



Investor Presentation

March 11, 2019

PIONEERING THE POSSIBLE

 |

Forward Looking Statements

This presentation contains forward-looking statements within the meaning of the “safe harbor” provisions of The Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, contained in this presentation, including statements regarding the Company’s strategy, future operations, future financial position, future revenue, projected costs, prospects, plans, and objectives of management, are forward-looking statements. The words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “target,” “should,” “would,” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Forward-looking statements in this presentation include statements regarding the clinical trial timeline for EDIT-101 and the Company’s 2022 goals. The Company may not actually achieve the plans, intentions, or expectations disclosed in these forward-looking statements, and you should not place undue reliance on these forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in these forward-looking statements as a result of various factors, including: uncertainties inherent in the initiation and completion of preclinical studies and clinical trials and clinical development of the Company’s product candidates; whether interim results from a clinical trial will be predictive of the final results of the trial or the results of future trials; expectations for regulatory approvals to conduct trials or to market products; availability of funding sufficient for the Company’s foreseeable and unforeseeable operating expenses and capital expenditure requirements; and other factors discussed in the “Risk Factors” section of the Company’s most recent Annual Report on Form 10-K, which is on file with the Securities and Exchange Commission, and in other filings that the Company may make with the Securities and Exchange Commission in the future. In addition, the forward-looking statements included in this presentation represent the Company’s views as of the date of this presentation. The Company anticipates that subsequent events and developments will cause its views to change. However, while the Company may elect to update these forward-looking statements at some point in the future, it 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 of this presentation.

OUR MISSION

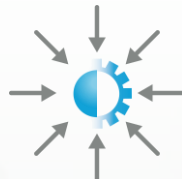
is to translate the promise of genome editing into a broad class of transformative genomic medicines to benefit the greatest number of patients





Clinical-stage company working to transform patients' lives

- First *in vivo* CRISPR clinical trial in history (EDIT-101 for LCA10)
- Plan to start EDIT-101 patient screening in mid-2019 and dosing in 2H19
- Rapidly translating exciting science into revolutionary medicines



Leader in CRISPR *in vivo* and engineered cell medicines

- Proven AAV delivery capability for CRISPR medicines
- Advancing engineered cell medicines to address blood diseases and cancer
- Enabled by unparalleled platform of Cas9 and Cpf1 (Cas12a) enzymes



Strong progress against EM22 goals

- EDIT-101 IND accepted by FDA upon initial review
- Usher syndrome 2A (USH2A) program proof-of-biology established
- Novel approach toward a durable medicine for sickle cell and beta-thalassemia



Build on Our Current Success

At least one program from our Celgene collaboration

More than one program in ocular diseases

Establish New Areas & Leverage Our Platform



At least one engineered cell medicine program beyond engineered T cells in cancer


At least one program in an additional cell or tissue type or using an advanced editing modality

| Developing Best-in-Class CRISPR Medicines

EDITING INSIDE THE BODY *IN VIVO CRISPR MEDICINES*

OCULAR DISEASES

Leber congenital amaurosis 10*  

Usher syndrome 2A 

Retinitis pigmentosa

Ocular HSV 

EARLY DISCOVERY

Liver – AATD   

Muscle – DMD 

Lung – CF

EDITING OUTSIDE THE BODY *ENGINEERED CELL MEDICINES*

CANCER

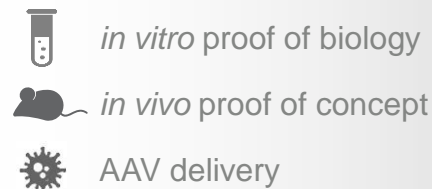
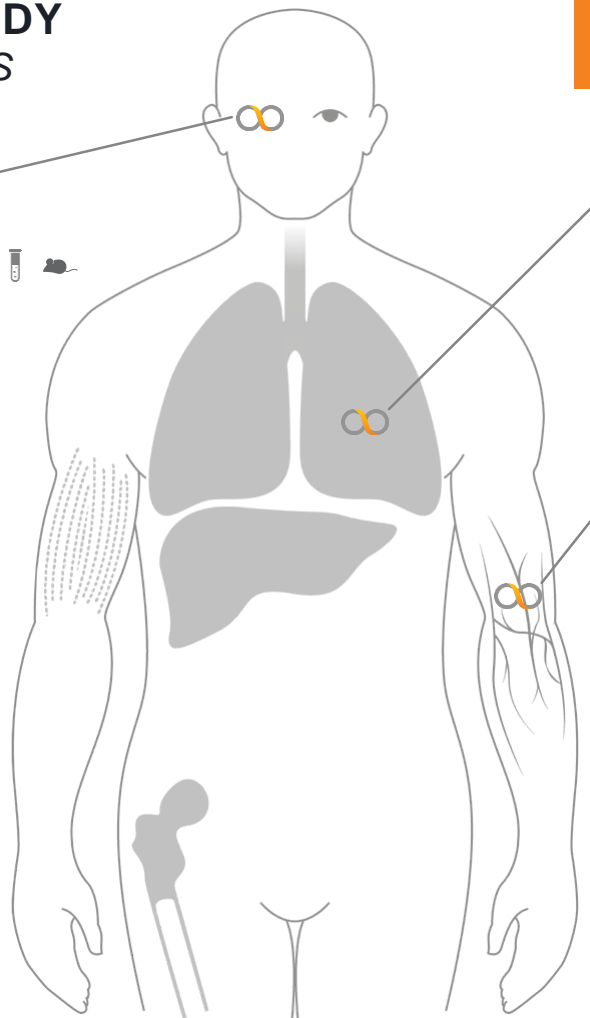
T cells for solid & liquid tumors** 

Allogeneic cell medicines

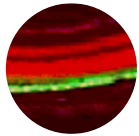
BLOOD DISEASES

Sickle cell disease  

Beta-thalassemia  



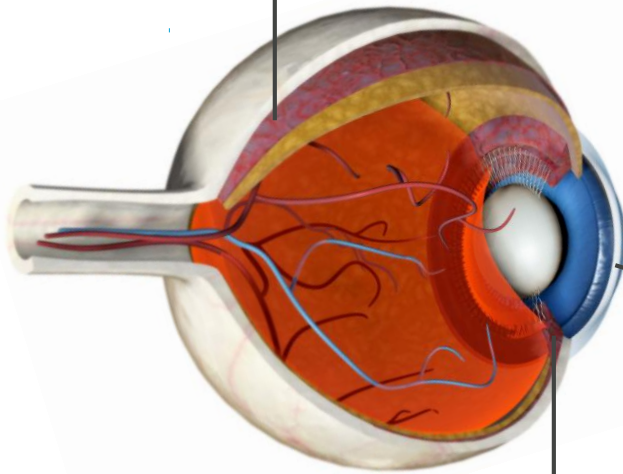
| Durable Medicines for Serious Eye Diseases



Retina

LEBER CONGENITAL AMAUROSIS
USHER SYNDROME
RETINITIS PIGMENTOSA

Cone-rod dystrophy
Age-related macular degeneration
Stargardt disease

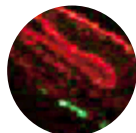


Anterior Chamber

Ocular HSV
Fuchs dystrophy

Trabecular Meshwork

Genetic glaucoma



**Hundreds of thousands
of patients**

**Targeted local injection
with proven AAV vectors**

**Promising clinical and
regulatory path**

| Targeting Leading Genetic Form of Blindness

Remove genetic mutation to
restore CEP290 protein and
rebuild photoreceptors in
**Leber congenital
amaurosis 10**

