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MarzAA KOL Luncheon

15 August 2019

Lotte New York Palace

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Nassim Usman, Ph.D.

President & CEO, Catalyst Biosciences

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Forward looking statements

This presentation includes forward-looking statements that involve substantial risks and uncertainties. All statements included in this presentation, other than statement of historical facts, are forward-looking statements. Examples of such statements include, but are not limited to, potential markets for MarzAA and DalcA, potential use of MarzAA as a subcutaneous prophylactic therapy for patients with hemophilia A or B with inhibitors, clinical trial results, the anticipated announcement of Phase 3 clinical trial data for MarzAA in 2020 and updated Phase 2b and final Phase 2b clinical trial data for DalcA in Q4 2019 and 2020, respectively, a planned end of Phase 2 meeting with FDA for MarzAA in Q4 2019, and the absence of adverse events or inhibitor antibodies in patients treated with MarzAA. Actual results or events could differ materially from the plans, expectations and projections disclosed in these forward-looking statements.

Various important factors could cause actual results or events to differ materially, including, but not limited to, the risk that additional human trials will not replicate the results from earlier trials or animal studies, that potential adverse effects may arise from the testing or use of MarzAA or DalcA, including the generation of antibodies, which has been observed in patients treated with DalcA, that clinical trials will take longer than anticipated to be completed, that costs required to develop or manufacture the Company's products will be higher than anticipated, competition and other factors that affect our ability to establish collaborations on commercially reasonable terms and other risks described in the "Risk Factors" section of the Company's annual report on Form 10-K filed with the Securities and Exchange Commission on March 8, 2019, and in other filings with the Securities and Exchange Commission. The Company does not assume any obligation to update any forward-looking statements, except as required by law.

Catalyst Biosciences: CBIO

Nasdaq: CBIO

We are working to establish a new standard of care in individuals with hemophilia and other bleeding disorders by developing highly potent subcutaneous treatments that promote blood clotting and improve their quality of life

Investment highlights

Novel subcutaneous factors with orphan drug designation, MarzAA & DalcA

$3.7B market opportunity

MarzAA & DalcA SQ clinical efficacy demonstrated

Experienced team

~134 worldwide patents – CBIO retains full ownership of all compounds

Well funded
~$94 M cash (Q2 2019)

Pipeline

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Clinical assets

Hemophilia with inhibitors rFVIIa

SQ Marzeptacog alfa (activated) **"MarzAA"**

Hemophilia B rFIX

SQ Dalcinonacog alfa “**DalcA**”

Additional assets

Hemophilia B

FIX Gene Therapy CB 2679d-GT

Dry AMD

anti-C3 protease CB 2782-PEG

Mosaic Biosciences

Universal pro-coagulant FXa

CB 1965a

Team

President & CEO

Nassim Usman, Ph.D.

Massachusetts Institute of Technology · RPI · Sirna Therapeutics · PRINCIPIA

26 years in biotech

SVP, Technical Operations

Andrew Hetherington, M.B.A.

gsk · BAYER · NOVARTIS

20 years in biotech

Chief Medical Officer

Howard Levy, M.B.B.Ch., Ph.D., M.M.M.

Sangart · novo nordisk · CSL · Lilly · Inspiration BIOPHARMACEUTICALS

18 years in hematology

VP, Translational Research

Grant Blouse, Ph.D.

novo nordisk · CATALYST BIOSCIENCES · WAYNE STATE UNIVERSITY SCHOOL OF MEDICINE · AARHUS UNIVERSITY DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS · Henry Ford HEALTH SYSTEM

12 years in biotech

Chief Financial Officer

Fletcher Payne

RINAT · CELL GENESYS · DYNAVAX INNOVATING IMMUNOLOGY · IBM · CYTOMX THERAPEUTICS · Plexxikon · Abgenix

26 years in biotech

VP, Business Development

Jeffrey Landau, M.B.A.

Jazz Pharmac · ONYX PHARMACEUTICALS · Lilly · THRESHOLD PHARMACEUTICALS

16 years in biotech

Robert Klamroth, MD, PhD

Vivantes-Klinikum im Friedrichshain, Berlin

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Hemophilia Treatment in Berlin

- "Comprehensive Care Centre" located at the "Vivantes Klinikum im Friedrichshain"
  Hospital founded by Rudolf Virchow in 1905

