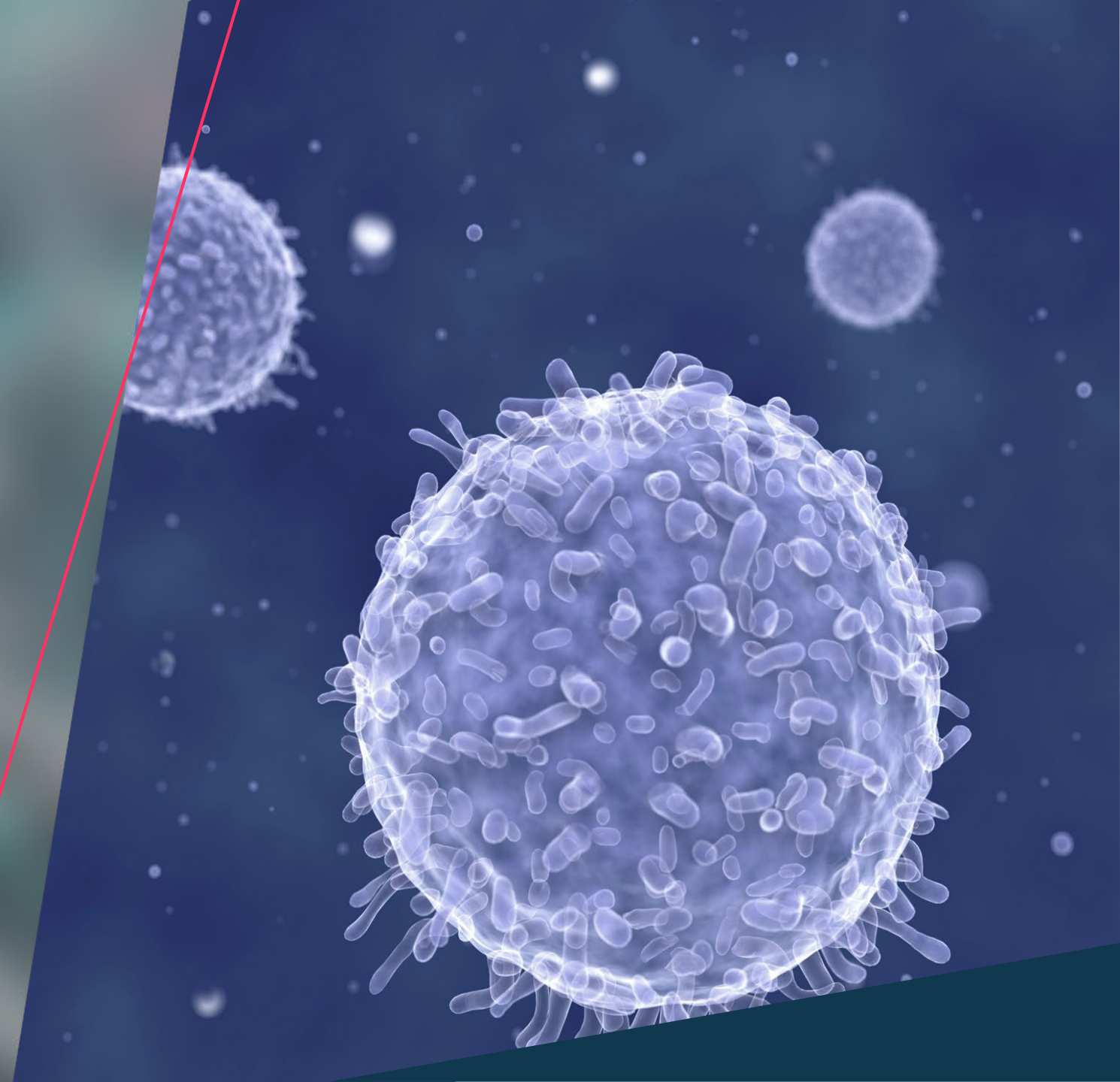
# *Cell- and Gene-Therapies*

**Capital Markets Day**
**March 10-11, 2021**

**Wolfram Carius**
Head of C&GT at Bayer Pharmaceuticals

**Sheila Mikhail**
CEO & Co-Founder of Asklepios BioPharmaceutical