Degeneration
of photoreceptors
leading to
blindness in
childhood

2,000 - 5,000
patients
in US and
Europe

IND accepted
November 2018



and



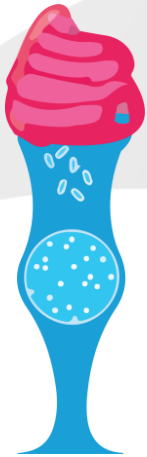
50/50 in US



| EDIT-101 Aims to Rescue Vision in LCA10

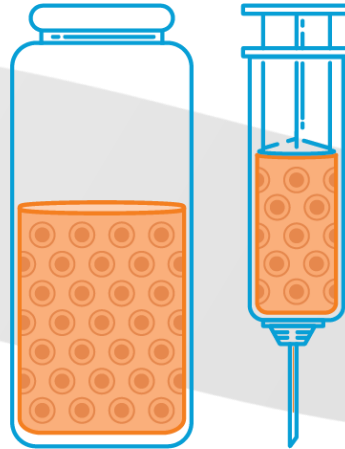
LCA10 Photoreceptor

Outer Segment



Outer segment
degenerates due to
CEP290 deficiency

EDIT-101



Editing removes
disease-causing
mutation

Rescued Photoreceptor

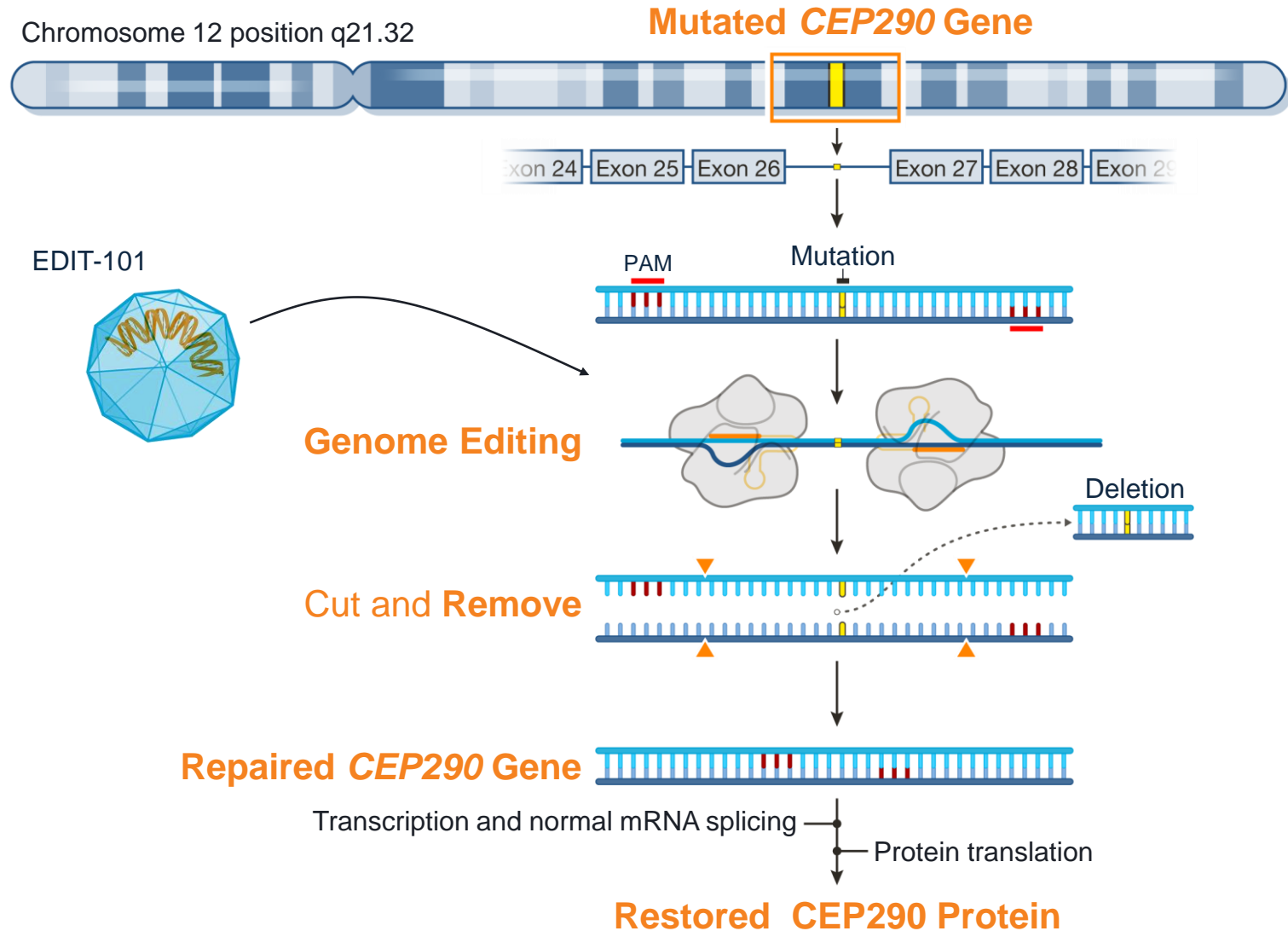
Outer Segment



Outer segment
regenerates with
CEP290 protein



EDIT-101 Aims to Rescue Vision in LCA10

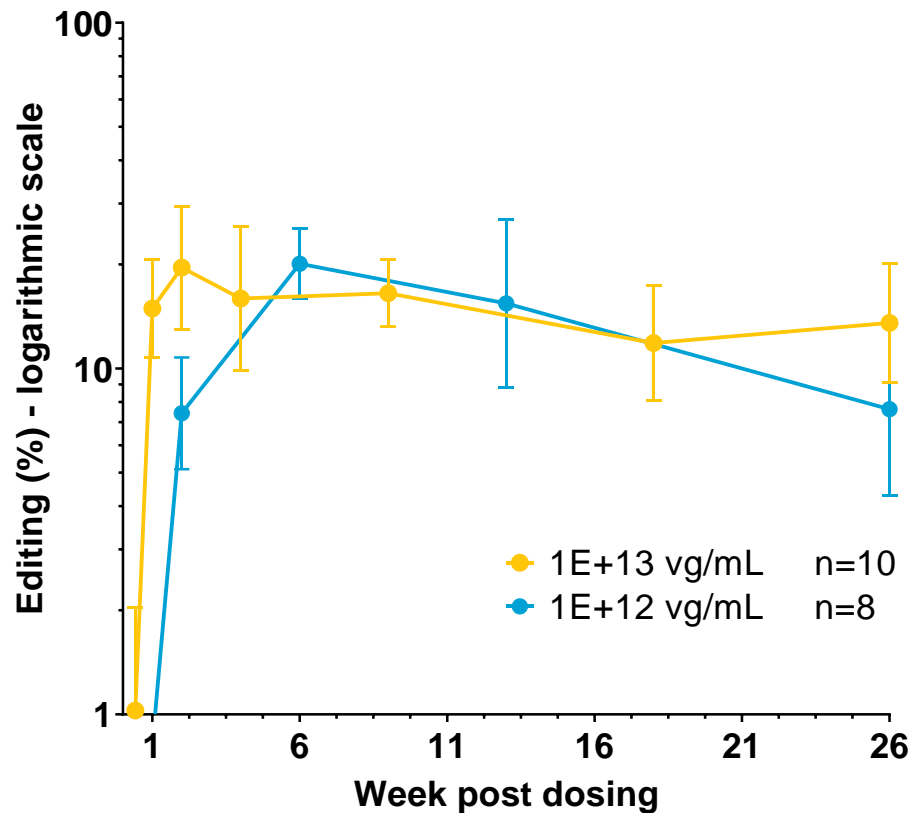




EDIT-101 Demonstrates Rapid Editing

CEP290 GENE EDITING

MOUSE FULL-THICKNESS RETINA

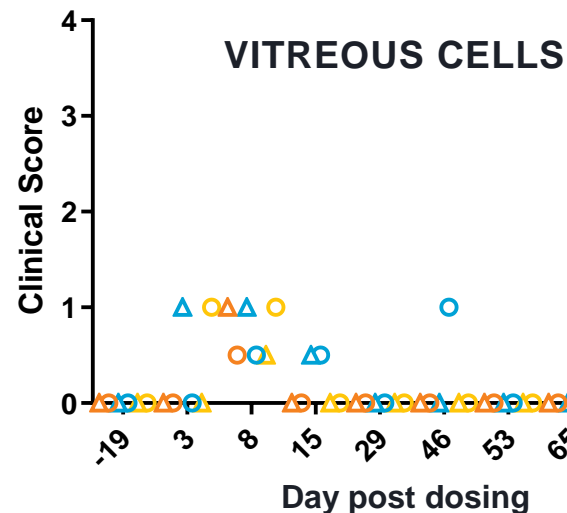
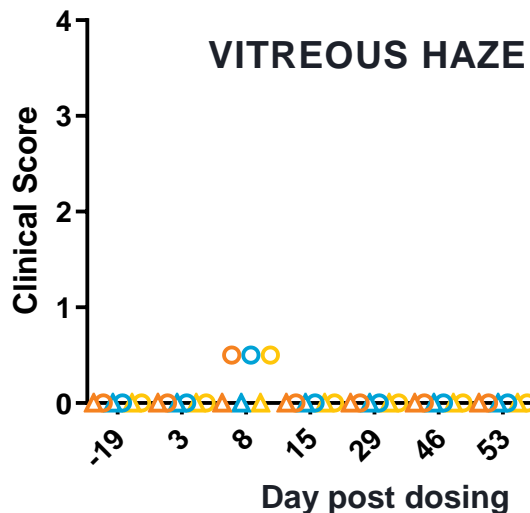
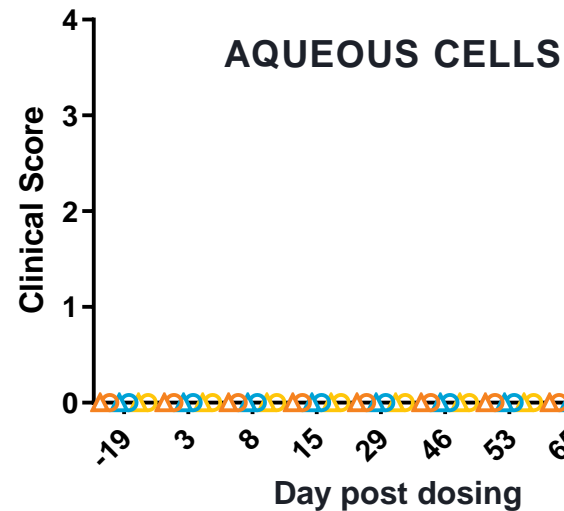
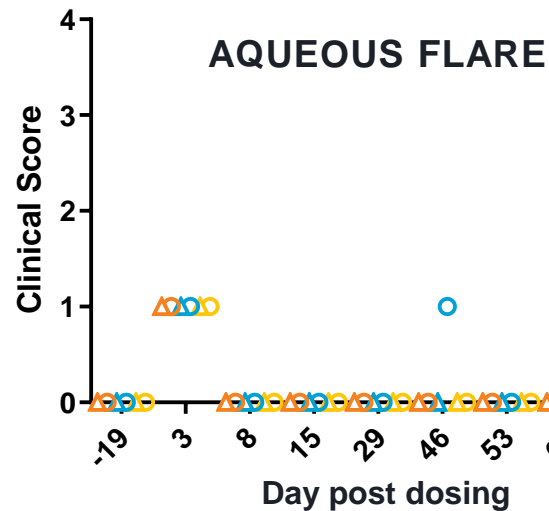


Rapid editing in transgenic mice carrying human gene mutation

Rapid editing also observed in non-human primates

Editing in both species well above predicted therapeutic threshold

EDIT-101 is Well Tolerated in Non-Human Primates



LEGEND

- EDIT-101
- Placebo
- Animal 1
- Animal 2
- Animal 3

CLINICAL SCORE

- 4.0 Severe
- 3.0 Marked