- Department and laboratory for coagulation disorders since 1960

- In- and out-patients

- Hemophilia and Thrombophilia
  - 70% of patients with thrombophilic disorders

- Hemophilia Treatment Centre
  for adults and children

Berlin Comprehensive Care Centre

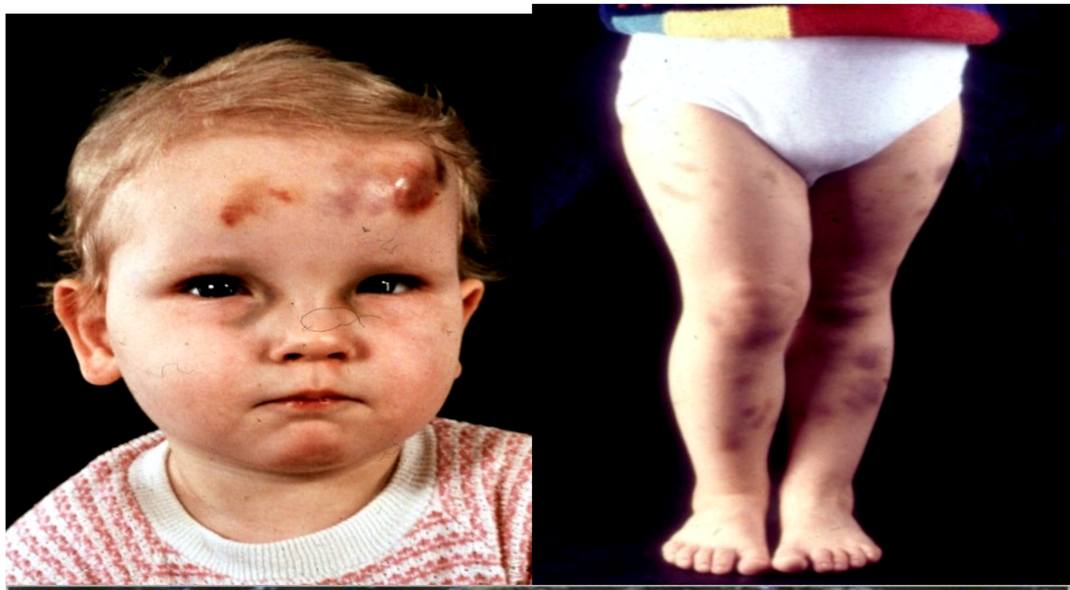
750 patients with bleeding disorders

- 245 hemophilia A
  10 with inhibitors
- 46 hemophilia B
  2 with inhibitors
- 5 with severe Morbus Glanzmann
- 3 with severe Factor VII-deficiency

Reference Centre for the Network for Coagulation disorders in the Eastern part of Germany

Hemophilia Treatment Goals

- To treat bleeds
- To avoid bleeds
- To avoid joint disease
- To avoid side effects
  - Inhibitor
  - Infection
- To achieve the life they choose



Prophylaxis is the treatment of choice

1. The benefits of prophylaxis, particularly started early, in patients with severe hemophilia are well demonstrated

2. The German authority recommends prophylactic treatment for all patients with severe hemophilia to avoid bleeding (GBA, Rapid Report 2015)

3. There is a variability in both the phenotypic bleeding pattern and the individual response to replacement therapy

4. Guiding the patient to his optimal prophylactic treatment in daily life is of major importance

MJ Manco-Johnson et al. *N Engl J Med*. 2007. 357(6):534-44.
Collins, PW. Personalized prophylaxis. *Haemophilia* 2012; 18.s4: 131-135.

Unmet needs

Prevent Inhibitor development

Alternative to intravenous application of clotting factors

Extended half-life of clotting factors

Darguad Y et al. *Harmophilia.* 2012. Suppl 4:81-8.

Characteristics of Inhibitor Development

Development of inhibitors is the most severe treatment-related complication in congenital hemophilia[1]

Inhibitors are alloantibodies that bind to sites on the FVIII molecule, and neutralize clotting activity[2]

Incidence of Inhibitors: 25–30% of patients with severe hemophilia A (FVIII <1%)[6]

Prevalence of Inhibitors: 5–7% in patients with hemophilia A[7]

- May vary by geographical region

1. Leissinger CA. *Am J Hematol*. 2004; 77:187–193. **2.** Kasper CK. Diagnosis and management of inhibitors to factors VIII and IX. An introductory discussion for physicians. Treatment of Hemophilia Monograph Series, no. 34. Published September 2004. Available at: www.wfh.org/2/docs/.../Inhibitors/TOH-34_English_Inhibitors.pdf **3.** Webert K. *Semin Thromb Hemost.* 2012; 38:735–741. **4.** Reding MT, et al. *Thromb Haemost.* 2002; 88: 568–575. **5.** Saint-Remy. In: Lee, Berntorp and Hoots, eds. *Textbook of Hemophilia*. 2010;52–55. **6.** Darguad Y, et al. *Haemophilia*. 2008; 14(Suppl 4):20–27. **7.** Wight J, Paisley S. *Haemophilia*. 2003; 9:418–435.