**Emile Nuwaysir**
CEO of BlueRock Therapeutics



# Cautionary Statements Regarding Forward-Looking Information

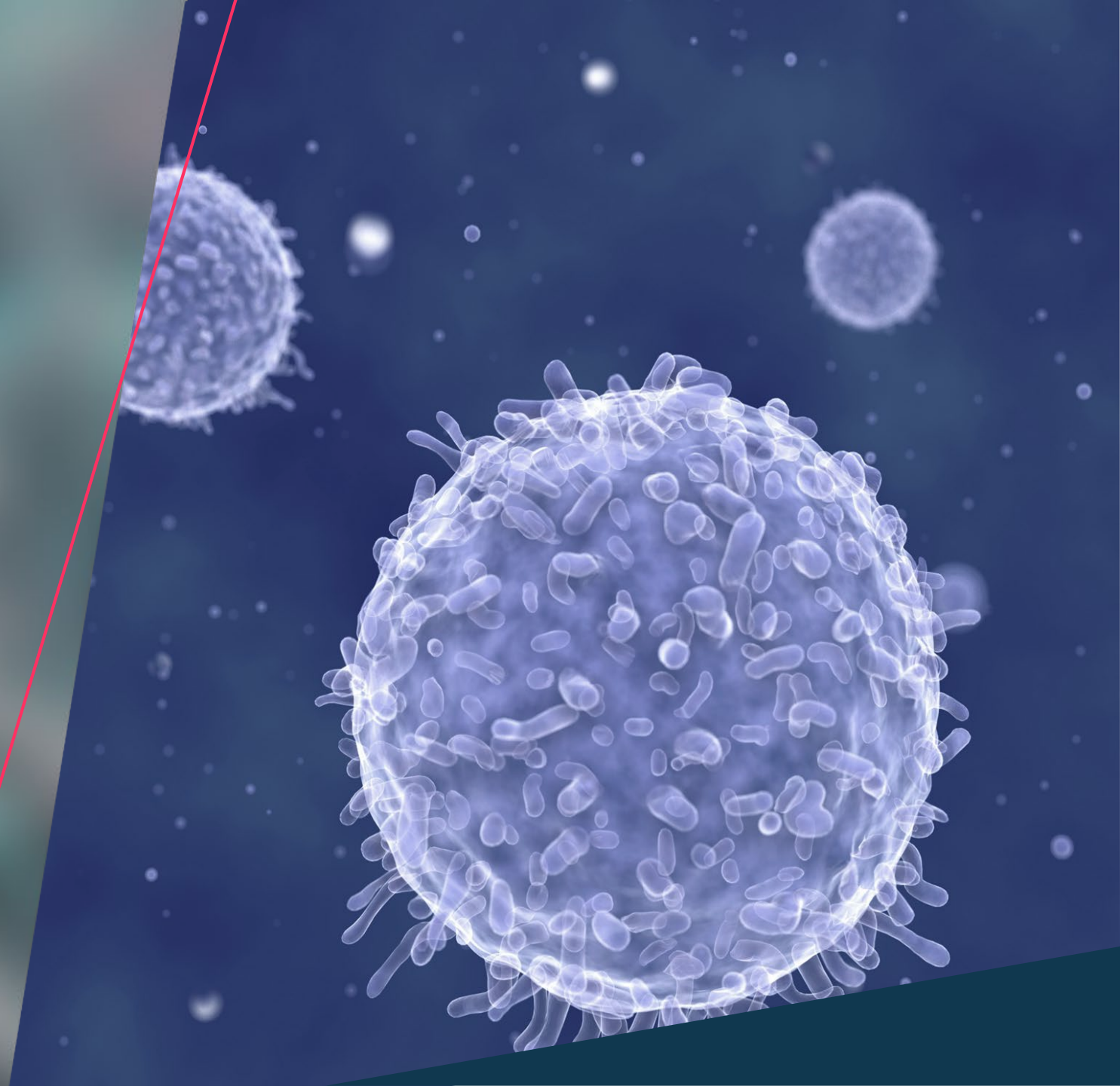
This presentation may contain forward-looking statements based on current assumptions and forecasts made by Bayer management.