- 2.0 Moderate
- 1.0 Mild
- 0.5 Minimal
- 0 None

4 weeks of steroid prophylaxis; 1E+12 vg/mL x 100 μ L/eye

Jiang et al., *Evaluation of Tolerability and Immunogenicity of EDIT-101 Following Subretinal Injection in Non-human Primates*, American Society of Gene & Cell Therapy 21st Annual Meeting



Setting the Stage for Interventional Trials

LCA10 NATURAL HISTORY STUDY

PATIENTS



~40 patients, aged 3 and above

OBJECTIVES



Characterize patients, assessments, rate of change and validate endpoints

SITES



7 sites across US and Europe

FOLLOW-UP



6 visits over 1 year with preliminary data 1H19



EDIT-101 Advancing to Clinical Trials

EDIT-101 PHASE 1/2 TRIAL

DESIGN



Open-label, dose escalation study to evaluate safety, tolerability, and efficacy

PATIENTS



~10 to 20 patients with IVS26 mutation*

COMPARATOR



Patient's own baseline values for each efficacy measure

FOLLOW-UP



Core measurements every 3 months for 1st year

*Intervening sequence 26 in CEP290 gene containing the c.2991+1655A>G mutation

Rescue vision by restoring
USH2A protein leveraging
**same proprietary
enzyme, vector,
and promoter
as EDIT-101**

Progressive
vision loss leading
to blindness due to
degeneration of
photoreceptors

