Corporate Presentation

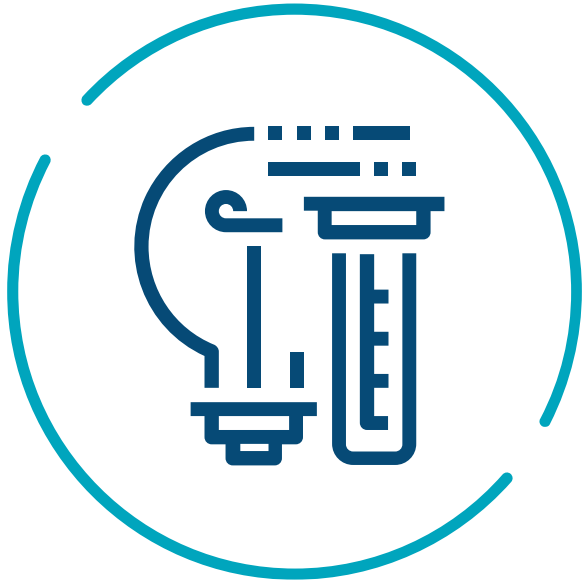
August 2021

Forward-Looking Statements

This presentation contains forward-looking statements regarding our current expectations. These forward-looking statements include, without limitation, statements relating to the potential to develop, obtain regulatory approvals for and commercialize safe and effective therapies to treat certain diseases and the timing, availability and costs of such therapies, the potential to use ZFP, ZFP-TF, ZFN, ZFP-Epi, CAR-Treg and other technologies to develop safe and effective therapies, the potential for us to benefit and earn milestone and royalty payments from our collaborations and the timing of such benefits and payments, our financial resources and expectations, plans and timelines for opening manufacturing facilities, plans and timelines for us and our collaborators to enroll patients in and conduct clinical trials and present clinical data and other statements that are not historical fact. These statements are not guarantees of future performance and are subject to certain risks and uncertainties that are difficult to predict. Our actual results may differ materially and adversely from those expressed. Factors that could cause actual results to differ include, without limitation, risks and uncertainties related to the evolving COVID-19 pandemic and its impact on the global business environment, healthcare systems and business and operations of us and our collaborators, including the initiation and operation of clinical trials; the research and development process; the uncertain timing and unpredictable results of clinical trials, including whether initial clinical trial data will be representative of final clinical trial data and whether final clinical trial data will validate the safety, efficacy and durability of product candidates; the unpredictable regulatory approval process for product candidates across multiple regulatory authorities; the manufacturing of products and product candidates; the commercialization of approved products; the potential for technological developments that obviate technologies used by us and our collaborators; the potential for us or our collaborators to breach or terminate collaboration agreements; the potential for us to fail to realize our expected benefits of our collaborations; and the uncertainty of our future capital requirements, financial performance and results. There can be no assurance that we and our collaborators will be able to develop commercially viable products. These risks and uncertainties are described more fully in our Annual Report on Form 10-K for the year ended December 31, 2020 as supplemented by our Quarterly Report on Form 10-Q ended June 30, 2021. Forward-looking statements contained in this presentation speak only as of the date hereof, and we undertake no duty to update such information except as required under applicable law. This presentation concerns investigational product candidates that are under preclinical and/or clinical investigation and which have not yet been approved for marketing by any regulatory agency. They are currently limited to investigational use, and no representations are made as to their safety or efficacy for the purposes for which they are being investigated. Any discussions of safety or efficacy are only in reference to the specific results presented here and may not be indicative of an ultimate finding of safety or efficacy by regulatory agencies.

