Sangamo THERAPEUTICS

Clinical and manufacturing update

April 2, 2019

Forward-Looking Statements

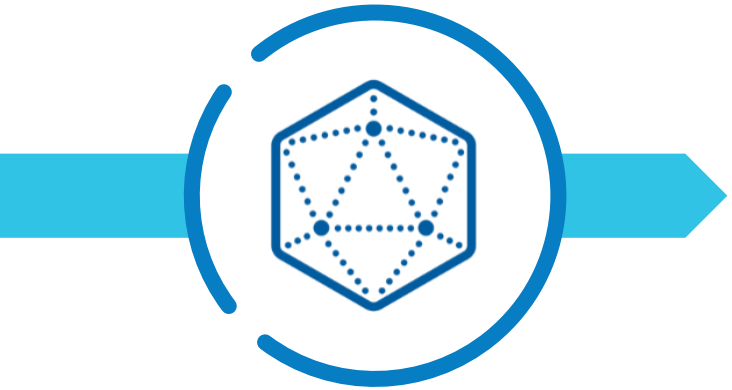
This presentation contains forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995, as amended. These forward-looking statements include, but are not limited to, the design of clinical trials and expected timing for enrollment and presentation of data; the anticipated clinical development milestones and other potential value drivers in the future; the expected benefits of our collaborations, the expanded capability of Sangamo's technologies; the research and development of novel gene-based therapies and the application of Sangamo's ZFP technology platform to specific human diseases; successful manufacturing of our product candidates; the potential of Sangamo's genome editing technology to safely treat genetic diseases; and the potential for ZFNs to be effectively designed to treat diseases through genome editing. These statements are based upon our current expectations and speak only as of the date hereof. Our actual results may differ materially and adversely from those expressed in any forward-looking statements as a result of various factors and uncertainties. Factors that could cause actual results to differ include, but are not limited to, the dependence on the success of clinical trials of lead programs, the lengthy and uncertain regulatory approval process, uncertainties related to the timing of initiation, enrollment and completion of clinical trials, whether clinical trial results will validate and support the safety and efficacy of Sangamo's therapeutics, risks and uncertainties related to preliminary data, whether the preliminary data from the CHAMPIONS and Alta Studies and will be representative of final results, whether the final results from the CHAMPIONS and Alta Studies will validate and support the safety and efficacy of SB-913 and SB-525 respectively, and the reliance on partners and other third-parties to meet their obligations. Further, there can be no assurance that the necessary regulatory approvals will be obtained or that Sangamo and its partners will be able to develop commercially viable gene-based therapeutics. Actual results may differ from those projected in forward-looking statements due to risks and uncertainties that exist in Sangamo's operations. These risks and uncertainties are described more fully in Sangamo's Annual Report on Form 10-K for the year ended December 31, 2018 as filed with the Securities and Exchange Commission. Forward-looking statements contained in this presentation are made as of the date hereof, and Sangamo undertakes no obligation to update such information except as required under applicable law.

Sangamo THERAPEUTICS

We are committed to translating ground-breaking science into genomic medicines that transform patients' lives

Our capabilities allow us to apply the appropriate therapeutic approach to the underlying genetic cause of disease

Gene Therapy



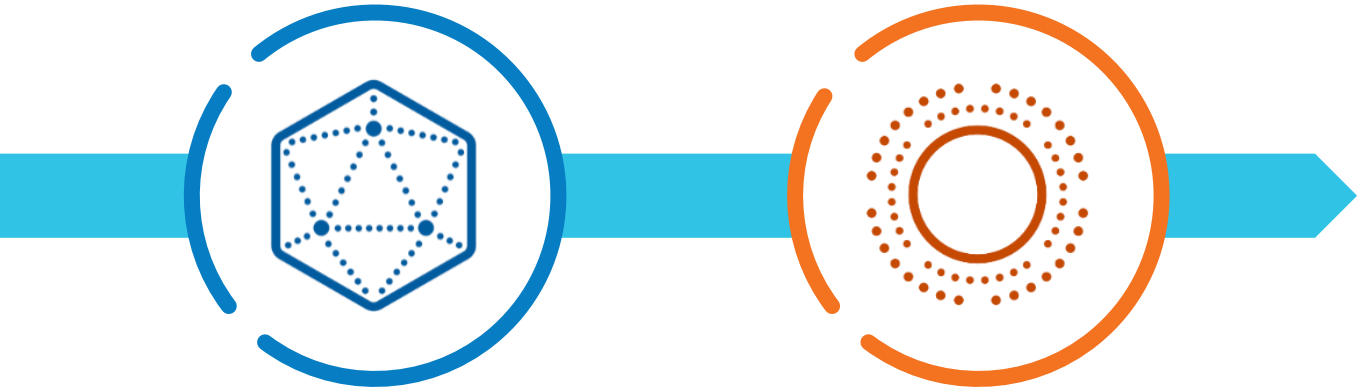
Gene therapy provides tractable, valuable near-term opportunities

Our capabilities allow us to apply the appropriate therapeutic approach to the underlying genetic cause of disease

Gene Therapy

Ex Vivo

Gene-Edited Cell Therapy



Gene therapy provides tractable, valuable near-term opportunities

Continue to advance *ex vivo* editing to create cell therapies

Our capabilities allow us to apply the appropriate therapeutic approach to the underlying genetic cause of disease

Ex Vivo

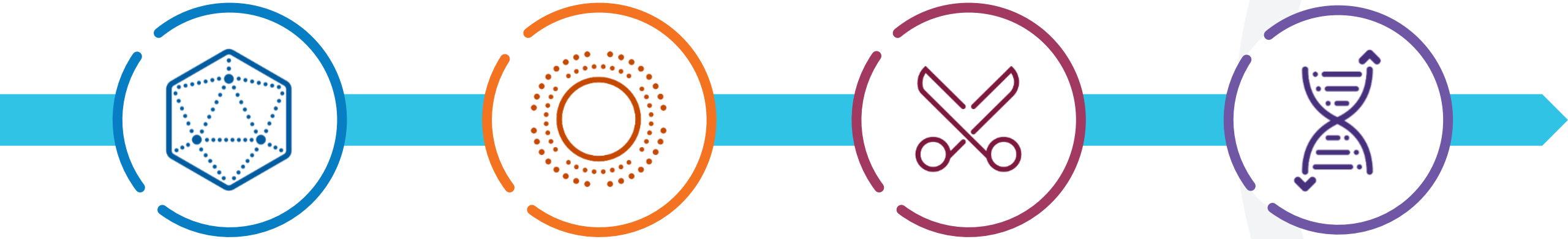
In Vivo

Gene Therapy

Gene-Edited Cell Therapy

Genome Editing

Gene Regulation



Gene therapy provides tractable, valuable near-term opportunities

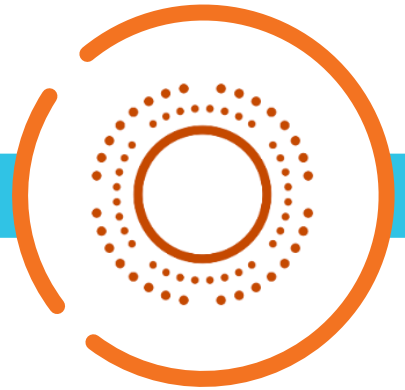
Continue to advance *ex vivo* editing to create cell therapies

Sustain momentum toward the long-term goal with *in vivo* gene editing and gene regulation