4,000
patients with
target mutation

Additional 10,000
potentially
addressable

**Editing approach
validated**

in collaboration with
Drs. Eric Pierce and Qin Liu



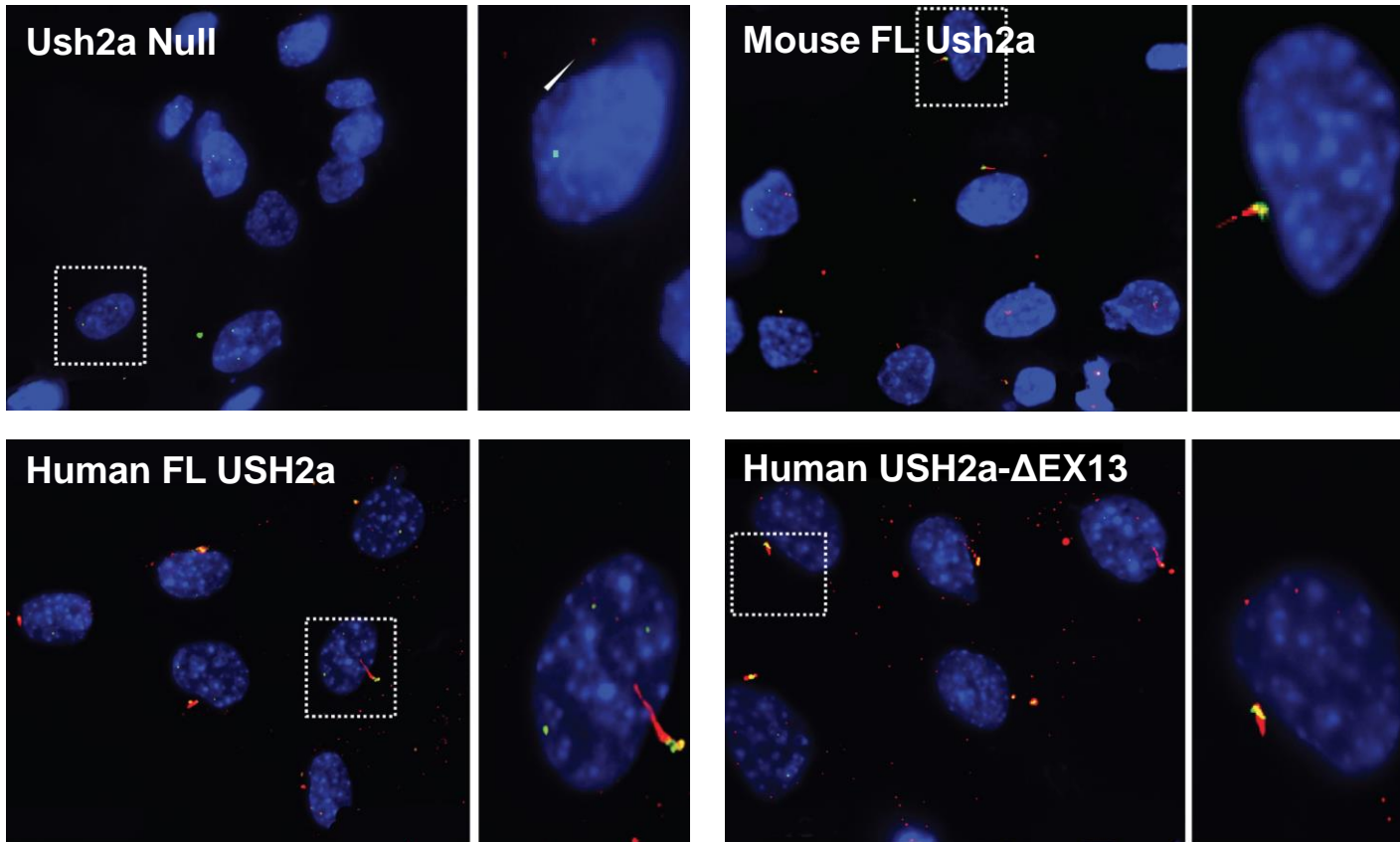
**Massachusetts
Eye and Ear®**



**HARVARD MEDICAL SCHOOL
AFFILIATE**



| Editing *USH2A* Increases Cilia length *in vitro*



Demonstrates that editing approach results in desired phenotype

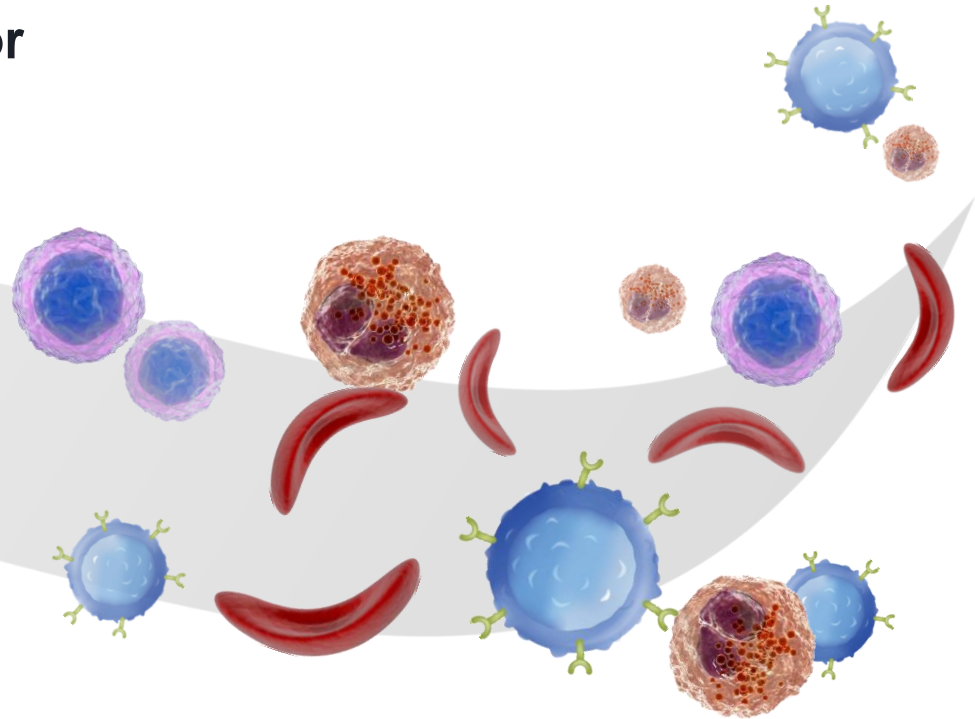


Developing Transformative Engineered Cell Medicines

Hematopoietic stem cells could yield **multiple medicines for blood diseases**

T cells and NK cells are therapeutic platform for **cancer, autoimmune, and infectious diseases**

Editas editing enables both **autologous and allogeneic cell medicines**



Edit hematopoietic stem cells to increase fetal hemoglobin
and alleviate morbidity and mortality of disease

Sickle cell disease and beta-thalassemia
causing anemia, pain crises, organ failure, and even death

Over **100,000** hospitalizations annually in US alone

Distinct editing strategy
designed to deliver **best-in-class medicines**



Three Critical Product Candidate Criteria

1

**SUCCESSFUL
EDITING**
of long-term
hematopoietic
stem cells

2

MAINTENANCE
of normal HSC
function

3

DURABLE
predicted therapeutic
induction of fetal
hemoglobin

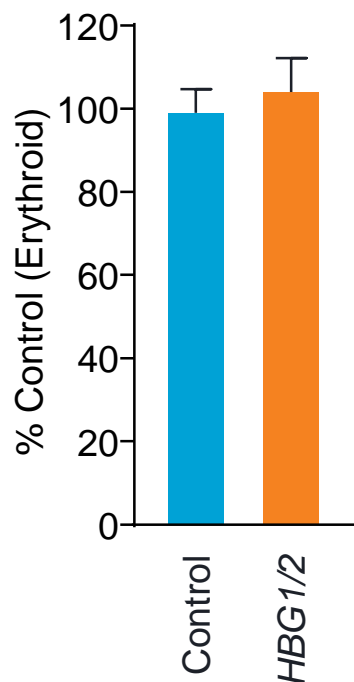
Editing strategy aligns with human genetics and is unique in the field