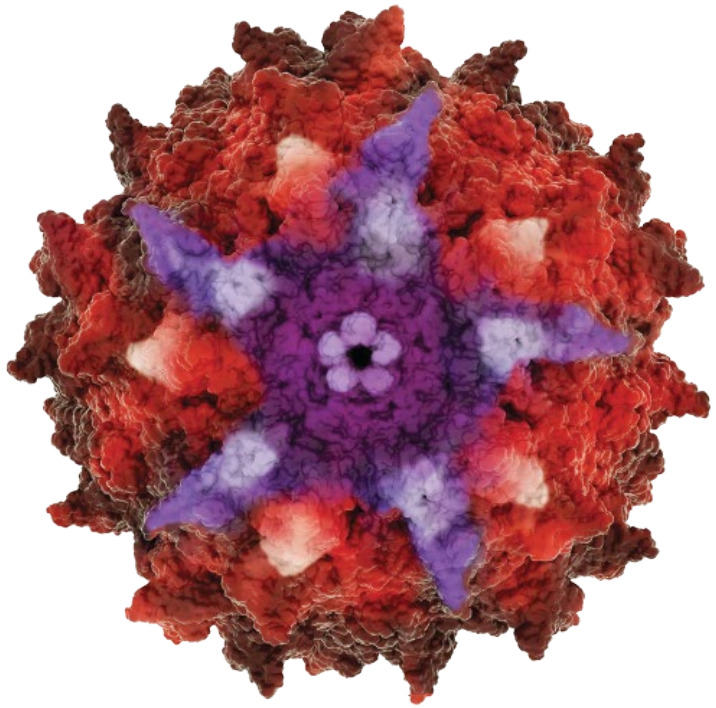
Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. These factors include those discussed in Bayer's public reports which are available on the Bayer website at http://www.bayer.com/.

The company assumes no liability whatsoever to update these forward-looking statements or to conform them to future events or developments.

# *Sheila Mikhail*

*CEO & Co-Founder of*
*Asklepios BioPharmaceutical*





AskBio™

Sheila Mikhail, JD, MBA
CEO & Co-founder

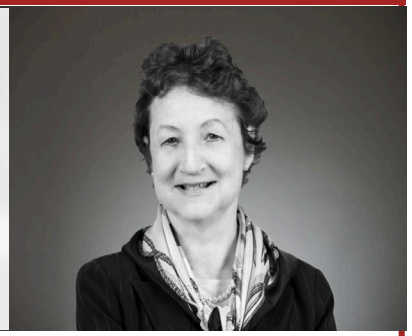
# AskBio at-a-glance

AskBio

Over 350 professionals operating in 5 countries

## Therapeutics

**Our scientific leaders pioneered the AAV gene therapy field**



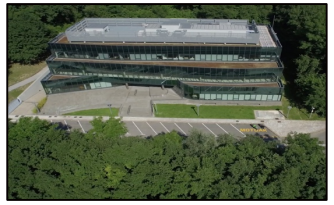
**R. Jude Samulski, PhD**
Chief Scientific Officer,
AskBio Co-founder

**Kathy High, MD**
President, Therapeutics

## Contract Manufacturing

VIRALGEN

TOUCHLIGHT AAV



## Cash Flows & Royalties

**Payments from sale of Technology/Programs**

Bamboo therapeutics
Chatham therapeutics
Pfizer
Takeda

**AskBio's technology is used in multiple approved AAV gene therapy products**

Glybera
uniQure
LUXTURNA
Spark Therapeutics
Roche
zolgensma
avexis
NOVARTIS

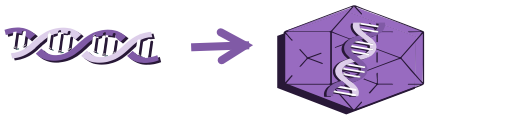
**AskBio is a fully integrated gene therapy platform transforming gene therapies from idea to impact.**

# Introduction to gene therapy

AskBio

**Treating Disease by Fixing the Cause**

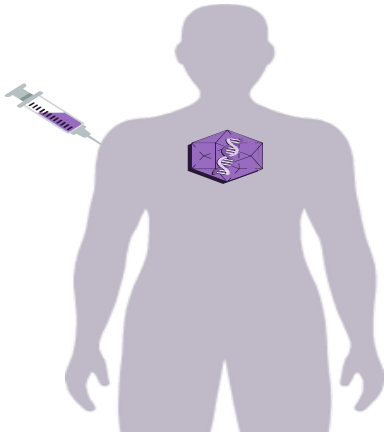
1 ***Therapeutic Development***



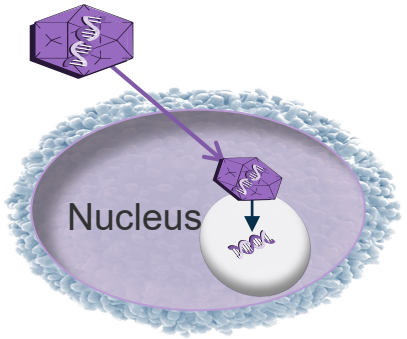
DNA (Gene)