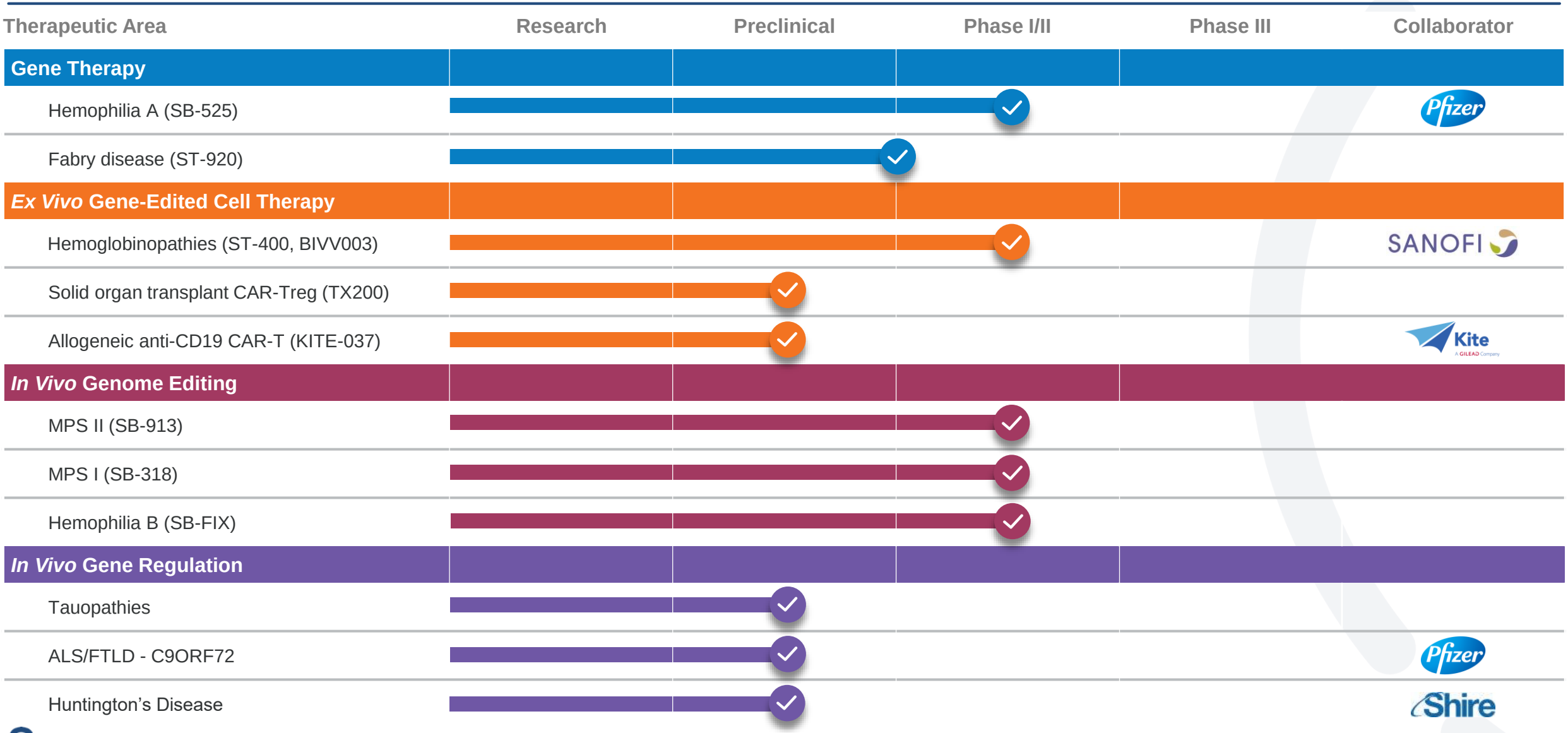
Sangamo's genomic medicines encompass a breadth of technical approaches and diverse pipeline assets

Ex Vivo

In Vivo

Gene Therapy	Gene-Edited Cell Therapy	Genome Editing	Gene Regulation
			
SB-525: Hemophilia A ST-920: Fabry disease Undisclosed targets	ST-400: Beta thalassemia BIVV003: Sickle cell disease TX200: Solid organ transplant KITE-037: Allo-CD19 CAR-T Undisclosed targets	SB-913: MPS II SB-318: MPS I SB-FIX: Hemophilia B Undisclosed targets	Tauopathies C9ORF72-linked ALS/FTLD Huntington's disease Undisclosed targets

Robust pipeline of genomic medicines in clinical and preclinical stages of development



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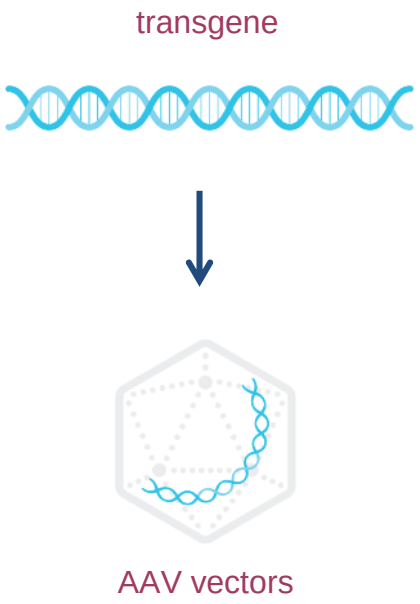
Gene Therapy

SB-525: Hemophilia A

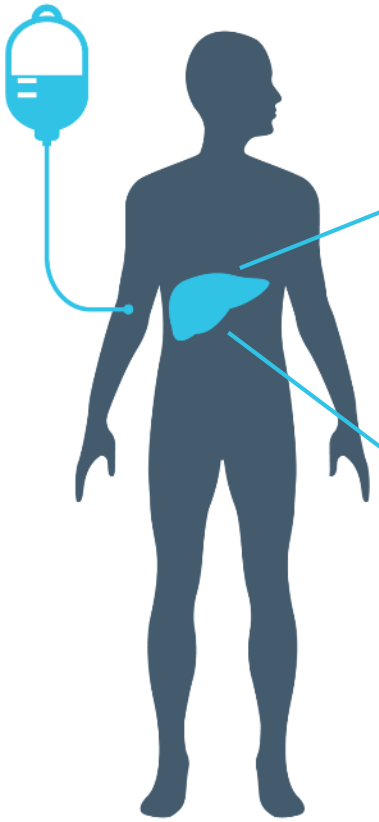
ST-920: Fabry disease

Sangamo's gene therapy platform: potential for potent therapeutic solutions for monogenic diseases

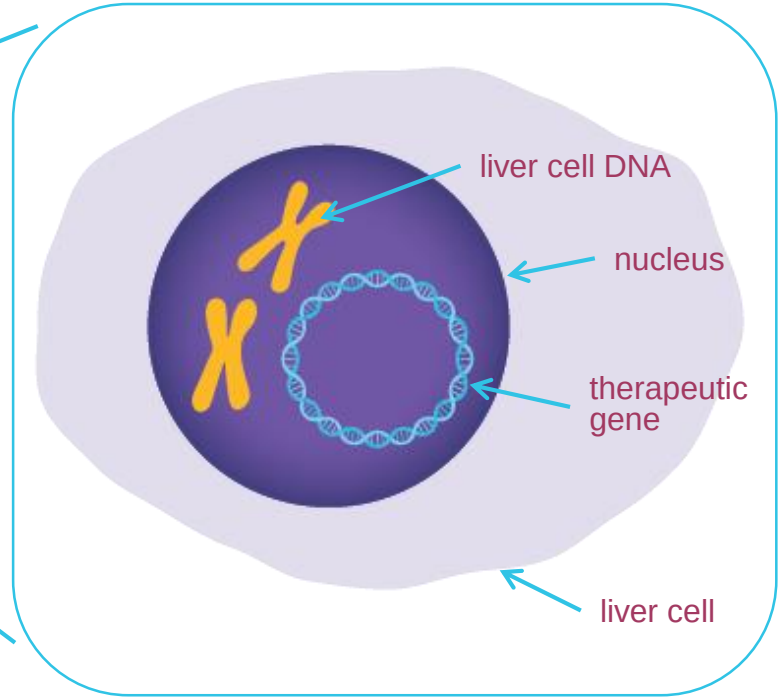
Packaging into AAV vectors



Delivery



To the liver



SB-525, gene therapy for hemophilia A

Phase I/II Open Label Study

Dose Escalation Complete

Cohort 1	Cohort 2	Cohort 3	Cohort 4
9e11 vg/kg	2e12 vg/kg	1e13 vg/kg	3e13 vg/kg

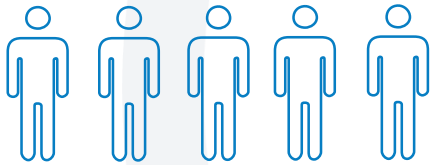
(Patients did not receive prophylactic steroids)

March 2019 SMC Review

- Expand 3e13 vg/kg cohort

Next steps

- Enroll 3 – 5 additional patients



3e13 vg/kg

FDA
- Orphan Drug
- Fast Track

- Orphan Medicinal Product

IND open

Goals

Patient safety | FVIII activity | Reduction of bleeding events | Reduction of factor replacement use