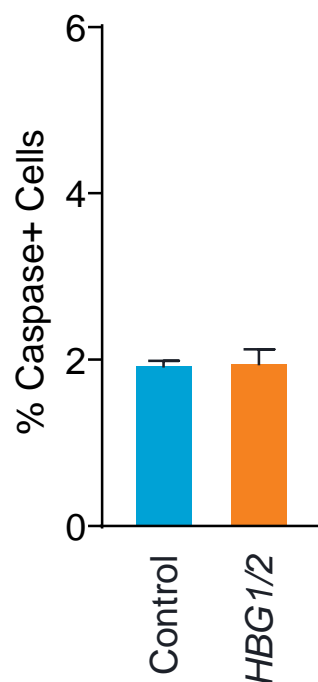
Editas Approach Maintains HSC Function

GLOBAL LOCUS EDITING EDITAS APPROACH

SIMILAR LEVELS OF
ERYTHROID OUTPUT

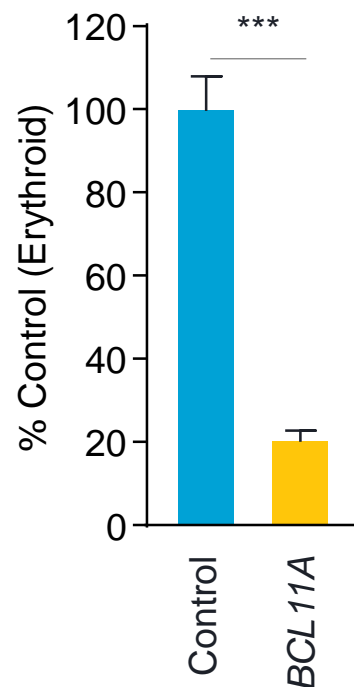


SIMILAR LEVELS
OF CELL DEATH

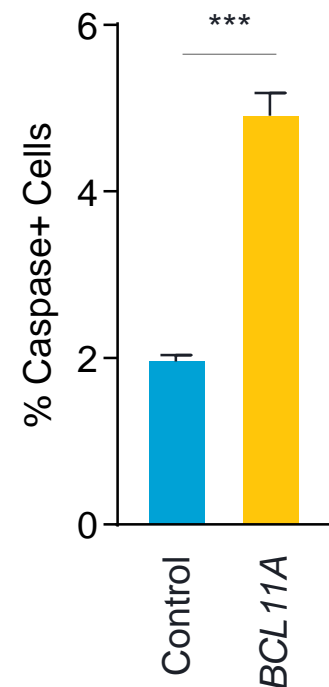


BCL11Ae EDITING COMPETING APPROACH

REDUCED
ERYTHROID OUTPUT



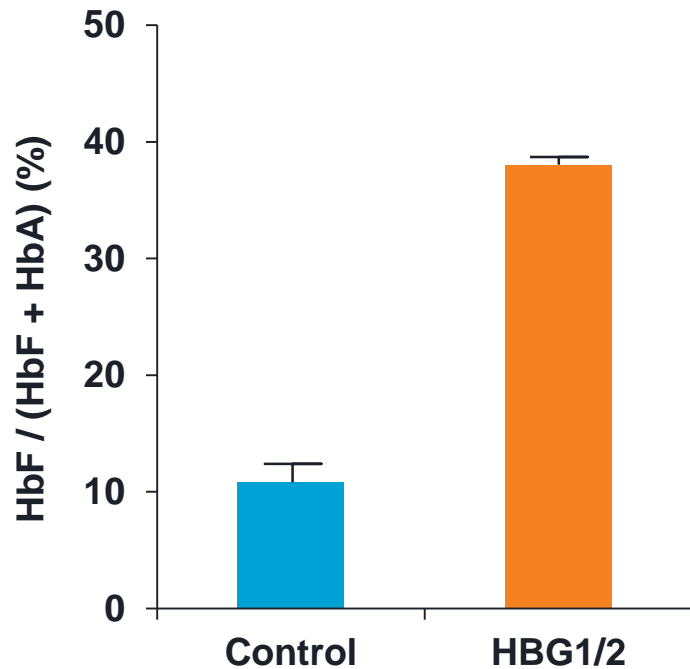
INCREASED
CELL DEATH



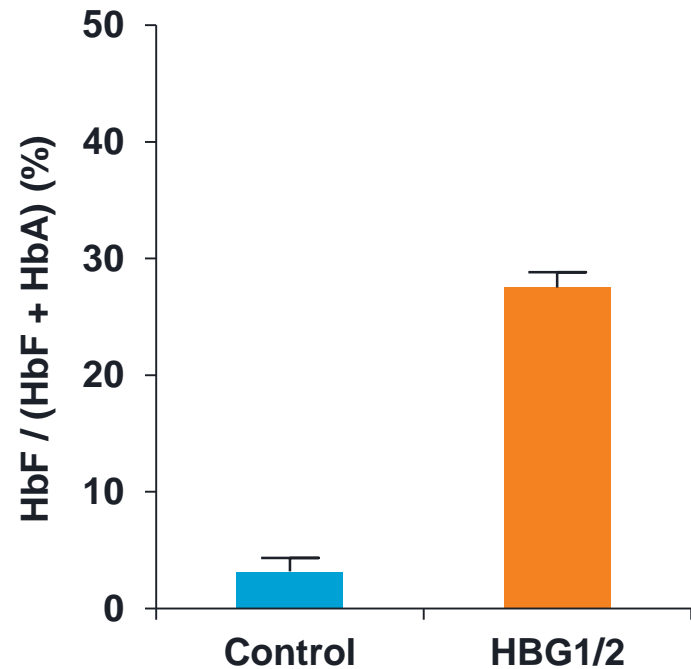
n = 5 healthy human donors; ***p<0.001

Chang et al., *Genome Editing of HBG1/2 Promoter Leads to Robust HbF Induction In Vivo While Editing of BCL11A Erythroid Enhancer Shows Erythroid Defect*, 60th ASH Annual Meeting & Exposition

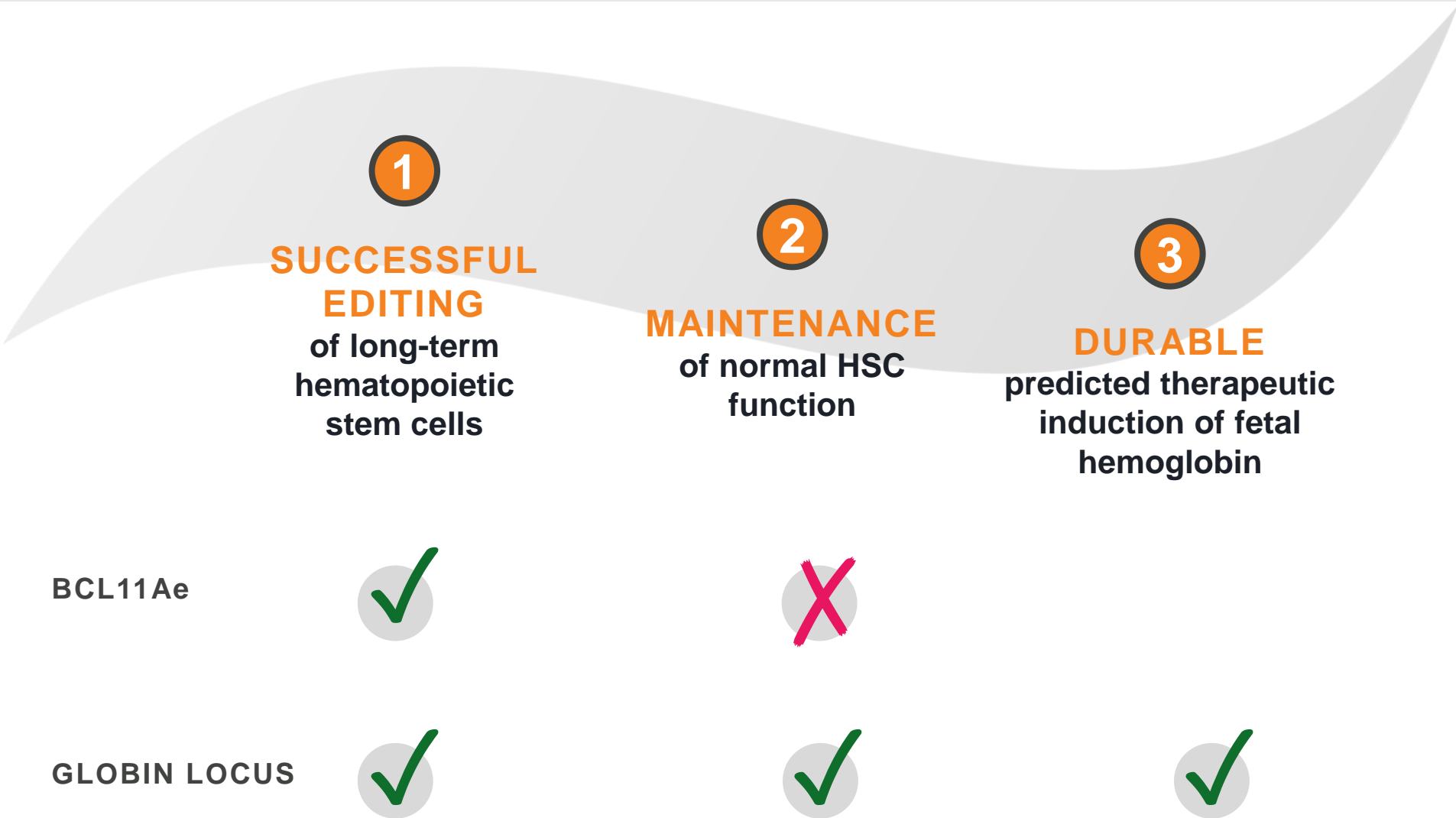
HbF INDUCTION *ex vivo*
CD34+ CELLS



HbF INDUCTION *in vivo*
RED BLOOD CELL PRECURSORS



Potential to safely and effectively induce fetal hemoglobin *in vivo*



Expand range of cancers that can be treated

with Editas Medicine engineered CAR T and TCR cell medicines

Achieved highly efficient editing of multiple gene targets, both individually and in combination