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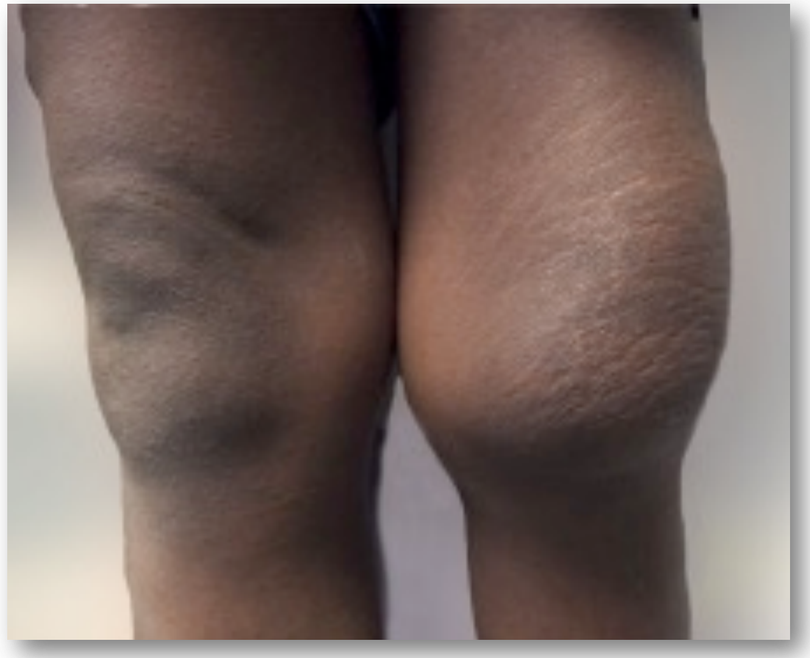
Burden of Inhibitor Development in Hemophilia

- Inhibitor patients have:
  - Risk of progressive, debilitating joint disease resulting in disability[3,4]
  - Risk of impaired HRQoL[5]
  - Need for mobility-assist devices and orthopedic surgery[3,4,6]



HRQoL, health-related quality of life. Photo courtesy of Leonard Valentino, MD.

1. Ingerslev J, et al. *Haemostasis*. 1996; 26(Suppl 1):118–123. **2.** Teitel J, et al. *Haemophilia*. 2007; 13:256–263. **3.** Leissinger CA. *Haemophilia*. 1999; 5(Suppl 3):25–32. **4**. Leissinger CA. *Am J Hematol*. 2004; 77:187–193. **5**. Scalone L, et al. *Hemophilia*. 2006; 12:154–162. **6**. Rodriguez-Merchan EC, Rocino A. *Haemophilia*. 2004; 10(Suppl 2):22–29.

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Treatment goals in patients with inhibitors

1. Goal: Treatment of acute bleeds
   - Bypassing agents in high responders

2. Goal: Prevention of bleeds
   - Prophylaxis with bypassing agents

3. Goal: Eradication of the inhibitor
   - **Immune tolerance induction**
   (successful in up to 80% of patients with hemophilia A and in 30% in patients with hemophilia B)

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Bypassing Agents

aPCC and rFVIIa are licensed for bypass therapy in patients with inhibitors, aPCC is additionally licensed for prophylaxis[1,2]

aPCC contains factors II, IX, and X, mainly nonactivated, and factor VII mainly in the activated form[1,2]

Risk of thrombosis exists with both products, and recommended doses should not be exceeded[1]

Only partial reduction in bleeding with prophylaxis

1. MASAC Document #230. September 2014. **2**. FEIBA [package insert]. Westlake Village, CA: Baxter Healthcare Corporation; November 2013.

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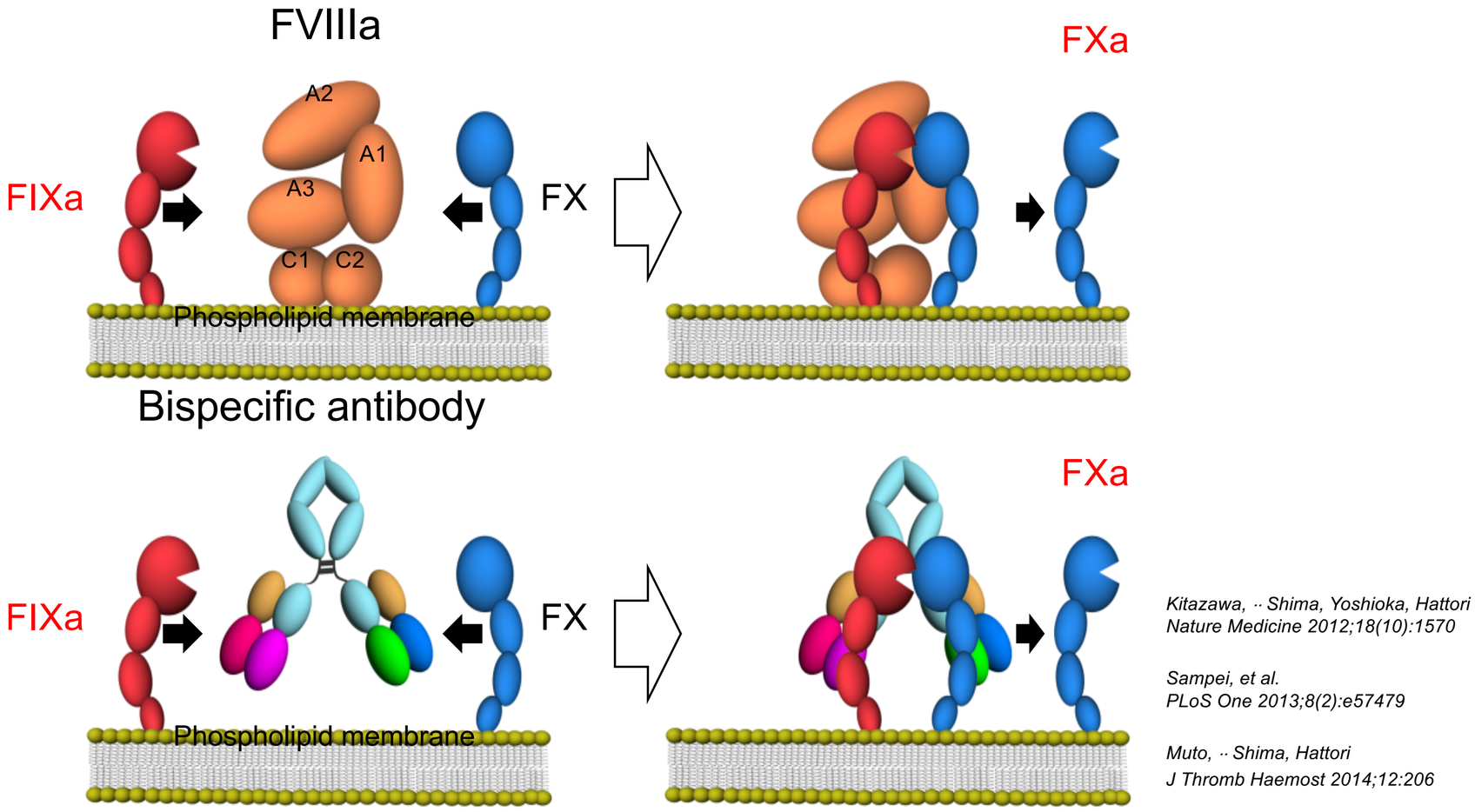
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Emicizumab Prophylaxis in Hemophilia A with Inhibitors