Gene Encapsulated in AAV

2 ***Therapeutic Delivery***

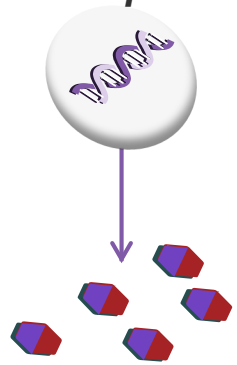


3 ***Gene Transfer***




Target Cell

4 ***Protein Production & Therapeutic Effect***



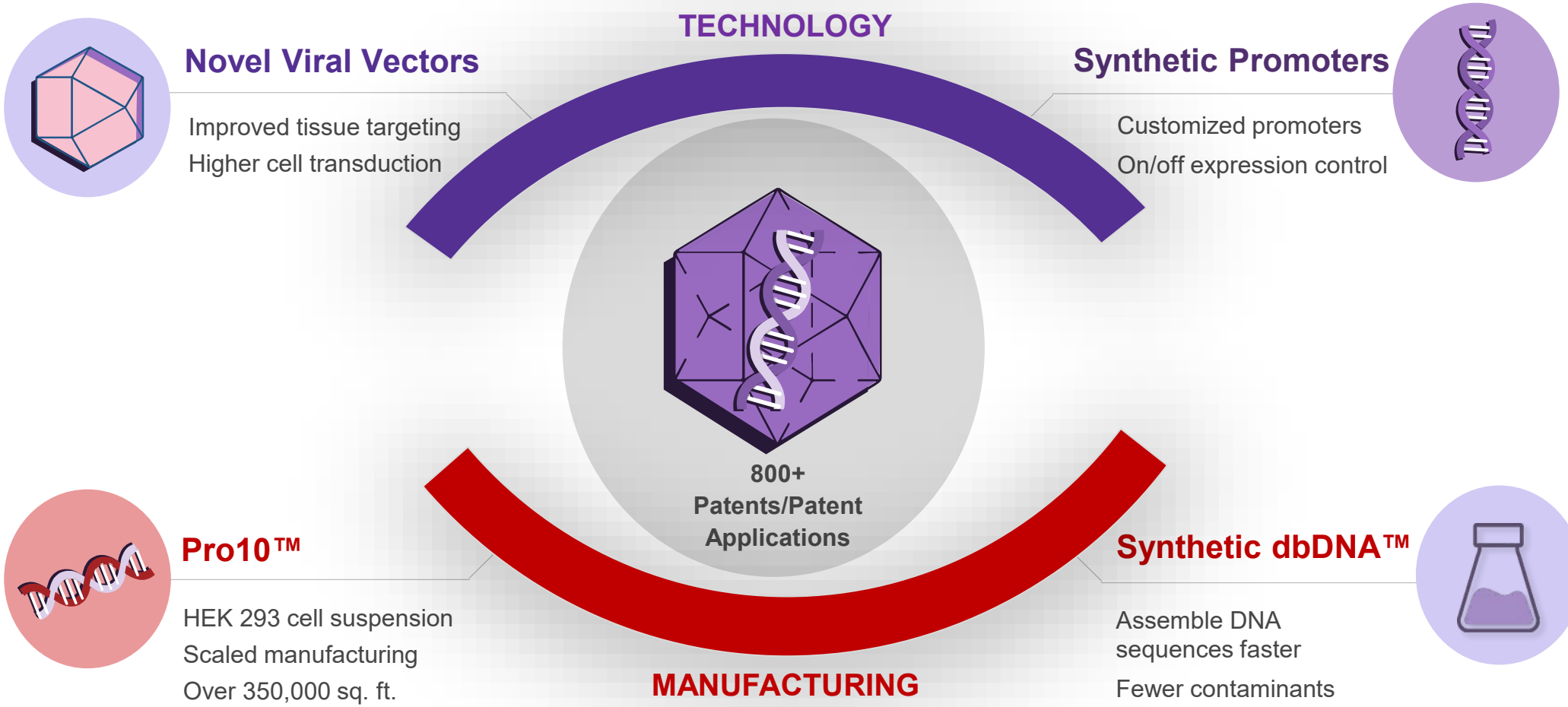
Functional Protein

## *AAV - The Superior Vector Delivery System*

- Restores normal function to damaged cells
- Good production yields
- Mild immune response
- Affects variety of cell types
- Good overall safety record
- Can be used for gene editing