Initial collaboration **milestones achieved** in multiple product workstreams

CRISPR edited product candidates advancing in **both solid and liquid tumors**





Powerful Engine for Genomic Medicines

Broadest Access to Genomic Targets

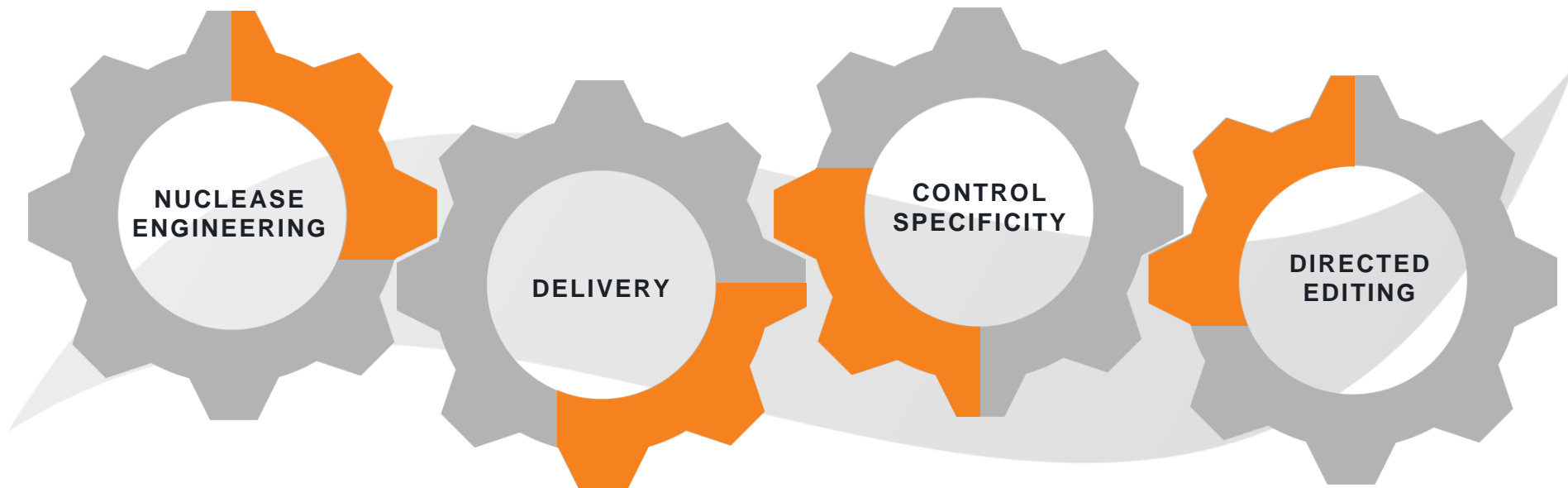
Proprietary portfolio of Cas9 and Cpf1 enzymes may directly edit ~95% of the human genome

Widest Range of Tissues and Cells

Ability to use AAVs, RNPs, and LNPs to address diseases throughout the body

Diverse Spectrum of Therapeutic Edits

Disrupt, remove, replace, or insert DNA to precisely and durably treat illness



| Strong Foundation for Long-Term Leadership

PARTNERS

OCULAR MEDICINES



Option to license up to
5 ocular programs

Partnership with innovator
in ophthalmology

\$90 million upfront plus
> \$1 billion contingent
milestones and tiered
royalties; option for 50/50
profit split in US on 2
programs, including EDIT-101

ENGINEERED T CELL MEDICINES FOR CANCER



CAR T and TCR cell medicines to
treat cancer

Partnership with leader in oncology

\$30 million upfront and up to
\$22 million in R&D funding;
~\$930 million in contingent
milestones plus tiered royalties;
\$10 million in milestones achieved
to date

PATENTS

BROADEST & DEEPEST PORTFOLIO OF CRISPR IP



Exclusive access to foundational
Cas9 and Cpf1 patent estates

Exclusive access to multiple
species and engineered forms of
Cas9 and Cpf1

Over 70 issued patents and over
600 patent applications pending

Issued patents covering EDIT-101



Community



Resilience



Ingenuity



Science



Passion



Revolution

Appendix

| Platform Enables Broad Product Pipeline

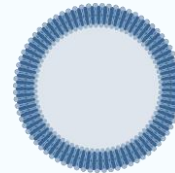

Broad
Range of
Sites




Wide
Delivery
Options



Viral Vector



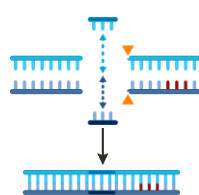
Lipid Nanoparticle



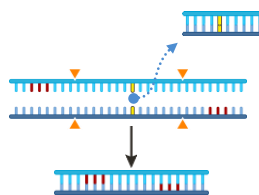
Electroporation


Diverse
Spectrum
of Edits

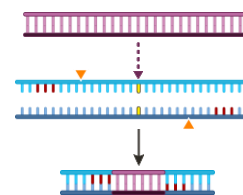
Disrupt



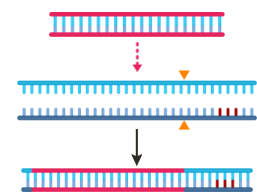
Remove



Replace



Insert



| Unmatched Patent Position in CRISPR Gene Editing

Exclusive access to Cas9 and Cpf1

patent portfolios, which are independent of each other

Exclusive access to advanced forms

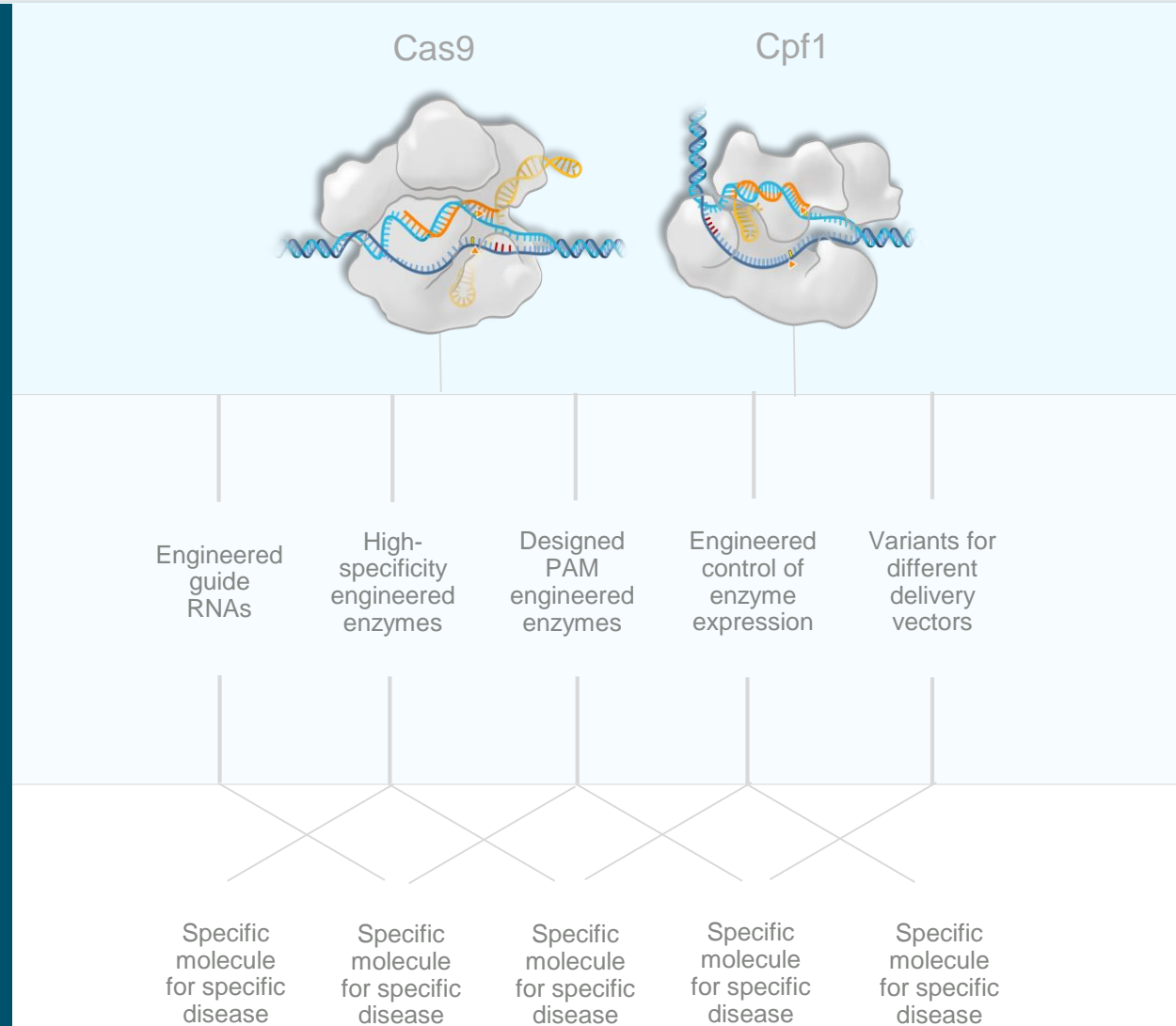
including high specificity, PAM variants, others