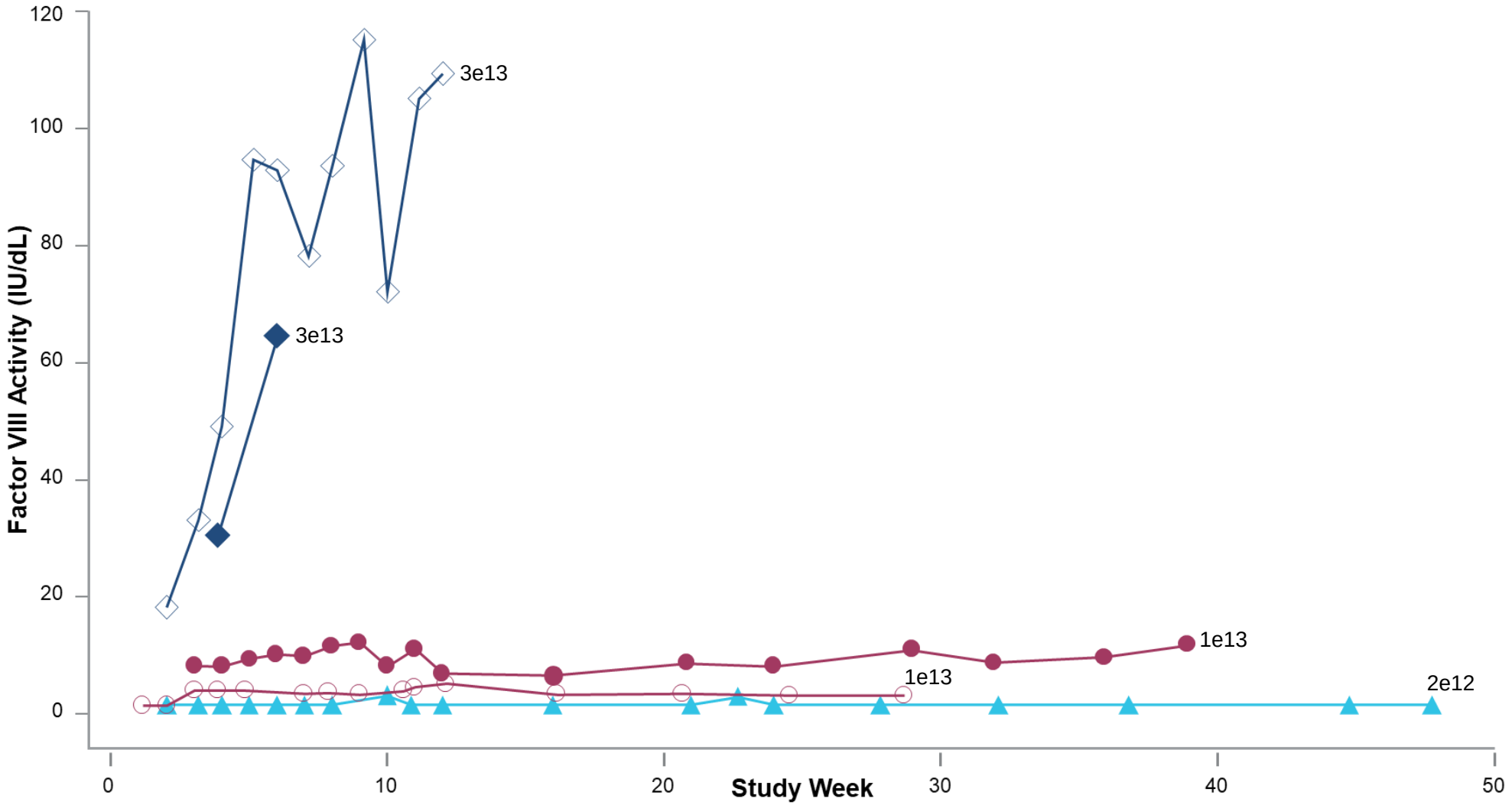
Sangamo THERAPEUTICS | Pfizer

SB-525: Safety summary – adverse events related to study drug

Event	9x10^11 vg/kg (N=2)	2x10^12 vg/kg (N=2)	1x10^13 vg/kg (N=2)	3x10^13 vg/kg (N=2)	Overall (N=8)
Tachycardia **(Gr 1)**	0	0	0	1	1
Fatigue **(Gr 1)**	0	0	0	1	1
Pyrexia **(Gr 2)**	0	0	0	2	2
ALT increased **(Gr 1)**	0	2	0	1	3
Myalgia **(Gr 1)**	0	0	0	1	1
Hypotension **(Gr 3)**	0	0	0	1	1

number of subjects with each event

SB-525: Factor VIII activity – chromogenic, linear scale



Data for Patients 1, 2 and 3 are not displayed due to their continued use of recombinant FVIII replacement

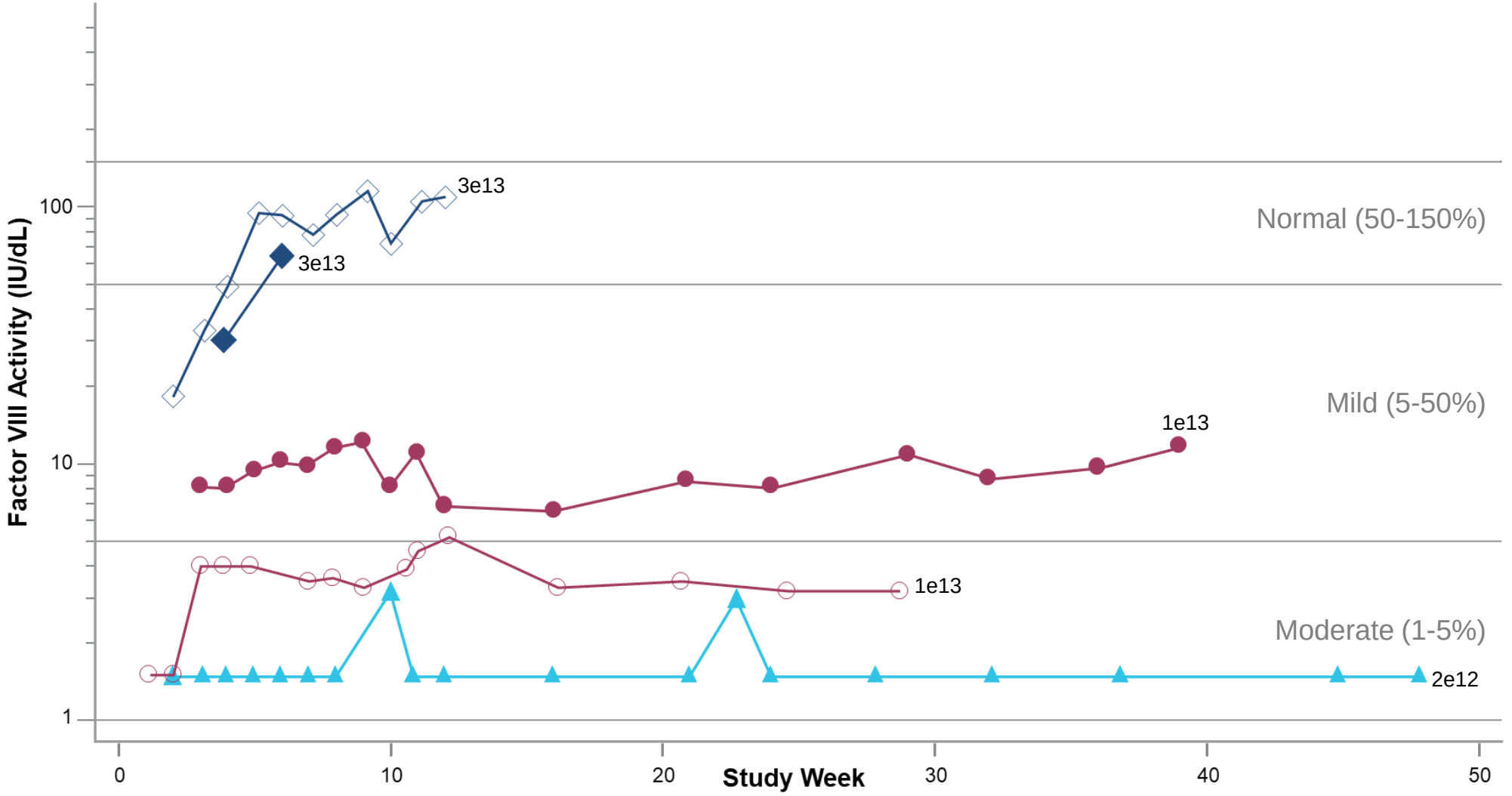
FVIII values with sample dates prior to treatment and up to 1 week after the treatment date or with sample dates within 3 days after a Factor VIII infusion are excluded