# Leading AAV therapeutics toolbox

AskBio




**Designed for increased potency, optimized targeting and better safety profile | Efficient manufacturing**

# Strong therapeutic pipeline with potential for multiple products

AskBio

| Disease | Discovery | Preclinical | Phase 1/2 | Patient population | Next Milestone |
|---|---|---|---|---|---|
| Pompe disease | | | | ~20-25k in U.S. | *Ph 2/3* |
| Congestive heart failure | | | | ~5M in U.S. | *Dose Escalation* |
| Parkinson's disease | | | | ~1M in U.S. | *Read out Cohort 1* |
| Multiple system atrophy | | | | ~50k in U.S./Europe | *Finish Cohort 1* |
| Limb-girdle 2i/R9 | | | | ~2k worldwide | *File IND* |
| Methylmalonic acidemia | | | | ~2.5k in U.S. | *File IND/Repeat Dosing* |
| Huntington's disease | | | | ~120k U.S./Europe | *File IND* |
| Angelman syndrome | | | | ~20k in U.S. | *IND Enabling Studies* |

# Why partner with BAYER?

AskBio™

**Culture**

**Science Focused**
Bayer's purpose "Science for a Better Life" is consistent with our science driven culture

**Governance**

**Governance**
By allowing us to stay independent, we can advance drugs with the nimbleness and focus of a smaller structure

**Therapeutic Expertise**

**Cardiovascular Experience**
Bayer will assist us in advancing the development of our congestive heart failure drug

**Medicinal Chemistry**

**Small Molecule Know-how**
The capabilities of our capsids and promoters are improved with small molecule know-how

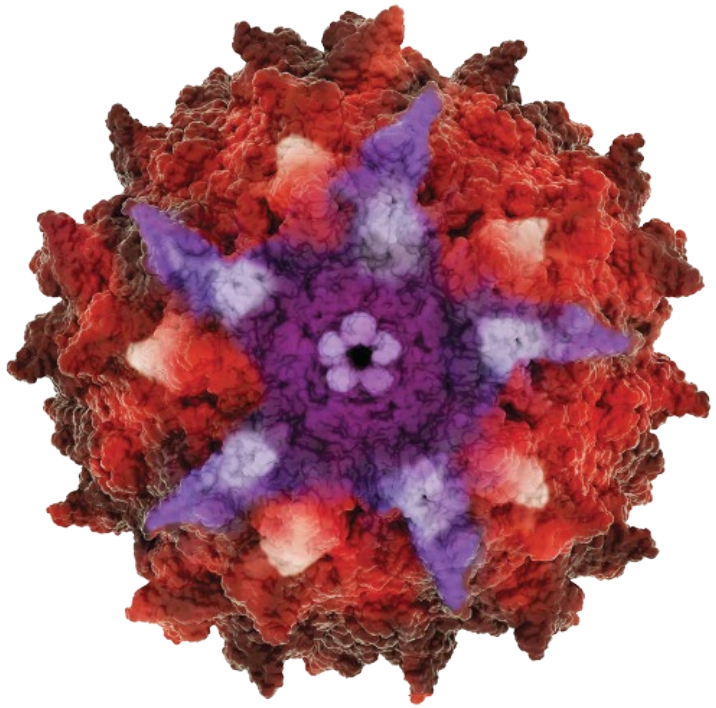
**Infrastructure**

**Global Network**
Bayer's global network will enable us to conduct clinical trials across the globe and enable better access to patients