Johannes Oldenburg, M.D., Ph.D., Johnny N. Mahlangu, M.D., Benjamin Kim, M.D., Christophe Schmitt, Pharm.D., Michael U. Callaghan, M.D., Guy Young, M.D., Elena Santagostino, M.D., Ph.D., Rebecca Kruse-Jarres, M.D., M.P.H., Claude Negrier, M.D., Ph.D., Craig Kessler, M.D., Nancy Valente, M.D., Elina Asikanius, M.Sc., Gallia G. Levy, M.D., Ph.D., Jerzy Windyga, M.D., and Midori Shima, M.D., Ph.D.

Concept of FVIIIa-mimetic bispecific antibody



Kitazawa, ·· Shima, Yoshioka, Hattori
Nature Medicine 2012;18(10):1570

Sampei, et al.
PLoS One 2013;8(2):e57479

Muto, ·· Shima, Hattori
J Thromb Haemost 2014;12:206

Bispecific antibody supports the interaction between FIXa and FX, thereby promotes FX activation and accelerates coagulation.

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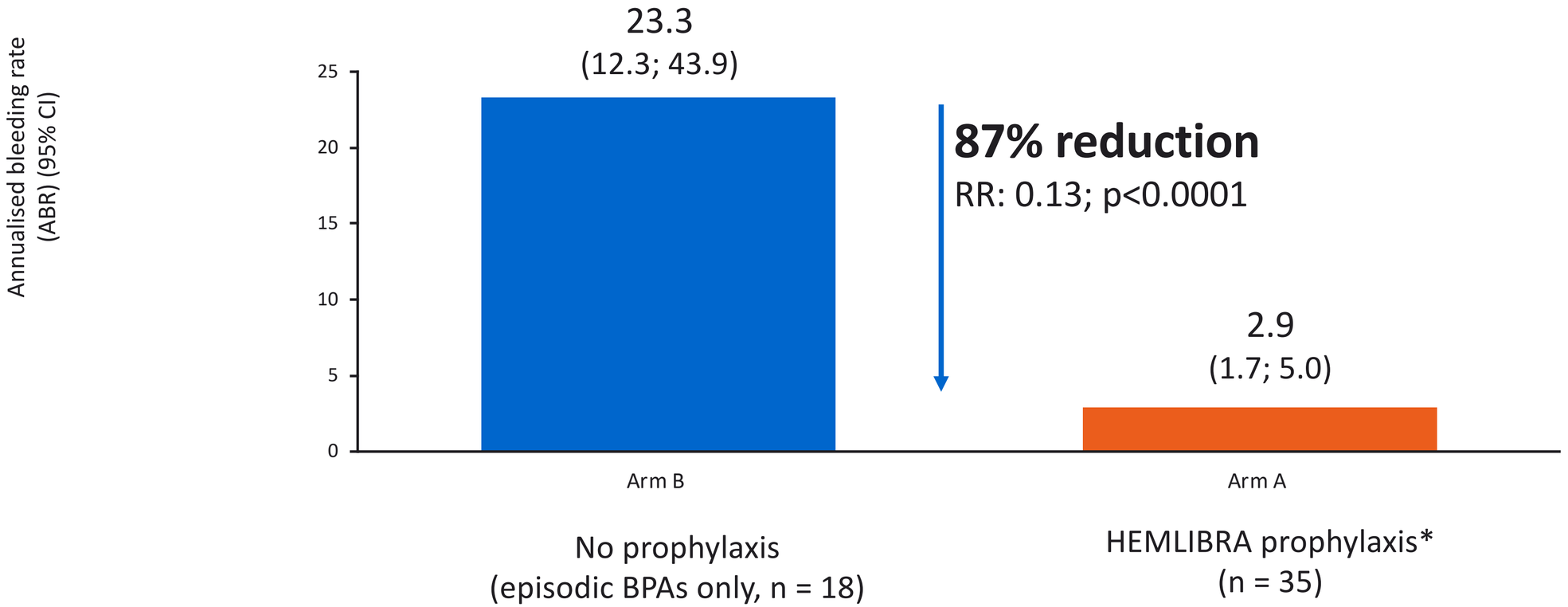
In HAVEN 1, treated bleeds were reduced by 87% with HEMLIBRA prophylaxis vs no prophylaxis