Leading Genomic Medicines into the Clinic

We are a genomic medicines company committed to translating ground-breaking science into medicines that transform the lives of patients with serious disease



Novel Science

Clinical-stage Programs

In-house Manufacturing

Robust Set of Genomic Medicines Addressing Rare Disease, CNS, Oncology and Autoimmune Indications

Phase 3

Hemophilia A
Giroctogene fitelparvovec
Sangamo | Pfizer

Phase 1/2

Fabry Disease
ST-920
Sangamo

Renal Transplant
TX200
Sangamo

Sickle Cell Disease
SAR445136
Sangamo | SANOFI

Beta Thalassemia
ST-400
Sangamo | SANOFI

Preclinical

Inflammatory Bowel Disease
Sangamo

Multiple Sclerosis
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Oncology
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Prion
Sangamo

Neuro-developmental Disorders
Sangamo | NOVARTIS

Gene therapy
Cell therapy
Genome engineering

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2021 Expected Focus

Fabry Disease
(ST-920)

Enroll Cohort 3

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Renal Transplant
(TX200)

Initiated Phase 1/2 trial in Q1 2021

First patient enrolled by end of 2021

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Complete Manufacturing Sites

Enabling speed, capacity, and timeline control

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Hemophilia A
(giroctocogene fitelparvovec)

Ongoing enrollment in Phase 3 AFFINE

2-year Phase 1/2 data in Q4 2021

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Sickle Cell Disease
(SAR445136, formerly BIVV003)

Initial Phase 1/2 results in 2021

Ongoing enrollment in PRECIZN-1

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Building Value through Biopharmaceutical Partnerships

~$815M received in cash	~$7B in potential milestones	Potential royalty payments

Central Nervous System

NOVARTIS

$75M upfront & up to **$720M**

Takeda

$13M upfront

Biogen

$125M upfront + **$225M** in equity purchase & up to **$2.37B**

Hemoglobinopathies/Blood Disorders

Pfizer

$82M upfront & up to **$625M**

SANOFI

$20M upfront & up to **$276M**

Oncology

Kite A GILEAD Company

$150M upfront + **$50M** in equity purchase & up to **$3.01B**

Proprietary programs

Fabry Disease – ST-920

Renal Transplant – TX200

Phase 1/2 Study Evaluating ST-920 in Fabry Disease

Entry Criteria

Male and female subjects ≥ 18 years of age with classic Fabry disease

On enzyme replacement therapy (ERT) regimen; or ERT-naïve; or ERT-pseudo-naïve and has not received ERT treatment in the prior 6 months

Primary Objective

Assess safety and tolerability of ST-920

Secondary Objectives

Assess the pharmacodynamics of α-Gal A and the presence of its substrates in plasma over time