Same color indicates same cohort

Patient 4 Week 52 value excluded as values indicate an artifact, as both one-stage and chromogenic assay values are identical only after factor intake. New samples are being collected to confirm

Program: FVIII-Coagulation_ReadOut.sas Run Date: 27MAR19 by mtian

SB-525: Factor VIII activity – chromogenic, log scale



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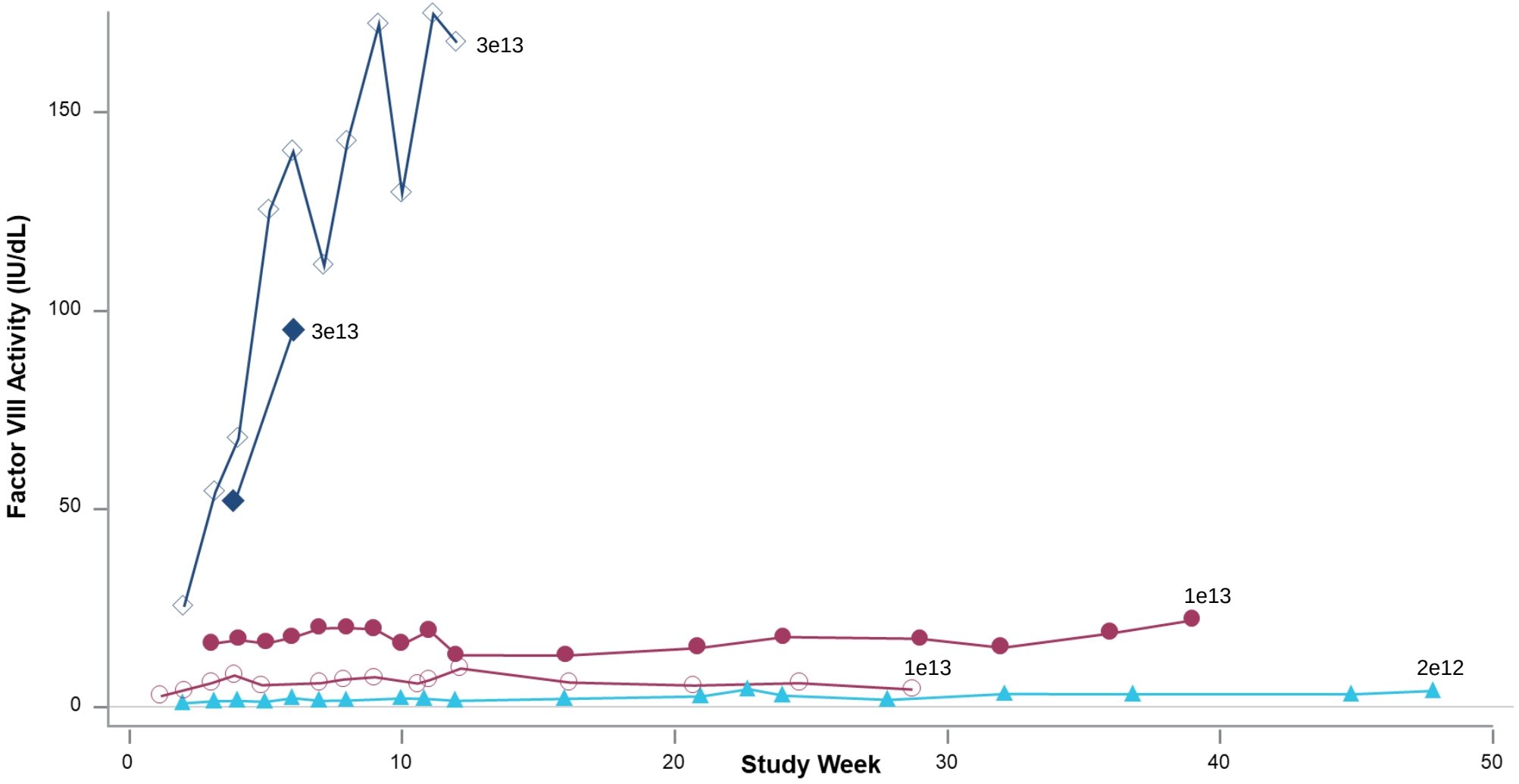
SB-525: Factor VIII activity – one-stage clotting, linear scale



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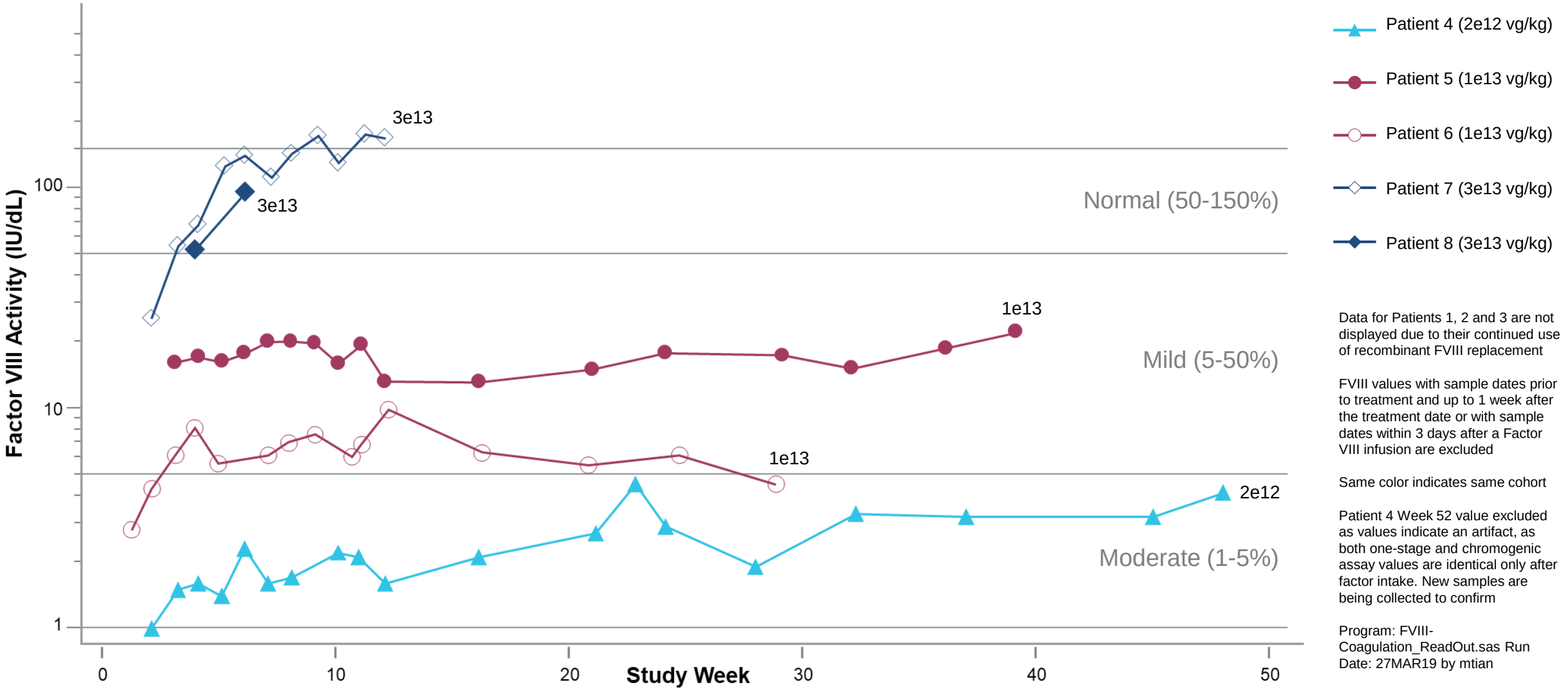

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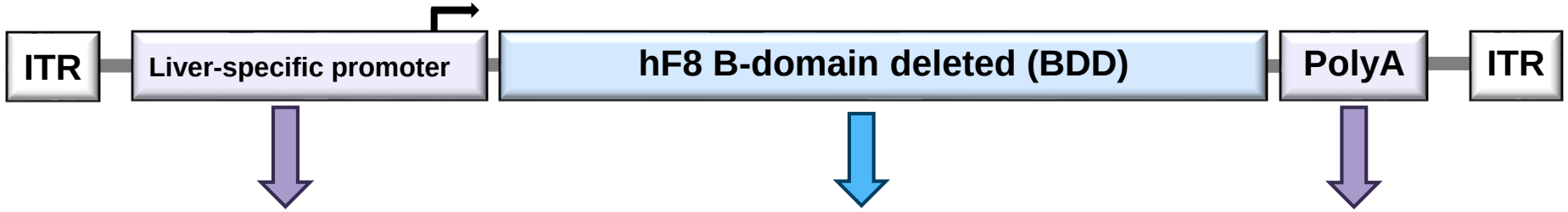
Program: FVIII-Coagulation_ReadOut.sas Run Date: 27MAR19 by mtian