**Distribution**

**Distribution Channels**
We will use Bayer's distribution channels for the distribution of our gene therapy drugs

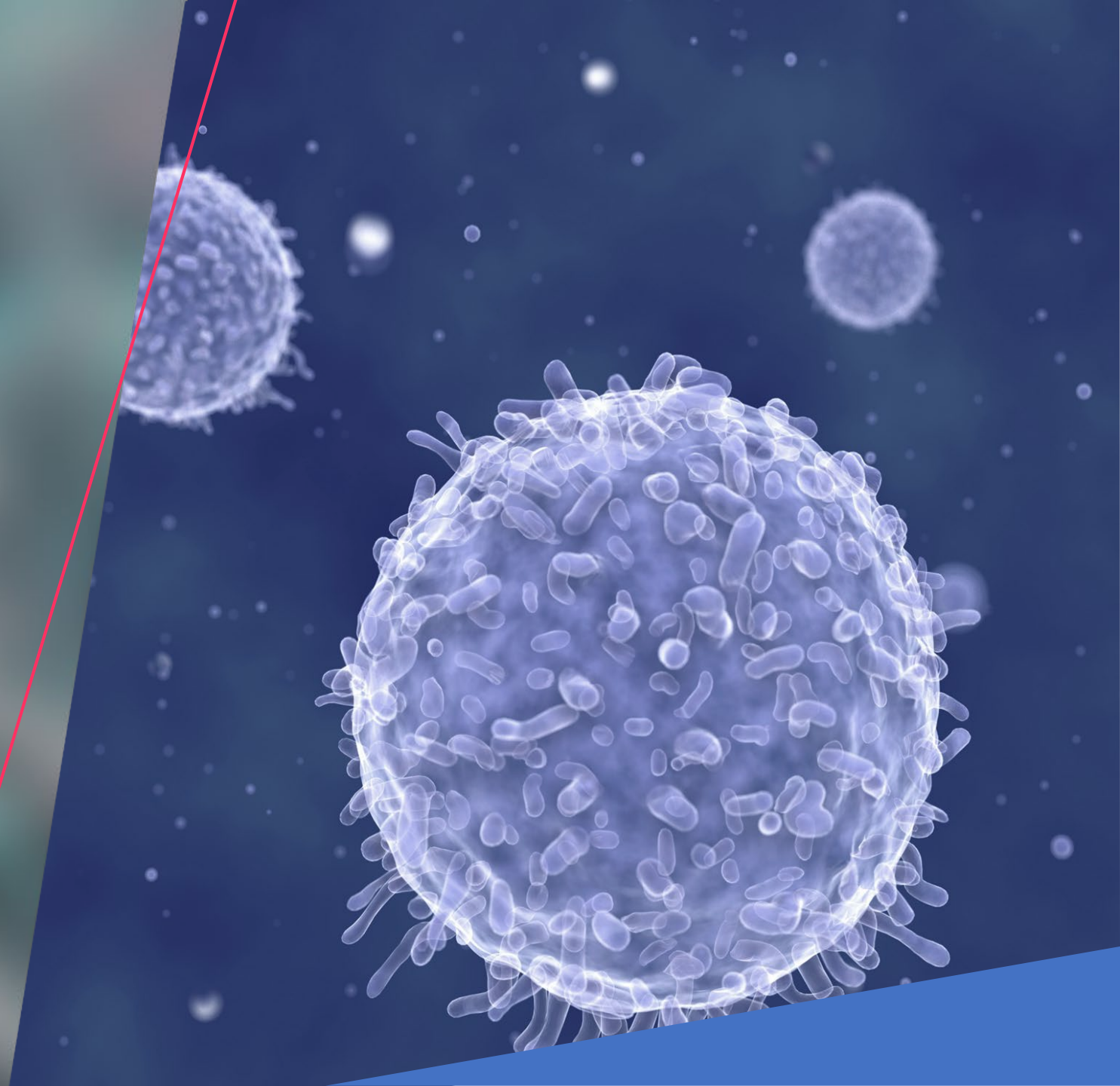
**Combining the best-in-class medicinal chemistry with leading gene therapy innovation**
**Leveraging the infrastructure of a Big Pharma while maintaining the nimbleness of a smaller biotech**



AskBio™

# *Emile Nuwaysir*

*CEO of BlueRock Therapeutics*




BlueRock
Therapeutics
An Entirely New Generation of Cellular Medicines

# Our Mission

**DEVELOP AUTHENTIC CELLULAR MEDICINES TO REVERSE DEVASTATING DISEASES.**

# Pioneering a novel *cell+gene* platform

**REPLACE**
Cells

**RESTORE**
Function

**REVERSE**
Disease

**Authentic Cell Replacement**

**ENGINEER**
Cells

**DELIVER**
Payload

**TREAT**
Rare and Common

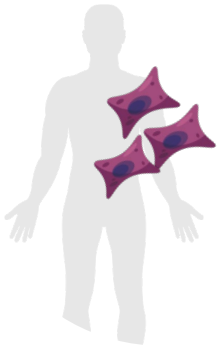
**Engineered Authentic Cells**

**Focused on three therapeutic areas: neurology, immunology, and cardiology**

# Platform Based on Universal Stem Cells

## *Enables Both Authentic and Engineered Cellular Medicines*

Healthy Donor



*Reprogram (Perform once)*

Induced Pluripotent Stem Cell (iPSC)