Assess impact of ST-920 on ERT administration required for subjects on ERT

Assess impact of ST-920 on renal function

Evaluate AAV2/6 vector DNA shedding over time

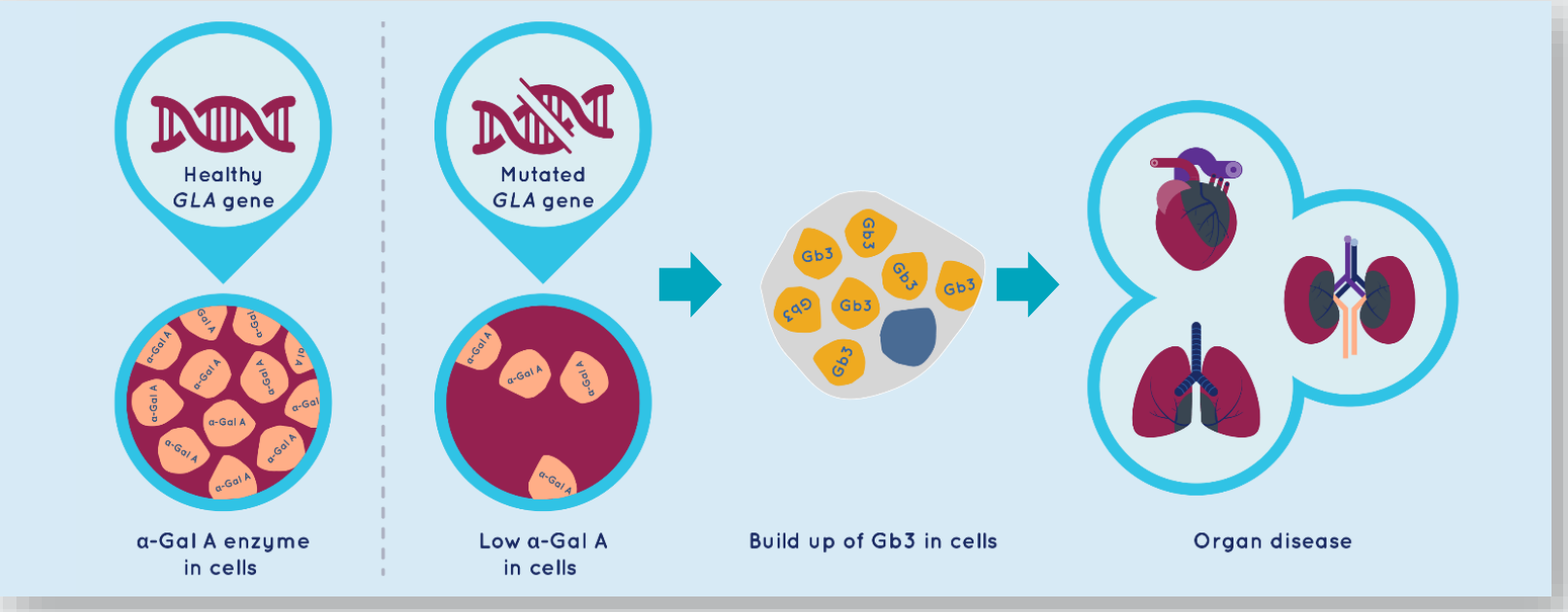
- First 4 patients dosed
- Dose escalate to high dose per SMC recommendation
- Now screening Cohort 3 patients

The goal is to provide predictable, durable expression of α-Gal A at levels which may eliminate the need for enzyme replacement therapy

ST-920 Offers a Potentially Differentiated Treatment for Fabry Disease

The lack of functioning enzyme results in an excessive accumulation of substrate in the kidney, heart, skin and vessels leading to reduced life expectancy

Fabry Disease



Our preclinical studies showed strong expression of α-Gal A which results in a reduction of Gb3 substrate across tissue types

ST-920

One-time IV infusion
No preconditioning regimen

May provide continuous, potentially life-long expression of endogenously expressed α-Gal A

Potential to deliver:

- Preserved renal function
- Reduced cardiac morbidity
- Decreased neuropathy

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Pioneering the CAR-T_{REG} Frontier

CAR-T_{REG}: Pioneering a New Frontier with TX200 for Renal Transplantation

TX200
Single infusion

Autologous HLA-A2 specific CAR-T_{REG} cell therapy

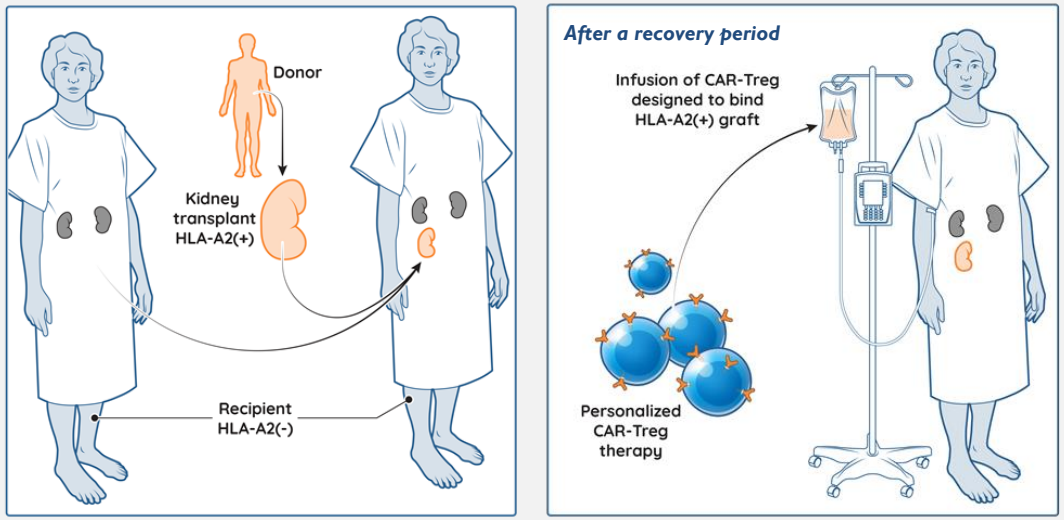
Therapeutic hypothesis and goals:

- Promote immunological tolerance to renal graft
- Help preserve graft function and reduce graft loss
- Reduce need for systemic immunosuppressive therapy

HLA-A2 Mismatched Renal Transplant

~46,000 renal transplantations expected in 2021 (US + EU)[1]

21-26% of transplanted organs are HLA-A2 mismatched[2]



Time from pre-transplant through TX200 administration may be several months

1. IROdat: https://www.irodat.org
2. Barocci et al. 2007; Marrari et al., 2010; Middleton et al., 1985; Schnitzler et al. 1997

Phase 1/2 Study Evaluating TX200 in Renal Transplantation

STEADFAST

- First clinical sites initiated
- First patient expected to be enrolled by the end of 2021

Entry Criteria

Male or female subjects aged 18-70 years, diagnosed with End Stage Renal Disease (ESRD) and waiting for a new kidney from an identified living donor

HLA-A2 mismatch between kidney donor and kidney recipient

Primary Objective

Assess safety and tolerability of TX200

Secondary Objectives

Assess incidence of acute graft rejection (confirmed by biopsy) and chronic graft rejection

Assess ability of TX200 to reduce need for immunosuppressive therapy up to 84 weeks

Assess localization of TX200 cells in the transplanted kidney

Assess impact of TX200 on chronic graft-related outcomes

TX200 is designed to help the recipient accept their donated kidney and prevent their immune system from rejecting it, thereby reducing the need for systemic immunosuppressive therapy

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TX200 Establishes Potential Foundation for Allogeneic CAR-T_{REG} and Major Autoimmune Indications

Allogeneic CAR-T_{REGS} may represent a more scalable option for major autoimmune diseases

Autologous CAR-T_{REG} clinical research (TX200)

Renal Transplant

Allogeneic CAR-T_{REG} preclinical research

Renal Transplant
Multiple Sclerosis
Inflammatory Bowel Disease

Potential for allogeneic autoimmune indications

Autoimmune Hepatitis
Crohn's Disease
Neuromyelitis Optica
Rheumatoid Arthritis
Systemic Sclerosis
Type 1 Diabetes Mellitus
Ulcerative Colitis
Vitiligo

2021 Clinical Partnered Programs

Pfizer – Hemophilia A – Phase 3

Sanofi – Hemoglobinopathies – Phase 1/2

Giroctocogene Fitelparvovec (SB-525 / PF-07055480) Program Transitioned to Pfizer for Phase 3 Development

Phase 3 AFFINE Study

Pfizer expects pivotal data readout in 2022;
Phase 3 lead in study fully enrolled

Dosed first subject in Oct 2020

Open-label, global, multicenter, single arm study evaluating the efficacy and safety of SB-525 in patients with moderately severe to severe hemophilia A

Primary endpoint is impact on annual bleed rate, or ABR, through 12 months following treatment versus Factor VIII replacement therapy collected in the Phase 3 lead-in study, which will provide a baseline for Phase 3 study participants

Participants will be analyzed throughout the 5-year study period following the single infusion to further assess durability and efficacy