SB-525: Factor VIII replacement usage reduction

Subject (dose vg/kg)	Follow-up	Spontaneous bleeds	Regimen before injection	Total infusions since injection post prophylactic period
8 (3e13)	Week 6	0	3-4/week	0
7 (3e13)	Week 12	0	2/week	0
6 (1e13)	Week 28	0	1/3 weeks	0
5 (1e13)	Week 40	2	3/week	8
4 (2e12)	Week 48	3	3/week	9

Experience with AAV manufacturing and gene construct design can be translated across our gene therapy platform



Promoter module modifications

- Assembled different permutations of liver-specific promoter elements
- A systematic mutational design approach was used to improve regions of the promoter module

Transgene modifications

- Optimized the F8 cassette

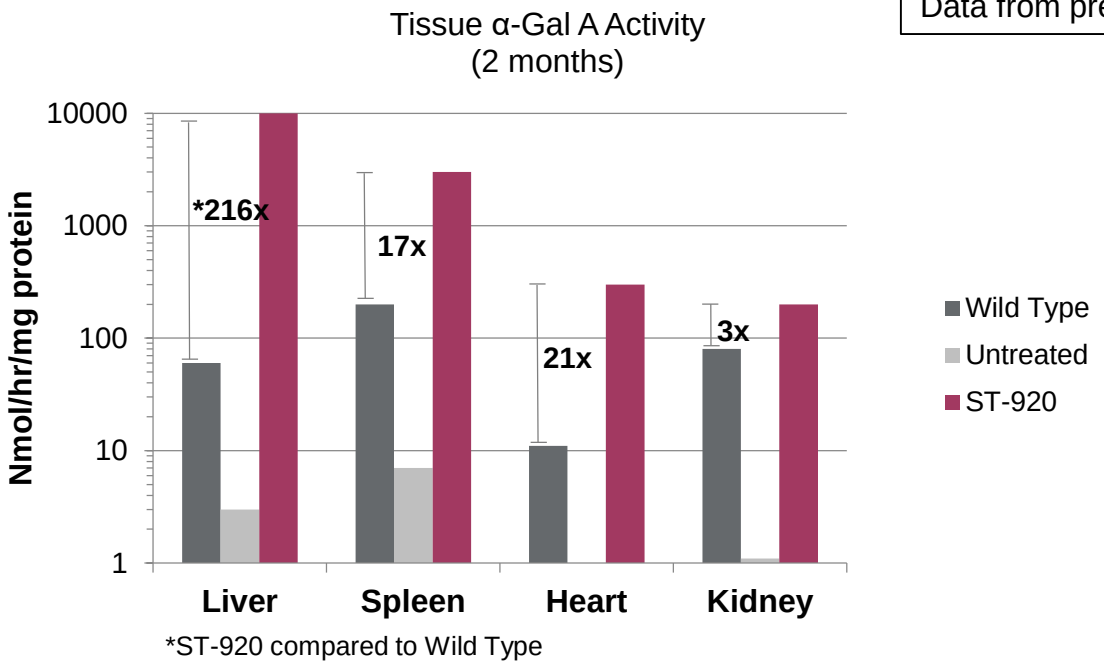
Other modifications

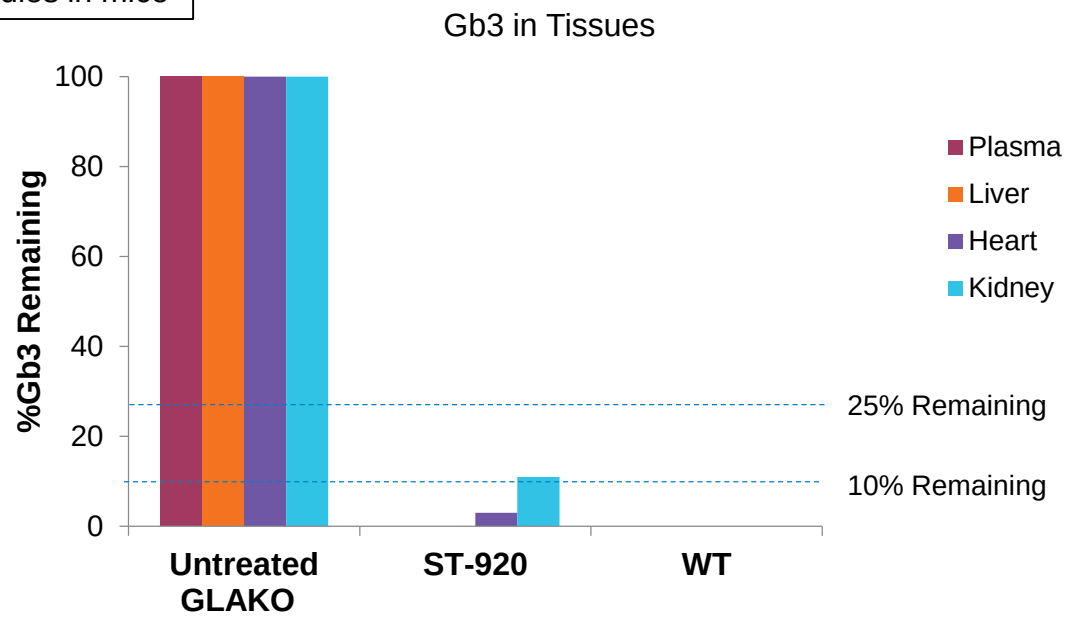
- Identified minimal synthetic polyA
- Removed unnecessary nucleic acids to reduce size
- Optimized sequences outside transgene

ST-920, gene therapy for Fabry disease
Designed to express α-Gal A enzyme

- 5,000 – 6,000 Fabry patients in US / EU; most diagnosed as adults
- Weekly and bi-weekly ERT infusions (standard of care) may not clear all substrate from secondary organs
- IND accepted by FDA. ST-920 clinical trial initiation expected in 2019

Data from preclinical studies in mice





Sangamo's gene therapy resulted in strong expression of α-Gal A and Gb3 substrate reduction across tissue types in GLAKO murine model

Gene therapy: upcoming milestones

SB-525: hemophilia A

- enroll 3e13 vg/kg expansion cohort
- present data at an upcoming scientific meeting

ST-920: Fabry disease

- clinical trial initiation in 2019

Ex Vivo Gene-Edited Cell Therapy

ST-400: Beta thalassemia

BIVV003: Sickle cell disease

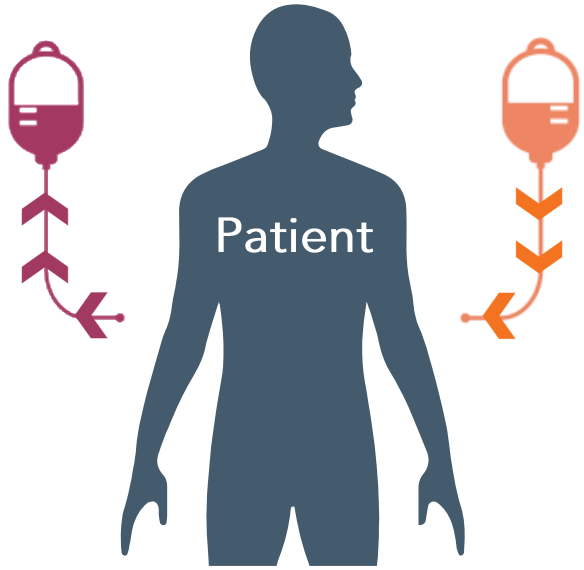
TX200: Solid Organ Transplant (CAR-Treg)

KITE-037: Allogeneic anti-CD19 CAR-T

Autologous, *ex vivo* gene-edited cell therapy product candidates for beta thalassemia and sickle cell disease