*Engineer*

To make "universal" cells

To add "payload" to cells

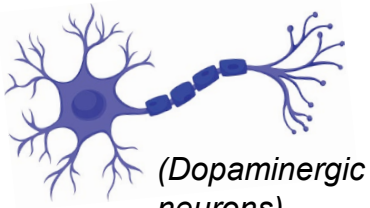
Universal iPSC for "Off-the-Shelf" Use

*Expand*

Infinite Expansion, Highly Scalable

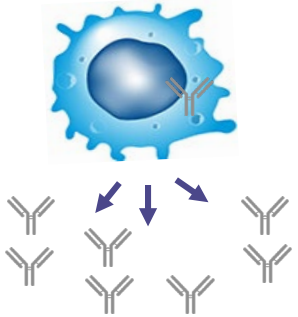
*Differentiate*

Authentic Cell Replacement



*(Dopaminergic neurons)*

Engineered Authentic Cells

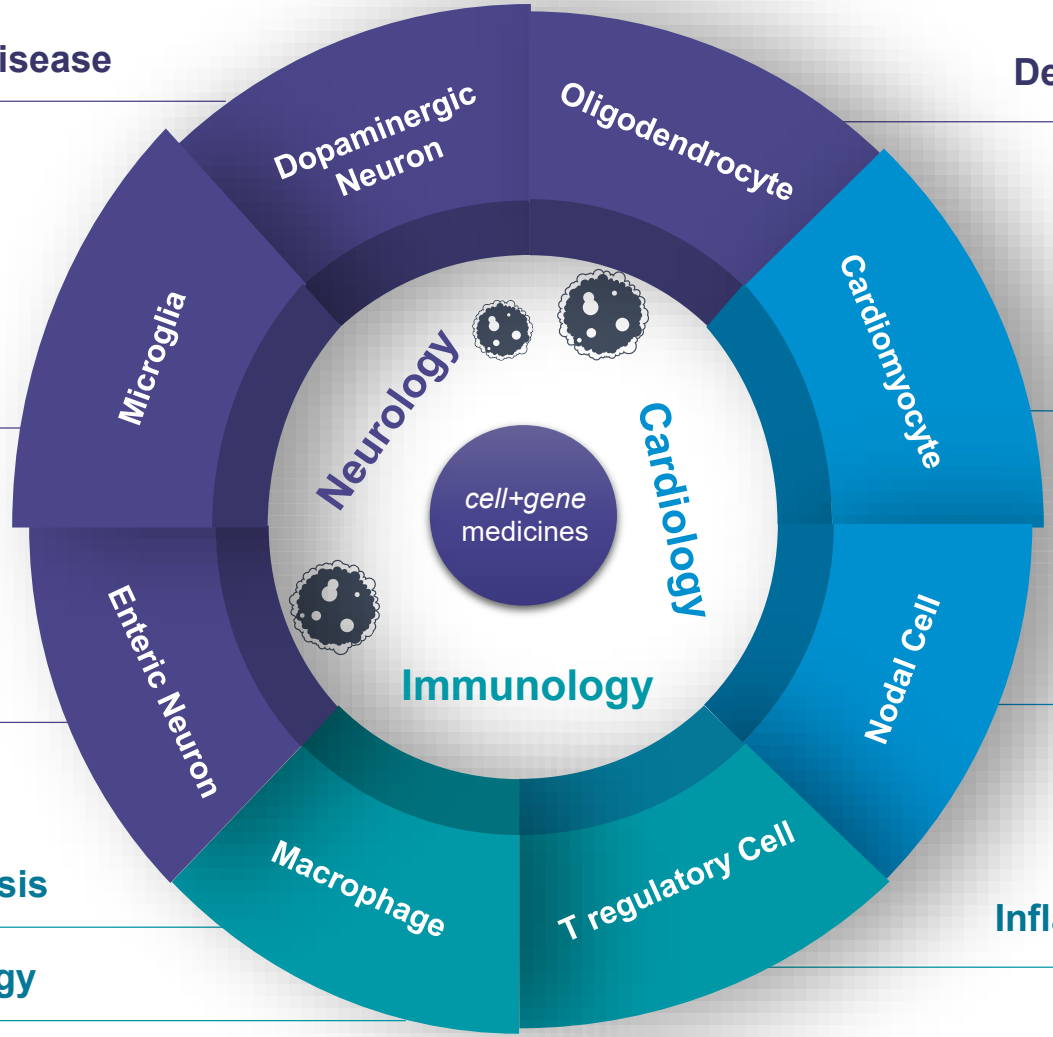


*(Macrophage expressing an antibody)*

BlueRock Therapeutics

# BlueRock Pipeline

## *Advancing a Deep Pipeline of cell+gene Therapies*




Parkinson's Disease

Demyelinating Disorders

Neurodegenerative Diseases

Heart Failure

Hirschsprung's Disease

Atrial Fibrillation

Tolerance & Fibrosis

Inflammation & Tolerance

Oncology

BlueRock Therapeutics

# Parkinson's Disease | High Unmet Medical Need

## A Debilitating Disease Impacting a Large Patient Population


- Second most common neurodegenerative disorder
- Chronic and progressive disease
- Motor and non-motor symptoms caused by loss of dopamine producing neurons
- Symptoms characterized by tremors, rigidity, cramping and dyskinesias