Over 70 issued patents

worldwide, including in United States, Europe, and Australia

Over 600 pending patent applications

from Editas Medicine and academic institutions





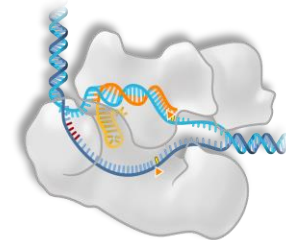
Broad Toolkit of CRISPR Nucleases

We are the ***only***
company with
***multiple editing
systems***

Cas9



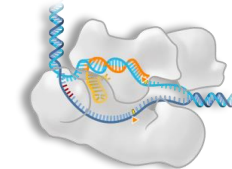
Cpf1



SpCas9



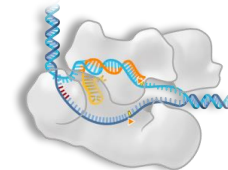
AsCpf1



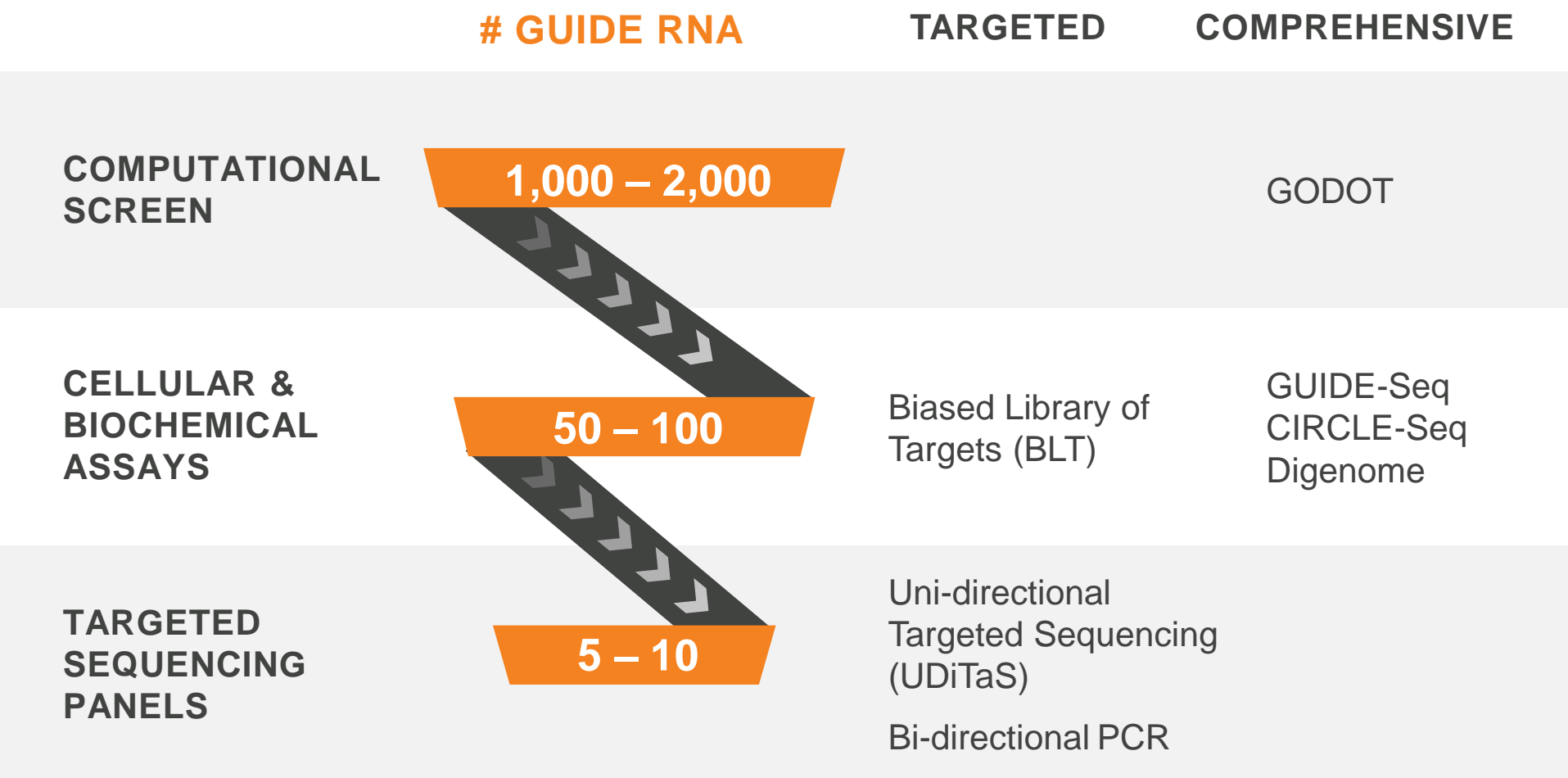
SaCas9



LbCpf1



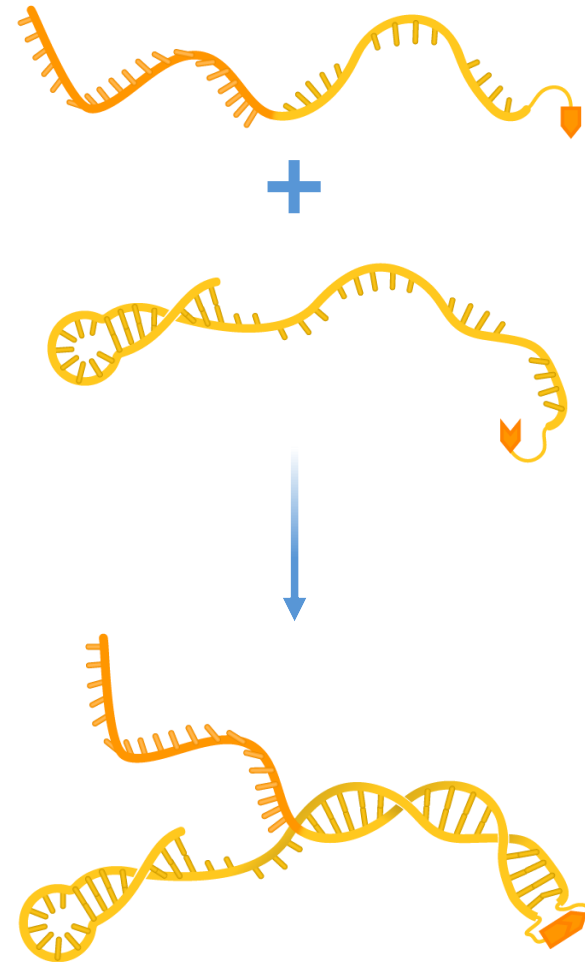
| Rigorous Approach to Specificity



**World class RNA
chemistry expertise**

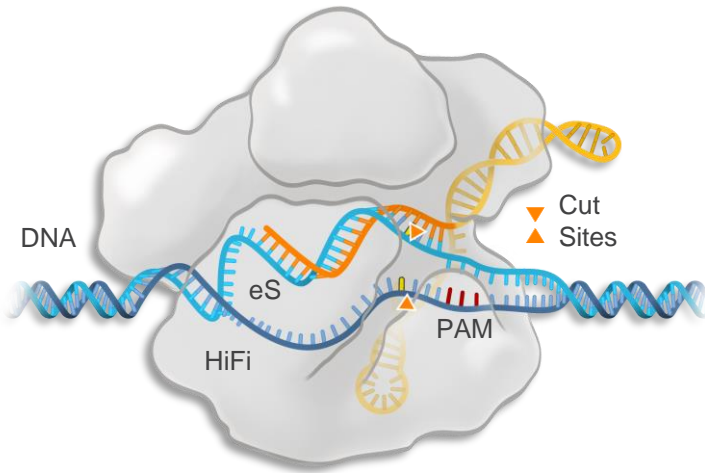
**Enables best-in-class
CRISPR medicines**