Apheresis
Isolate CD34+ Hematopoietic stem cells from patient's blood

1

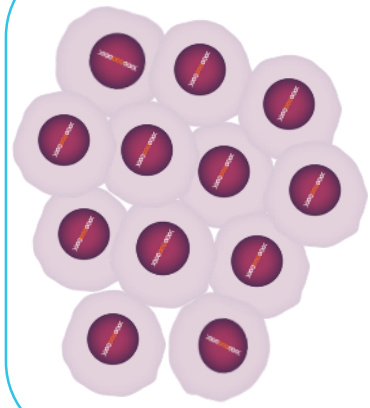


4

Infusion
ST-400 stem cells are infused back to the patient (with myeloablative pre-conditioning to promote engraftment)

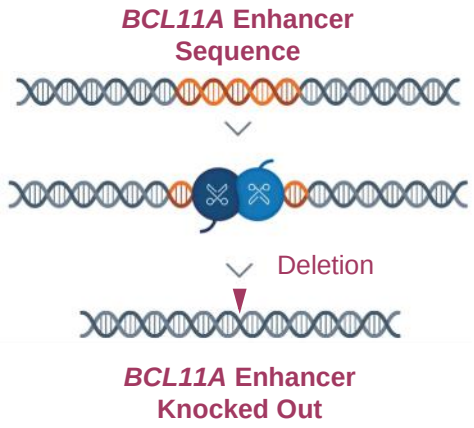
Functional RBCs with fetal hemoglobin produced from ST-400 stem cells

cGMP Manufacturing Facility



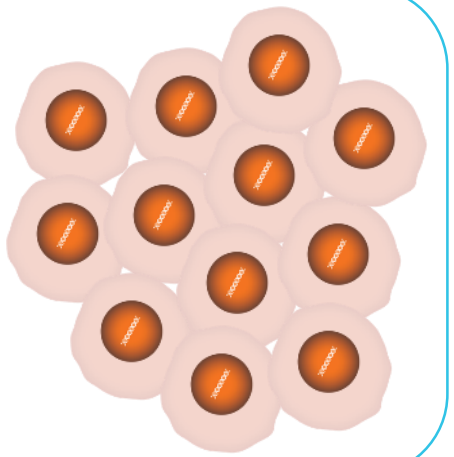
2

Gene editing
Manufacture ST-400 stem cells via transient, non-viral delivery of ZFN mRNA



3

Harvest
ST-400 stem cells are cryo-preserved and shipped to treatment center



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ST-400, gene-edited cell therapy for beta thalassemia

Phase I/II Open Label Study

Patient Enrollment Ongoing

Potential Advantages

- Leverages naturally-occurring, protective mechanism to increase fetal-hemoglobin to reduce or potentially eliminate blood transfusions
- Highly efficient, precise gene editing
- Non-viral delivery of ZFNs

Next steps

- Continue patient enrollment

IND open

Goals

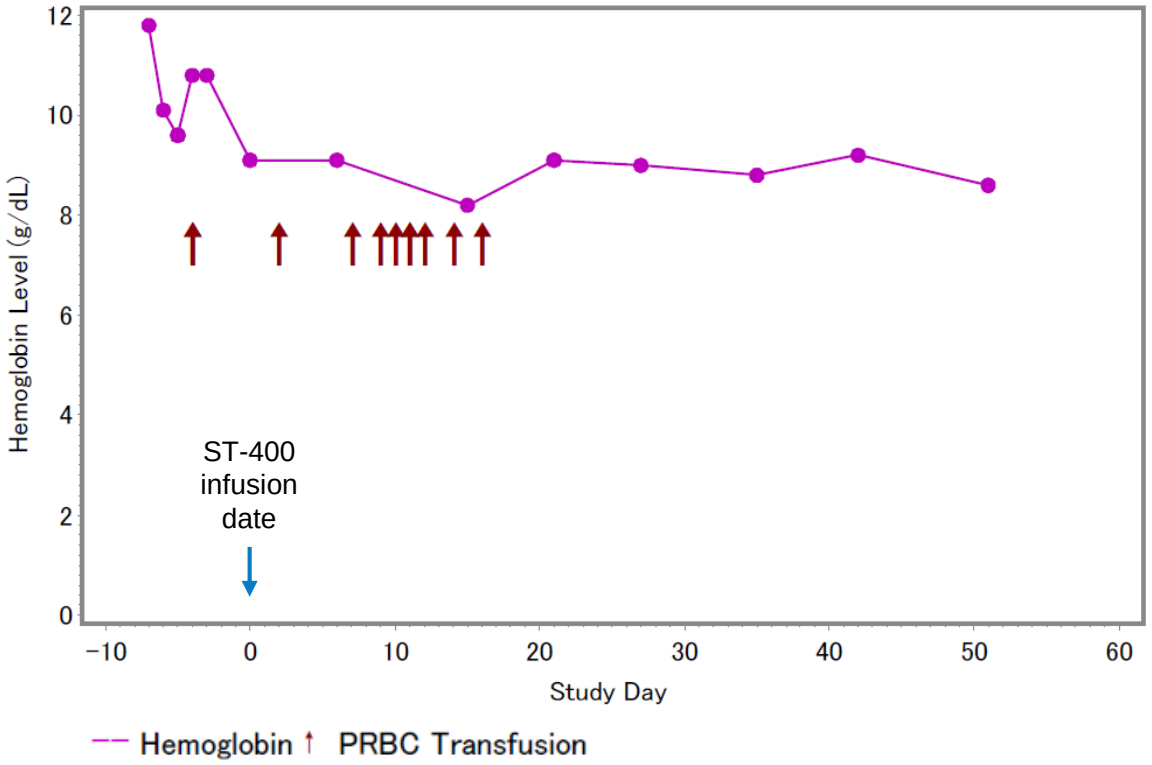
- Patient safety
- Successful engraftment
- Fetal hemoglobin (HbF) production
- Reduction / elimination of transfusions

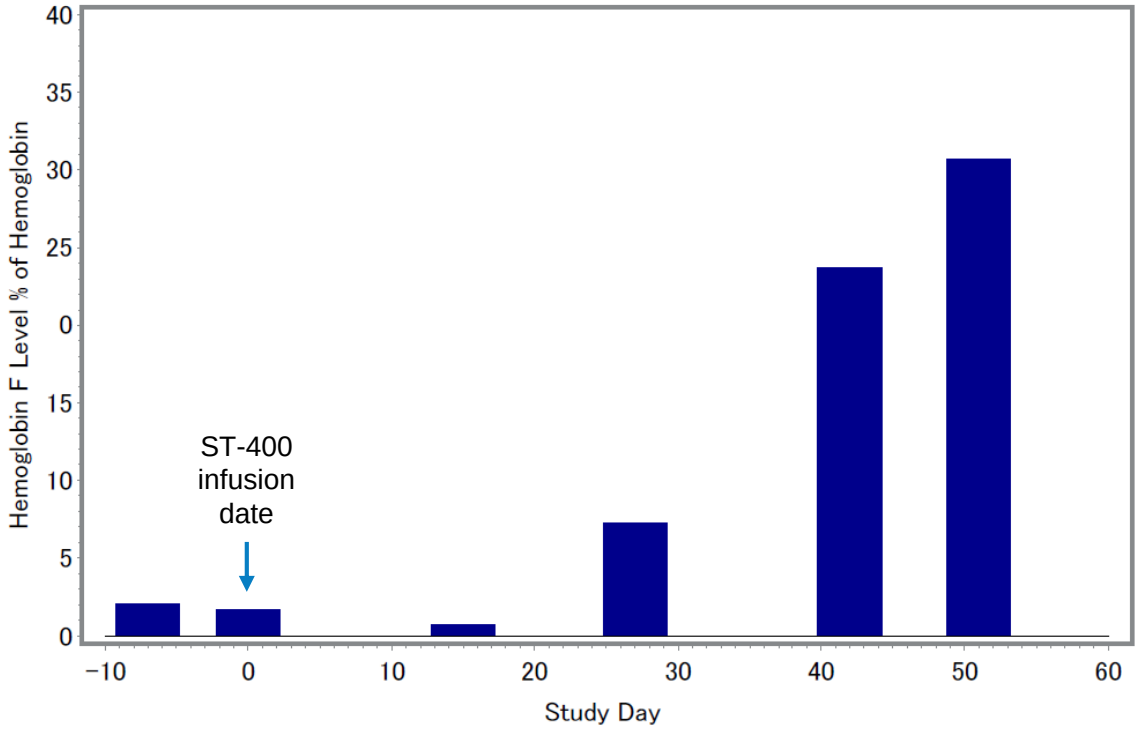
Sangamo THERAPEUTICS | SANOFI

ST-400: Phase 1/2 Thales study summary

- ST-400 product candidate characteristics:
  - Non-viral delivery of ZFNs
  - *Ex Vivo* cellular editing of CD34+ HSCs
  - Disruption of *BCL11A* enhancer intended to upregulate endogenous fetal Hb production in RBCs
- First patient has most severe form of transfusion-dependent beta thalassemia (β^0/β^0)
- During ST-400 infusion, patient experienced a serious adverse event (allergic reaction) that rapidly resolved with medical management
- Patient 1 demonstrated neutrophil and platelet recovery within two and four weeks of infusion, respectively, indicating successful reconstitution of ST-400 hematopoiesis following conditioning
- Indels were detected in circulating white blood cells, indicating successful editing of *BCL11A* erythroid specific enhancer