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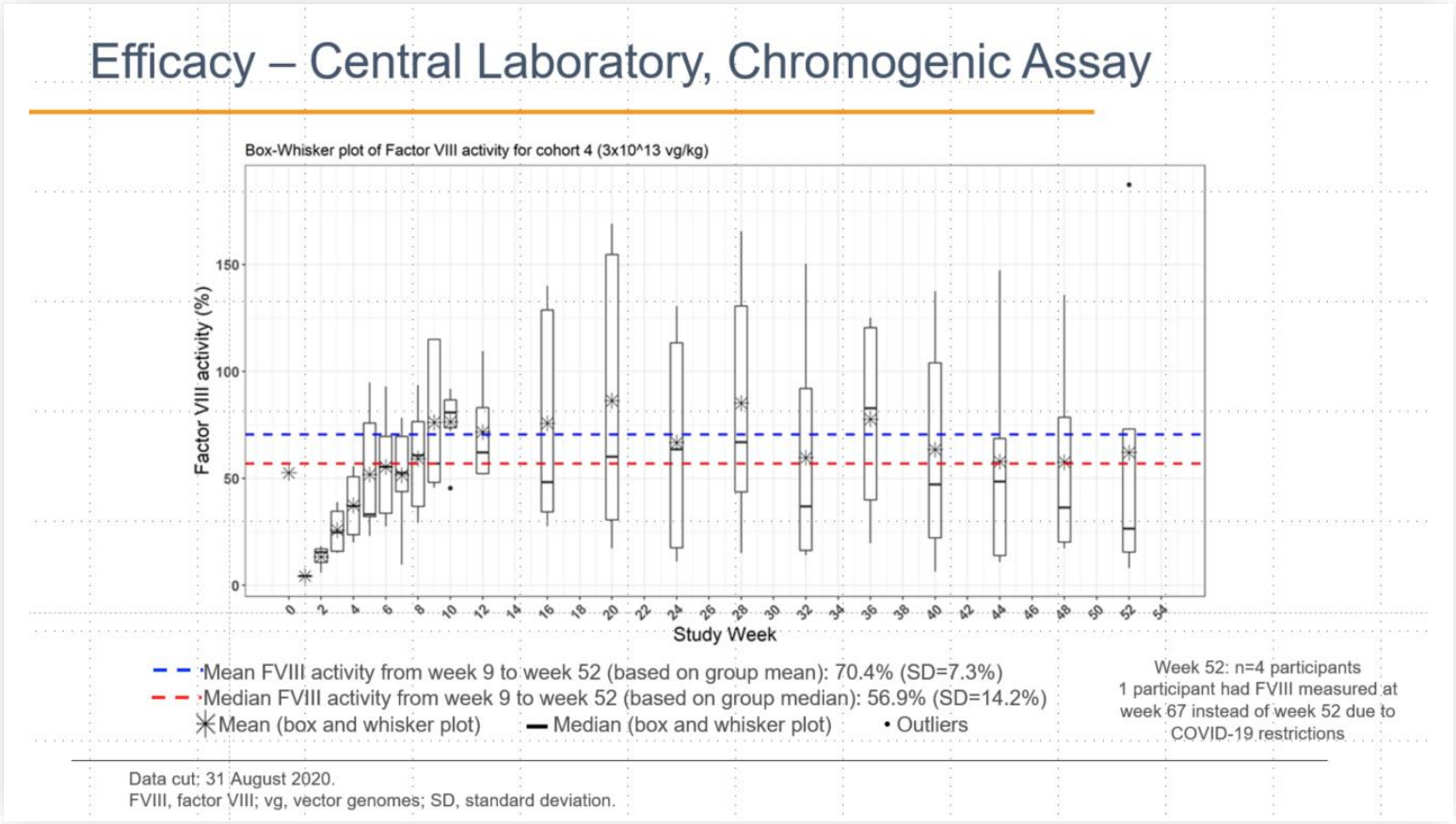
Pfizer

Phase 1/2 Alta Study of Giroctocogene Fitelparvovec (SB-525 / PF-07055480) Gene Therapy for Hemophilia A - Efficacy, Cohort 4 (3e13 vg/kg)



Updated Alta Study Results Presented by Pfizer at ASH 2020 on Dec. 7, 2020

Durable FVIII expression through one year

Steady state FVIII activity achieved by Week 9

FVIII activity from Week 9 to 52:

- Median = 56.9%
- Mean = 70.4%

FVIII activity from Week 9 to longest available follow up (Week 82 for patient 7):

- Median = 50.2%
- Mean = 63%

No bleeds in the first year; one treated target joint bleed was reported during the 2nd year following vector infusion

Phase 1/2 Alta Study of Giroctocogene Fitelparvovec (SB-525 / PF-07055480) Gene Therapy for Hemophilia A - Safety

Treatment-Related Adverse Events

MedDRA Preferred Term	Cohort 2 2e12 vg/kg (n=2)		Cohort 4 3e13 vg/kg (n=5)		All Participants (N=11)	
	Subjects, n (%)	No. of Events	Subjects, n (%)	No. of Events	Subjects, n (%)	No. of Events
Any treatment-related event	2 (100.0)	5	4 (80.0)	21	6 (54.4)	26
ALT increased[a]	2 (100.0)	3	3 (60.0)	10	5 (45.5)	13
Pyrexia			3 (60.0)	3	3 (27.3)	3
AST increased	1 (50.0)	2	2 (40.0)	3	3 (27.3)	5
Tachycardia			2 (40.0)	2	2 (18.2)	2
Fatigue			1 (20.0)	1	1 (9.1)	1
Hypotension			1 (20.0)	1	1 (9.1)	1
Myalgia			1 (20.0)	1	1 (9.1)	1

- No treatment-related AEs for participants in cohorts 1 and 3

[a]One participant had an ALT increase per central lab results that the Investigator has not reported increase as an adverse event.
Data cut: 31 August 2020. AE, adverse event; ALT, alanine transaminase; AST, aspartate aminotransferase; vg, vector genomes.

Updated Alta Study Results Presented by Pfizer at ASH 2020 on December 7, 2020

Giroctocogene fitelparvovec was generally well tolerated

Treatment-related SAEs occurred in 1 participant in cohort 4 (grade 3 hypotension and grade 2 fever ≈6 hours after completion of the vector infusion); resolved ≈12 hours post infusion

4 of 5 cohort 4 participants required corticosteroid treatment for ALT/AST elevation; all resolved with intervention

As of 52 weeks, no corticosteroid use has been required

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Hemoglobinopathies Collaboration with Sanofi

Phase 1/2 PRECIZN-1 Study in sickle cell disease

Sanofi continuing to screen/enroll subjects into the Phase 1/2 PRECIZN-1 clinical trial evaluating SAR445136 (formerly BIVV003), ex vivo gene-edited cell therapy product candidate for sickle cell disease

- FDA granted Fast Track designation
- EMA granted Orphan Designation based in part on early data
- Sanofi expects to present initial data at a medical meeting in 2021

Phase 1/2 Thales Study

Five subjects dosed in Sangamo's Thales study evaluating ST-400 for transfusion dependent beta thalassemia

- No additional subjects to be enrolled until data from PRECIZN-1 and Thales have been collected and analyzed
- Follow-up data expected in 2021 from the Thales study

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Innovation in Neurological Disease

Sangamo ZFP Technology: Potential to Access Hundreds of Genomic Targets in CNS

ZFP-TF genome regulation		Example target
Pan-Allele	**ZFP-TFs for single gene repression and activation**	• Tauopathies • α-Synuclein • Autism Spectrum Disorder
Allele-Selective	**ZFPs target disease allele repeats selectively**	• Huntington's Disease • C9ORF72-linked ALS
Epigenetic Editing	**ZFP-Epi to demethylate select sites**	• Rett Syndrome • Fragile X
ZFN genome editing		**Example target**
Inflammation	**CAR-T_{REGS} for remyelination and inhibition of neuroinflammation**	• Multiple Sclerosis • ALS
Mitochondrial	**ZFNs for selective clearance of mutant mitochondrial genomes**	• Cerebellar Ataxia • Leigh Syndrome