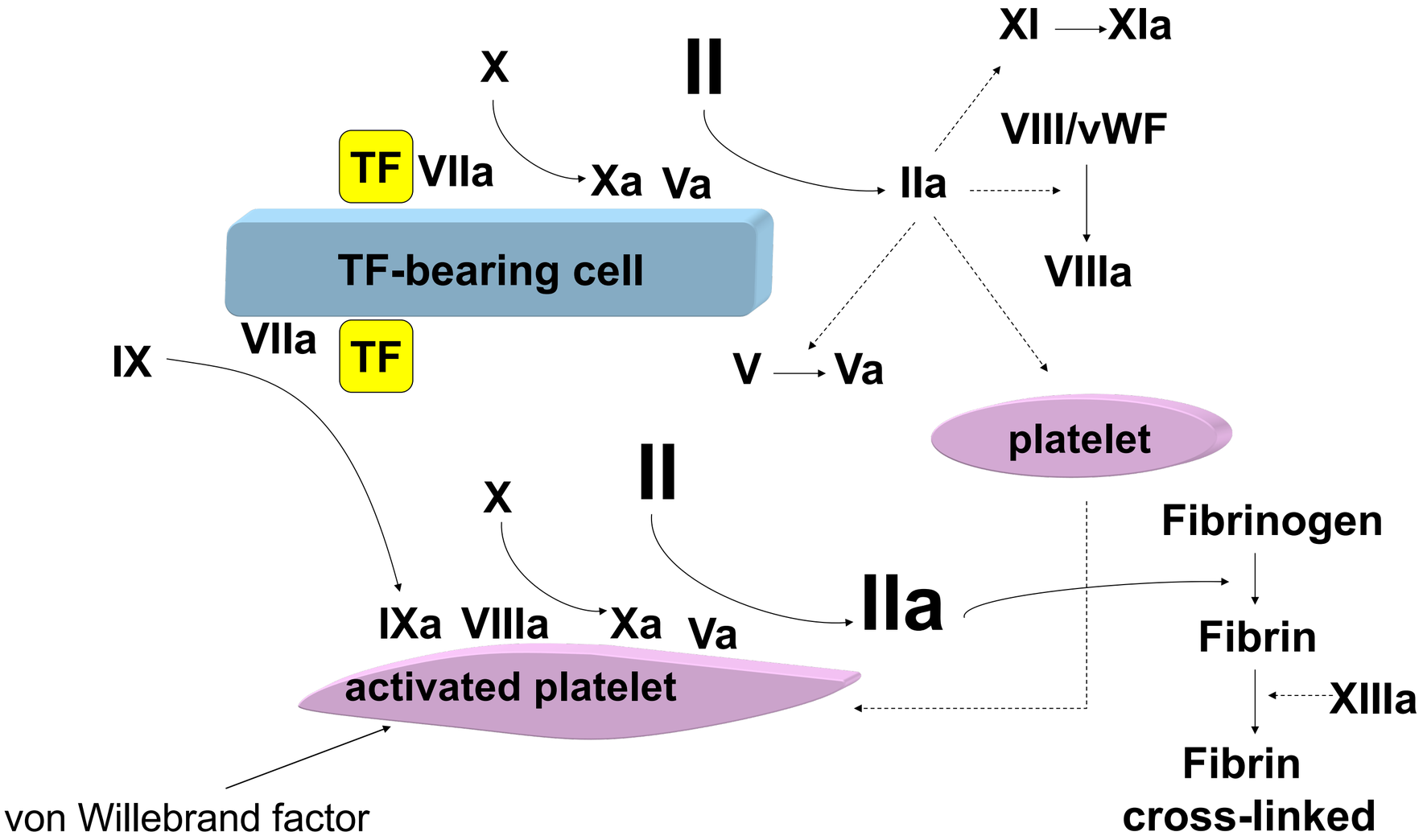


% participants with zero bleeds (95% CI)	**5.6** (0.1–27.3)	**62.9** (44.9–78.5)

*Arm A time on treatment: 29.5 weeks (range, 3.3–47.9)
25 October 2016 cut-off
ABR, annualised bleed rate; BPA, bypassing agent; CI, confidence interval; RR, risk ratio