## Current Treatment Options Are Not Adequate

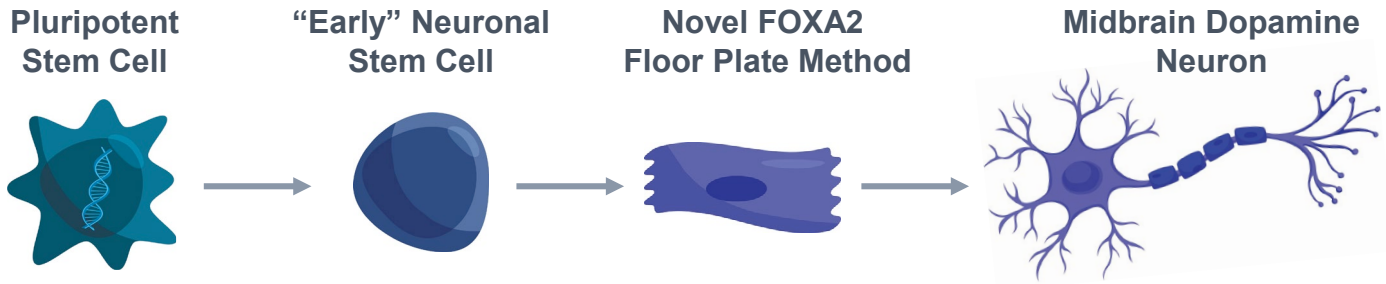
- Medications, effective at early stages, become less and less effective with disease progression
  - Annual WW sales of ~$2.8B by 2019
- DBS carries the risk of infections, stroke, seizures, is costly and requires follow-up surgeries
  - Global DBS devices market expected to reach $9.4B in 2019
- Gene therapy approaches have the challenge to express therapeutic genes in degenerative tissues

* *Nature Reviews Drug Discovery 10, 571-572 (August 2011)*
** *http://www.prnewswire.com/news-releases/market-for-deep-brain-stimulation-devices-for-parkinsons-disease-to-be-worth-usd-94-billion-by-2019-transparency-market-research-551769321.html*

BlueRock Therapeutics

# Best-in-Class Neural Cell Differentiation Expertise

## *BlueRock's Team Pioneered the Derivation of Dopaminergic Neurons*




**Over $23M in NYSTEM grants supported the advancement of Studer's PD cell therapy efforts**

**Lorenz Studer, M.D.**
*BlueRock Founder*

Memorial Sloan Kettering Cancer Center

NYSTEM
NEW YORK STATE STEM CELL SCIENCE

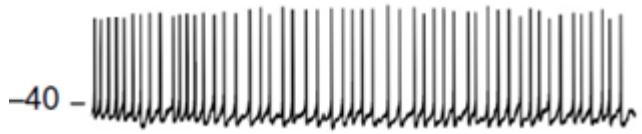
The Washington Post

**Ask a MacArthur genius: Can transplanted brain cells cure Parkinson's?**

NEW YORK STATE

**NYSTEM Congratulates Lorenz Studer, Winner of MacArthur Foundation Fellowship for Pioneering Research Into Parkinson's Disease**

- ✓ Highly pure and specified DA neurons from floor plate protocol
- ✓ Eliminated the contaminating cell types found in older protocols
- ✓ Cells recapitulate spontaneous "bursting" of the authentic cell type




- ✓ Robust cell survival and functional benefit *in vivo*, demonstrated across multiple animal models

BlueRock Therapeutics

# Groundbreaking Phase 1 Parkinson's Trial Design:
## *Evaluation of Safety, Tolerability and Efficacy*

Memorial Sloan Kettering Cancer Center

BlueRock Therapeutics

Weill Cornell Medicine

**Trial Design**

- Single-center, open label, Phase I trial assessing DA01 authentic cell therapy for Advanced Parkinson's Disease

**Enrollment Criteria**

- 10 subjects with advanced PD (male/female)
- Patients diagnosed >5 and <15 years ago
- Responsive to L-dopa, but inadequate relief of motor symptoms

**Objectives**

- Safety, tolerability, PET-imaging for cell survival at 1 year
- Preliminary efficacy (motor, non-motor, QoL) at years 1 & 2

**Dosing**

- Two cohorts - low and high doses
- Immunosuppression up to 12 months following transplantation

**Takeaways**

- Significant clinical trial protocol improvements over prior cell therapy PD trials (authentic cell, GMP-quality materials, enrollment criteria, evaluation timepoint, immunosuppression, surgical procedure)
- Ongoing PD Natural History study (n=100) at Weill Cornell w/ same primary investigator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TO REVERSE DEVASTATING DISEASES.

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