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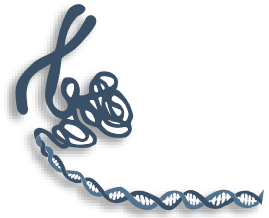
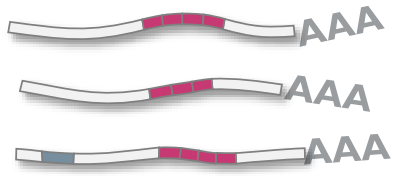
ZFP-TFs Target Upstream at the Source of Mutant Protein Isoforms and Complexes



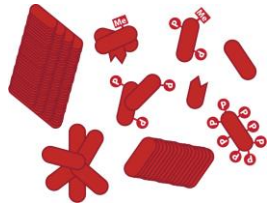
DNA

1 mutant allele



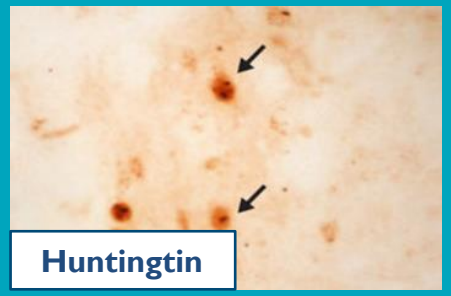
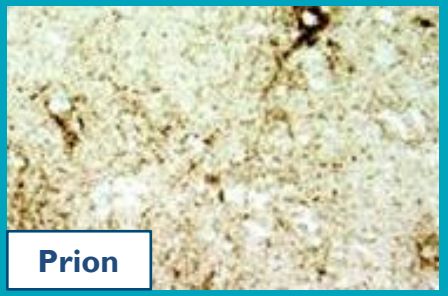
RNA

Sense, antisense, mis-spliced



Protein

Varied and complex

ALZHEIMER'S DISEASE	PARKINSON'S DISEASE	HUNTINGTON'S DISEASE	ALS	PRION DISEASE
 Tau	 α-Synuclein	 Huntingtin	 C9orf72	 Prion
Biogen	Biogen	Takeda	Pfizer	Sangamo THERAPEUTICS

Hill et al., 2003 Jucker & Walker 2013

Irwin et al., 2015 Waldvogel et al., 2014

Robust Pipeline of Genomic Medicines in Neurological Diseases

Phase 3

Hemophilia A
Giroctogene fitelparvovec
Sangamo | Pfizer

- Gene therapy
- Cell therapy
- Genome engineering

Phase 1/2

Fabry Disease
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Key Points in Sangamo's 2021 Story

Executing on Clinical-stage Pipeline

Phase 3 2021 Clinical Program

Hemophilia A
Giroctogene fitelparvovec
Sangamo | Pfizer

- Gene therapy
- Cell therapy
- Genome engineering

Phase 1/2 2021 Clinical Programs

Fabry Disease
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SAR445136
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ST-400
Sangamo | SANOFI