Oldenburg J, et al. N Engl J Med 2017;377:809–18

Model of cellular hemostasis



Hoffman et al. (1998) Blood Coag Fibrinol 9 (suppl 1): S61-S65

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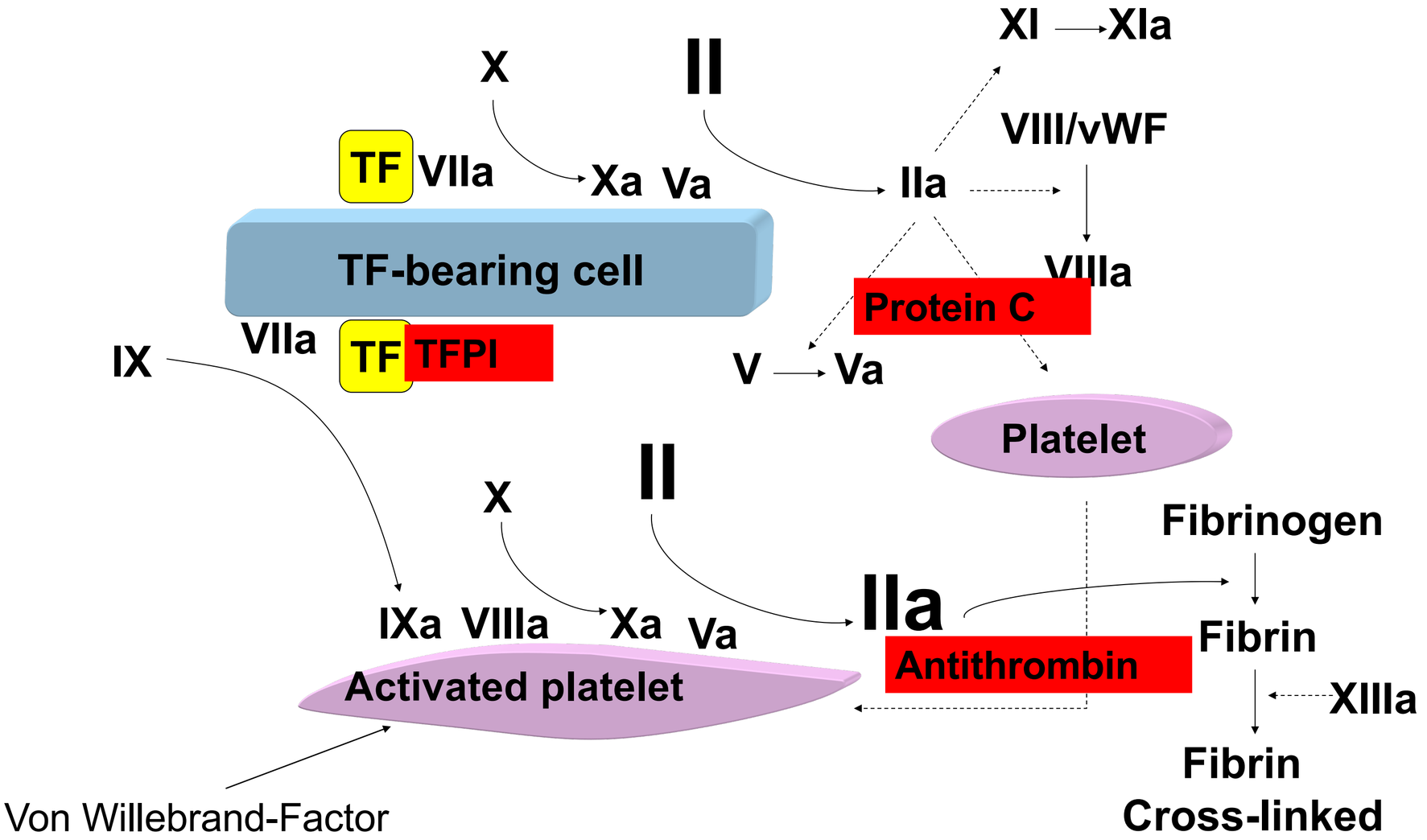
Model of cellular hemostasis