ST-400: Stable total hemoglobin; rising fetal hemoglobin in a patient with β^0/β^0 beta thalassemia at 7 weeks post-transfusion





Total Hb levels remained stable (~9 g/dL)

Fetal Hb levels continuing to rise from ~1% of total Hb at infusion to ~31% at week 7

The patient received several PRBC transfusions for approximately two weeks after the ST-400 infusion

Ex Vivo gene-edited cell therapy: upcoming milestones

ST-400: beta thalassemia

- complete patient enrollment
- present data at an upcoming scientific meeting

BIVV003: sickle cell disease

- complete patient enrollment (Sanofi)

TX200: solid organ transplant

- file CTA and initiate clinical trial in 2019

KITE-037: Allogeneic anti-CD19 CAR-T

- file IND in 2H 2019 (Kite-Gilead)

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In Vivo Gene Regulation

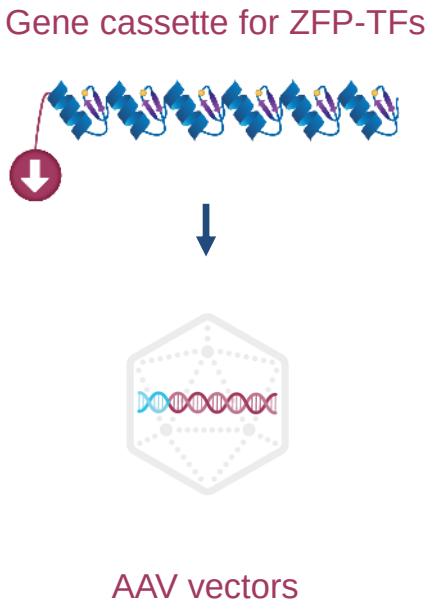
Tauopathies

C9ORF72-linked ALS/FTLD

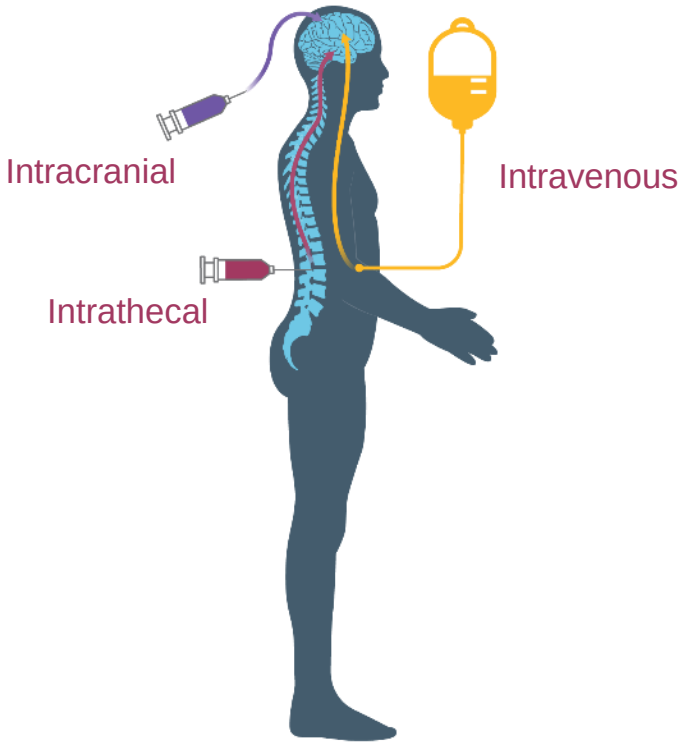
Huntington's disease

Sangamo's gene regulation platform: precise and specific regulation of a mutated gene allele to treat CNS diseases

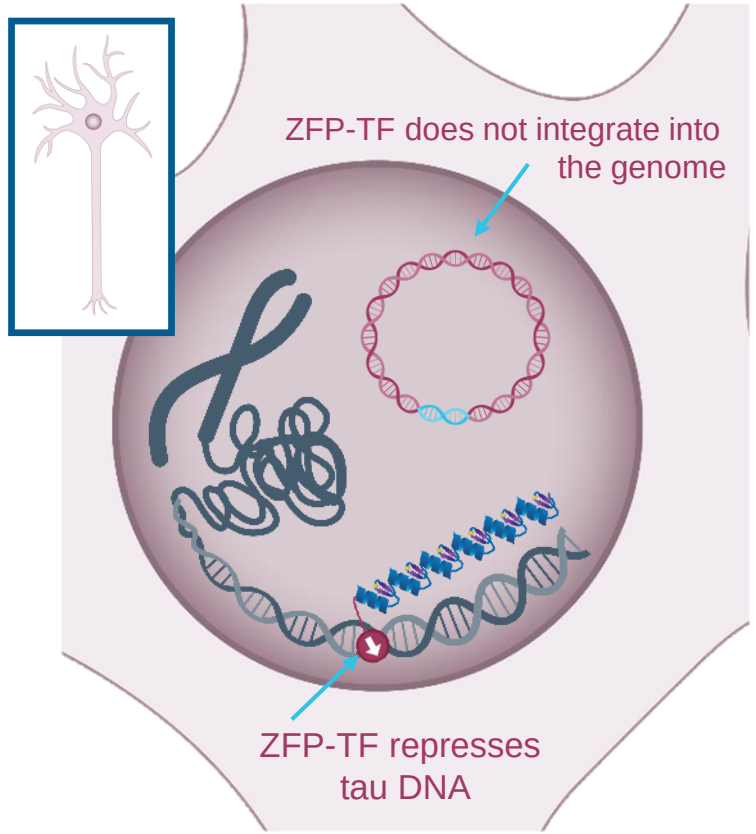
Packaging into AAV vectors



Potential Routes of Administration



In Neurons



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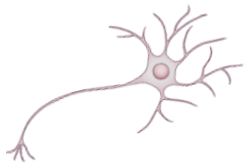
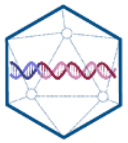
Highly-specific, >98% human tau reduction in iPS neurons