Investing in Manufacturing to Provide Greater Capacity, Flexibility and Control

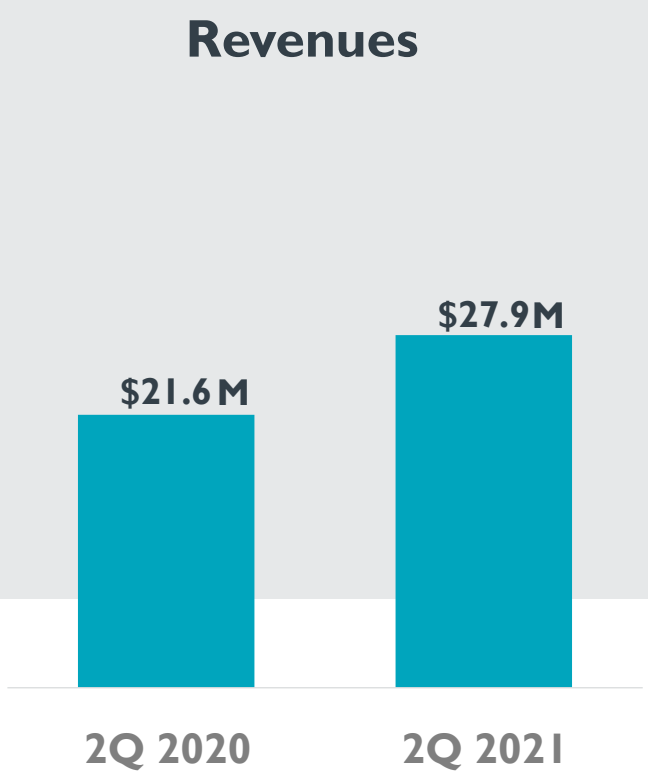
Operational Capabilities

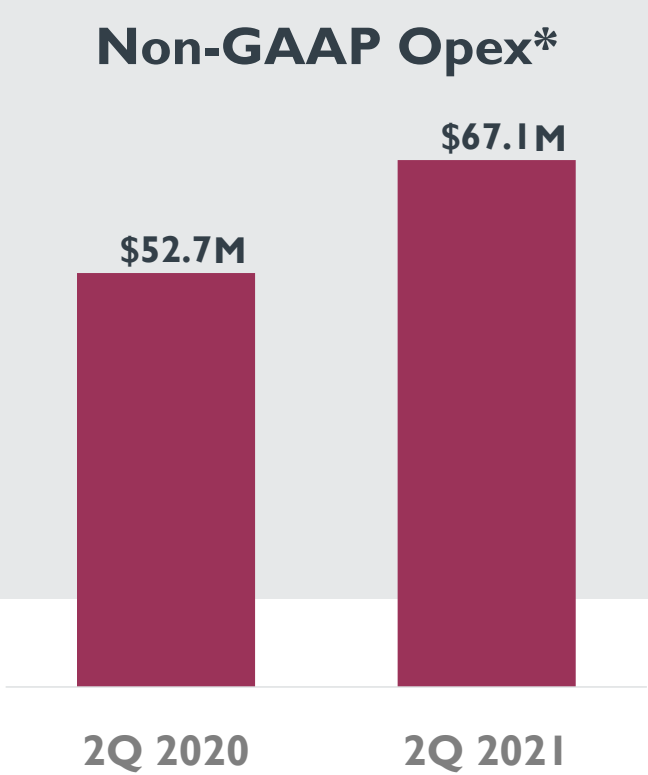
In-house Phase 1/2 cGMP facilities – increased control and flexibility of our processes, quality, supply and timeline

- Brisbane, USA
  - Gene therapy (operational as of end of 2020)
  - Cell therapy (projected 2021)
- Valbonne, France
  - Cell therapy (projected 2021)

CDMO Thermo Fisher – dedicated access to AAV capacity up to 2000-L bioreactor scale

2Q 2021 Financial Results; 2021 Guidance





FY 2021 Non-GAAP Opex**

$255M-$275M

* GAAP total operating expenses were $76.6 million for 2Q 2021, compared to $59.4 million for 2Q 2020 and included stock-based compensation expense ("SBC") of $9.5 million and $6.7 million, respectively

** On a GAAP basis we expect our 2021 operating expenses to be in the range of $285 - $305 million including anticipated SBC of approximately $30 million

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Anticipated 2021 Catalysts

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Fabry Disease (ST-920)	Enroll Cohort 3
Renal Transplant (TX200)	Initiated Phase 1/2 trial in Q1; first patient enrolled by end 2021
Cell Therapy Manufacturing Sites	Year-end 2021

Pfizer **Hemophilia A**	2-year Phase 1/2 data in Q4 2021
SANOFI **Sickle Cell Disease**	Initial Phase 1/2 data in 2021

Key Takeaways

- Broad portfolio with prioritized candidates in both rare and large indications
- Technology validating biopharma partners
- Strong balance sheet, cash of approximately $579M (as of Jun 30, 2021)
- In-house cGMP facility provides manufacturing capacity, flexibility and control of our processes
- Genomic medicine company executing on a clinical stage pipeline

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