Modified from: Hoffman et al. (1998) Blood Coag Fibrinol 9 (suppl 1): S61-S65

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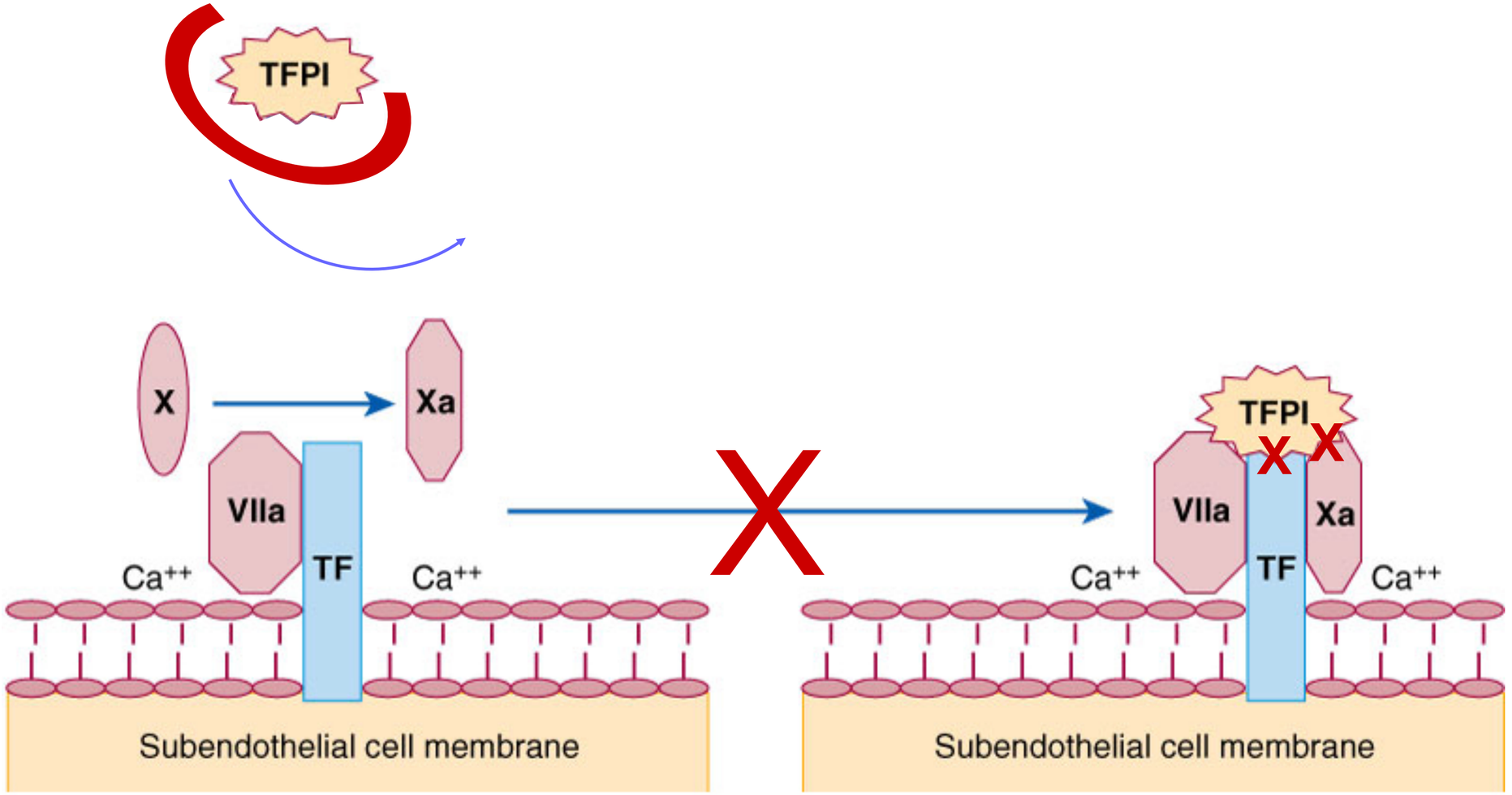
Alternative Approaches

Blocking Tissue Factor Pathway Inhibitor (TFPI)



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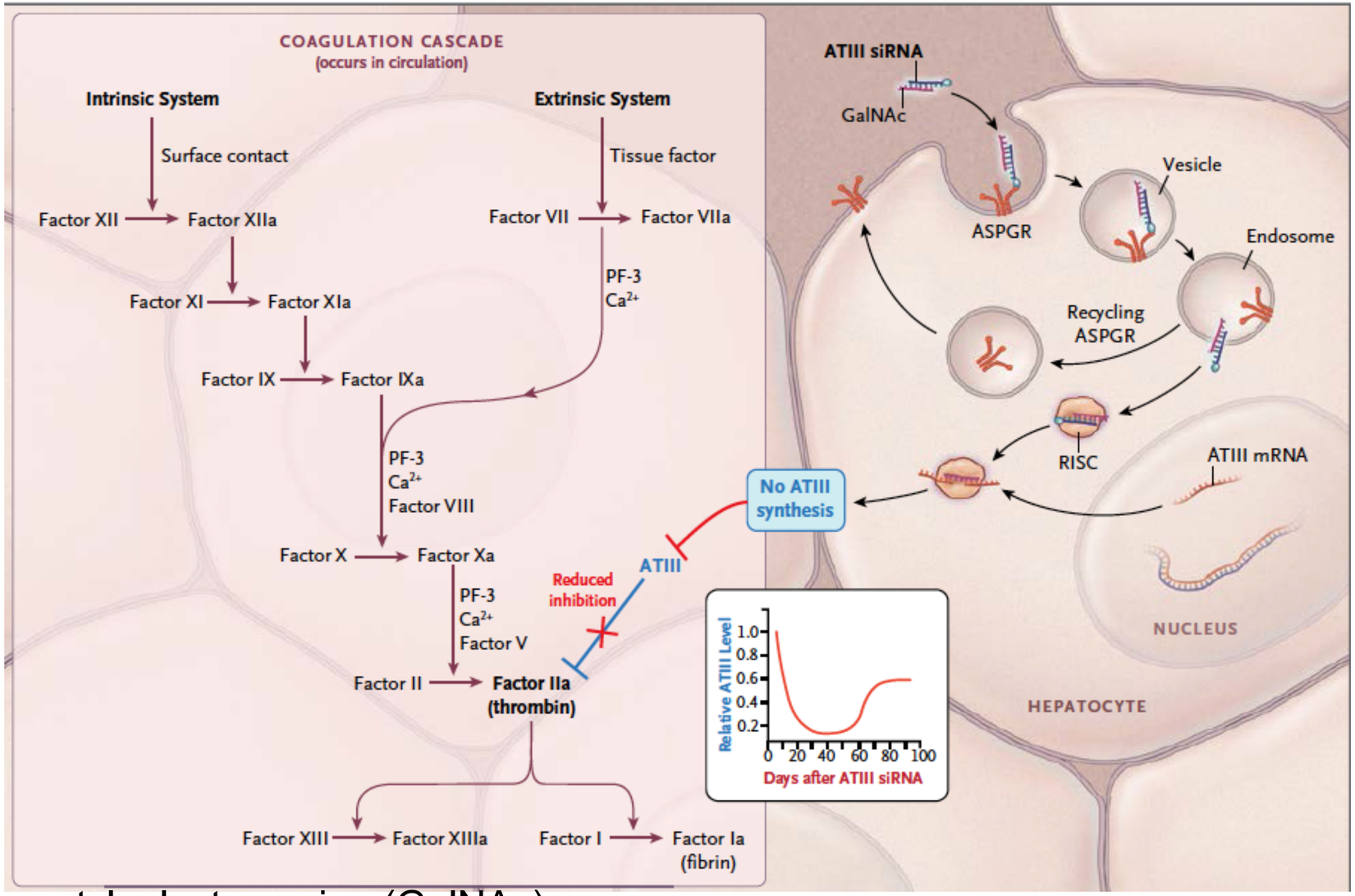
Silencing Antithrombin to promote Hemostasis