iPS Neurons

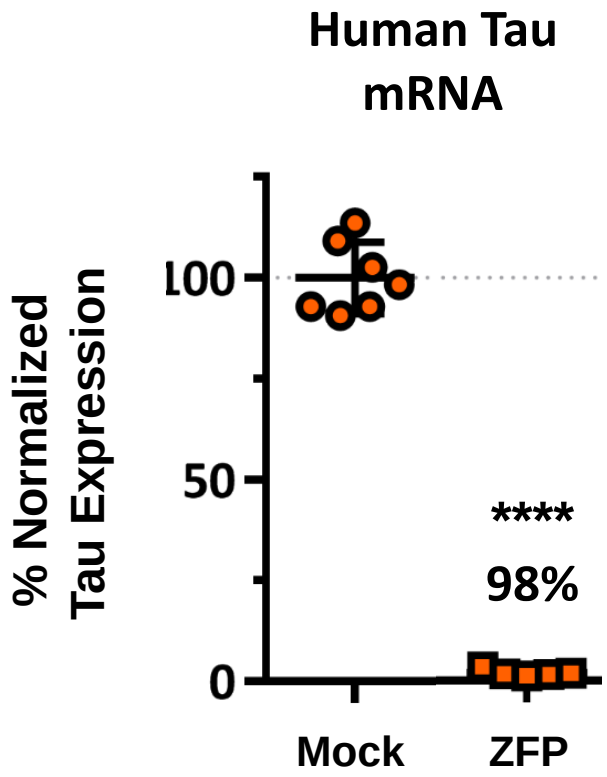
+

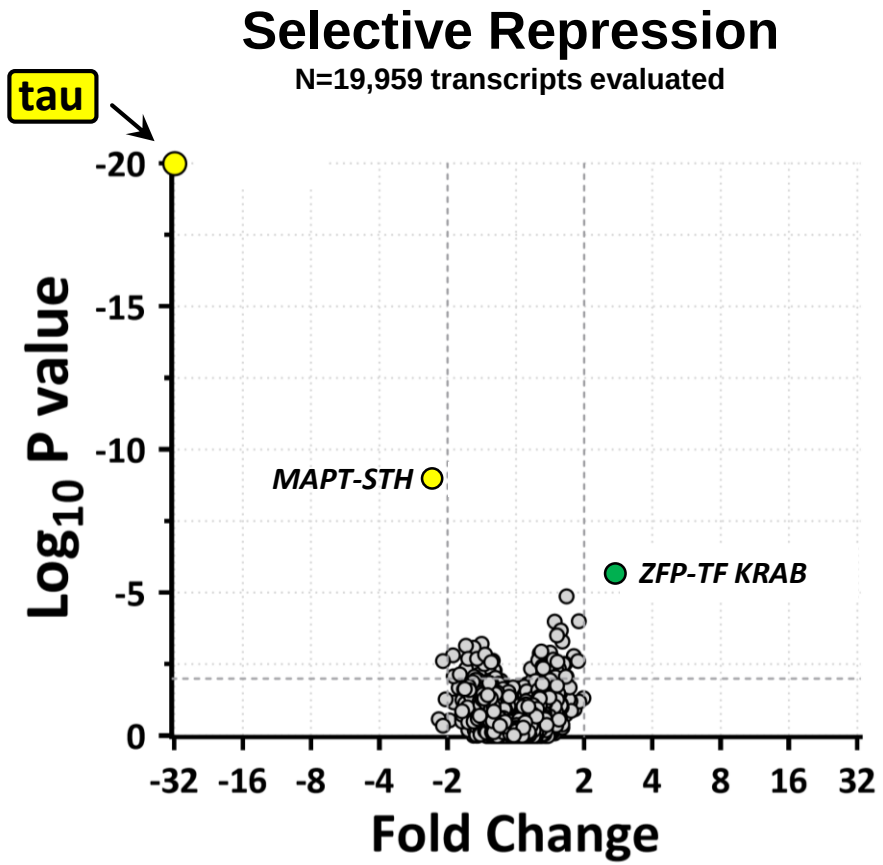


AAV6 + ZFP

19d

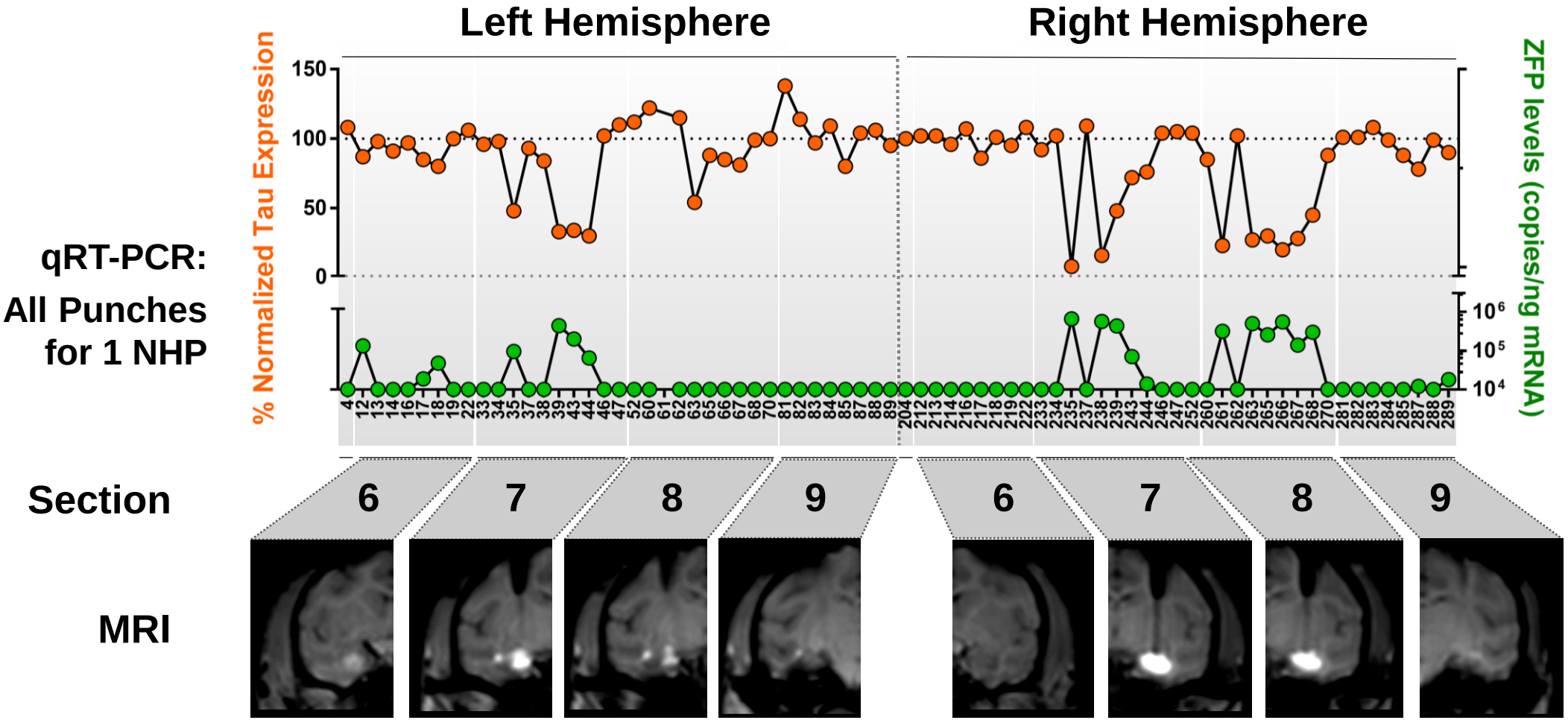
qRT-PCR
microarray





**** P < 0.0001, n = 5-7 biological replicates. Dose: 1E5 VG per cell. Human Clariom S Genechip.

>80% tau reduction achieved in regions of non-human primate brain with AAV coverage



ZFP expression and tau reduction are closely correlated

Operations

Manufacturing
Financials

In-house cGMP facility and dedicated external manufacturing capacity provide scale for clinical research and commercial supply

*Digital rendering of Sangamo cGMP facility

Ensuring control of quality, cost and timelines

- Construction of in-house phase 1/2 cGMP manufacturing facility at Sangamo headquarters is underway
  - Expected to be operational in 2020
- Expanded Brammer agreement provides access to dedicated AAV manufacturing capacity up to 2000-L bioreactor scale for late-stage clinical and large-scale commercial grade supply
  - Allows Sangamo to leverage Brammer AAV manufacturing know-how in Brisbane facility
  - Enables seamless transition from early to late stage development and manufacturing
  - Sangamo and Brammer have worked together for more than a decade

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2019 milestones and catalysts

Gene therapy	SB-525: hemophilia A	– enroll expansion cohort – present data at an upcoming scientific meeting
	ST-920: Fabry disease	– clinical trial initiation in 2019
Ex Vivo gene-edited cell therapy	ST-400: beta thalassemia	– complete patient enrollment – present data at an upcoming scientific meeting
	BIVV003: sickle cell disease	– complete patient enrollment (Sanofi)
	TX200: solid organ transplant	– file CTA and initiate clinical trial in 2019
	KITE-037: Allo-CD19 CAR-T	– file IND in 2H 2019 (Kite-Gilead)
In Vivo genome editing	SB-913: MPS II	– phase 1/2 data collection ongoing, disclosure of additional data expected in 2019 – initiate second generation SB-913 MPS II clinical trial in 2019
	SB-318: MPS I	
	SB-FIX: hemophilia B	

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Key takeaways

- Genomic medicine company building value with gene therapy, *ex vivo* gene-edited cell therapy, *in vivo* genome editing and gene regulation
- Precise, efficient and specific gene editing technology (ZFNs) backed by a robust patent estate
- Broad portfolio of rare and large indications across inherited metabolic diseases, immunology, CNS, hematology and oncology
- Flow of clinical data readouts in 2019 and 2020 following enrollment progress of last twelve months
- Strong balance sheet, four validating biopharma partnerships (Kite, Pfizer, Sanofi, Shire), and manufacturing capabilities

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