**Proprietary guide
RNAs with distinct
intellectual property**

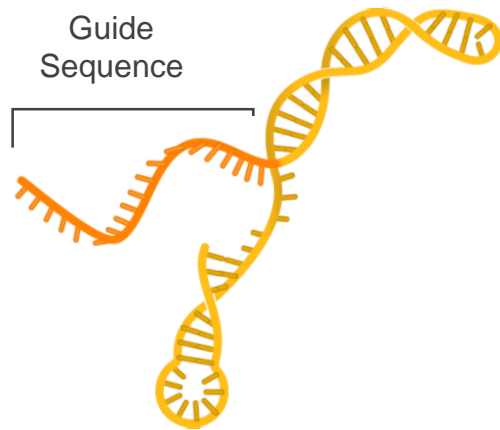


| CRISPR Unlocks Genome Editing

Nuclease



Guide RNA



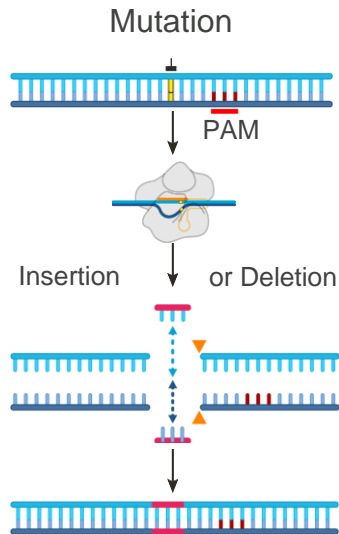
Complex of nuclease and guide RNA precisely locates and cuts genomic sites

Ability to target multiple sites simultaneously

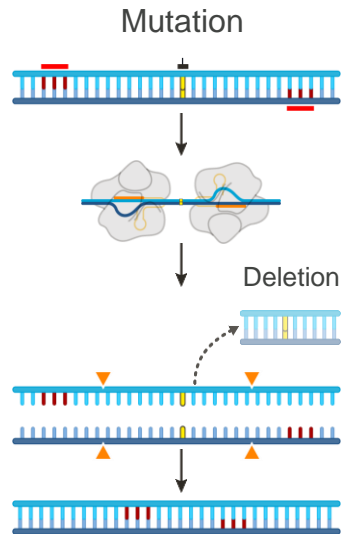
Nuclease can be engineered to reach more sites and to modulate cutting

| CRISPR Addresses Diverse Mutations

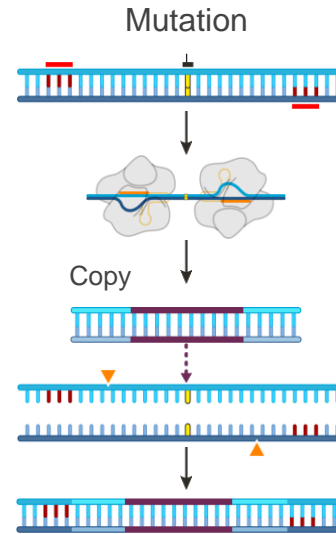
Cut and Disrupt



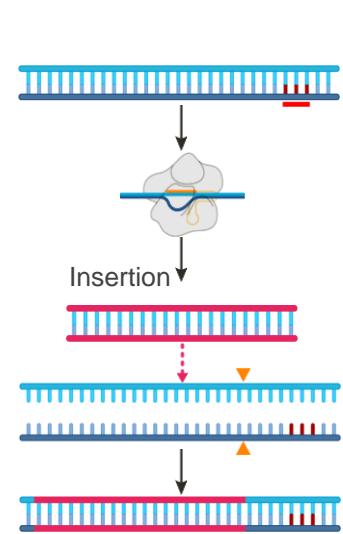
Cut and Remove



Cut and Replace



Cut and Insert

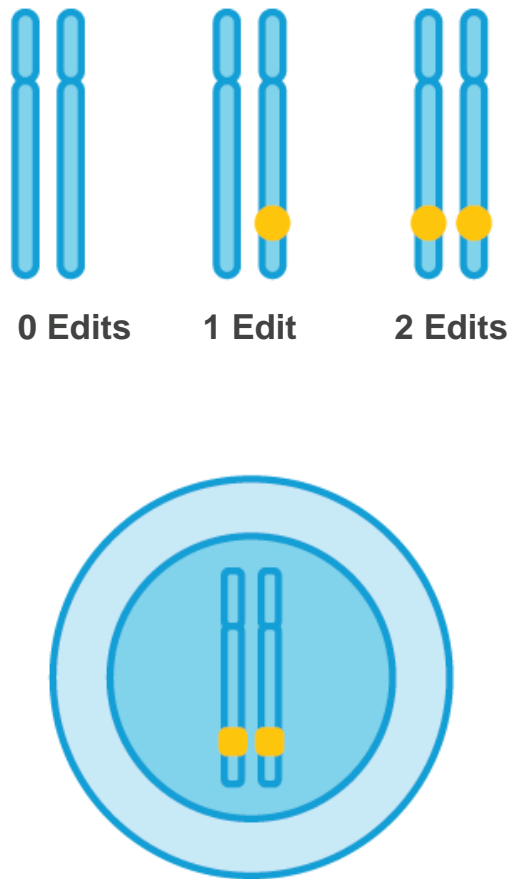


Non-homologous end joining typically **disrupts a gene or eliminates a disease-causing mutation**

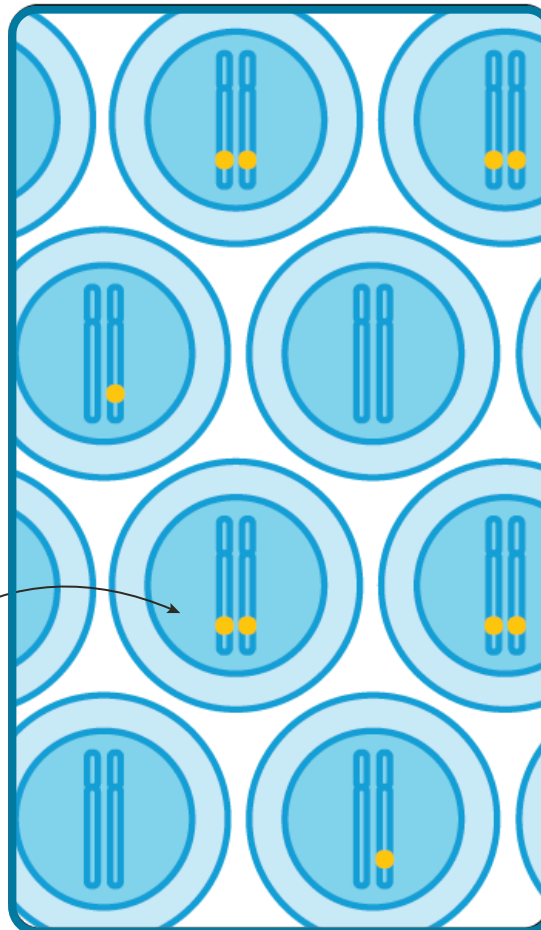
Homology-directed repair and targeted insertion aim to **promote expression of correct DNA sequences**

Fundamentals of Gene Editing Medicines

1 Editing Efficiency in Target Cell Type



2 Proportion of Target Cells Edited



3 Long-term Fate of Edited Cells