N-acetylgalactosamine (GalNAc)
Hepatocyte receptor asialoglycoprotein(ASPGR)
RNA-induced silencing complex (RISC)

Ragni 2015 NEJM

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HB Gene therapy

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 DECEMBER 22, 2011 VOL. 365 NO. 25

Adenovirus-Associated Virus Vector–Mediated Gene Transfer in Hemophilia B

Amit C. Nathwani, M.B., Ch.B., Ph.D., Edward G.D. Tuddenham, M.B., B.S., M.D., Savita Rangarajan, M.B., B.S., Cecilia Rosales, Ph.D., Jenny McIntosh, Ph.D., David C. Linch, M.B., B.Chir., Pratima Chowdary, M.B., B.S., Anne Riddell, B.Sc., Arnulfo Jaquilmac Pie, B.S.N., Chris Harrington, B.S.N., James O'Beirne, M.B., B.S., M.D., Keith Smith, M.Sc., John Pasi, M.D., Bertil Glader, M.D., Ph.D., Pradip Rustagi, M.D., Catherine Y.C. Ng, M.S., Mark A. Kay, M.D., Ph.D., Junfang Zhou, M.D., Yunyu Spence, Ph.D., Christopher L. Morton, B.S., James Allay, Ph.D., John Coleman, M.S., Susan Sleep, Ph.D., John M. Cunningham, M.D., Deokumar Srivastava, Ph.D., Etiena Basner-Tschakarjan, M.D., Federico Mingozzi, Ph.D., Katherine A. High, M.D., John T. Gray, Ph.D., Ulrike M. Reiss, M.D., Arthur W. Nienhuis, M.D., and Andrew M. Davidoff, M.D.

NEJM 2011

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Which patients are not treated well?

Hemophilia B with inhibitors

Thrombasthenia Mb Glanzmann

Factor VII-deficiency

H (born 2007)

- Born in Mossul/Iraq
- Severe haemophilia B, mutation unknown
- Diagnosis of haemophilia B at the age 2
- First presentation in Berlin in 2015 with a joint bleed in the left knee
- Communication difficult
- Previous treatment unknown but parents report some kind of reaction after intravenous infusion of factor concentrate

H (born 2007)

- Factor IX Inhibitor titre 7 BU
- After exploration of the parents inhibitor development after treatment with plasma-derived factor IX at the age of 3 with 3 times anaphylactic reaction

- Initiating on-demand treatment with rFVIIa with good response

- 4 bleeds per month mainly in left knee and left elbow

- Prophylaxis with rFVIIa reduded bleeding to 2 bleeds per months

- Decision to immune tolerance induction with an immunosuppressive regimen
  - Partial success but still a need for rFVIIa

E (born 2008)

Severe Morbus Glanzmann

On demand treatment with platelets and rFVIIa
High and repeated doses of rFVIIa necessary

Life threatening nose bleeds with several admissions to the ICU and transfusion of red cells and platelets

Developed antibodies against platelets

Stem cell transplantation 2015 – complicated by severe infection

J (born 1998)

Severe factor VII deficiency (factor VII< 1%)

No overt bleeding in childhood

On demand treatment with rFVIIa

Reported joint pain in both ankles and elbows at the age of 8 years

Athropathy in both ankles and left elbow

Prophylaxis with rFVIIa 2mg every other day

Progression of joint disease

Radiosynoviorthesis both ankles and right elbow 2016 and 2017

No adherence to daily prophylaxis with rFVIIa

Steven Pipe, MD

University of Michigan

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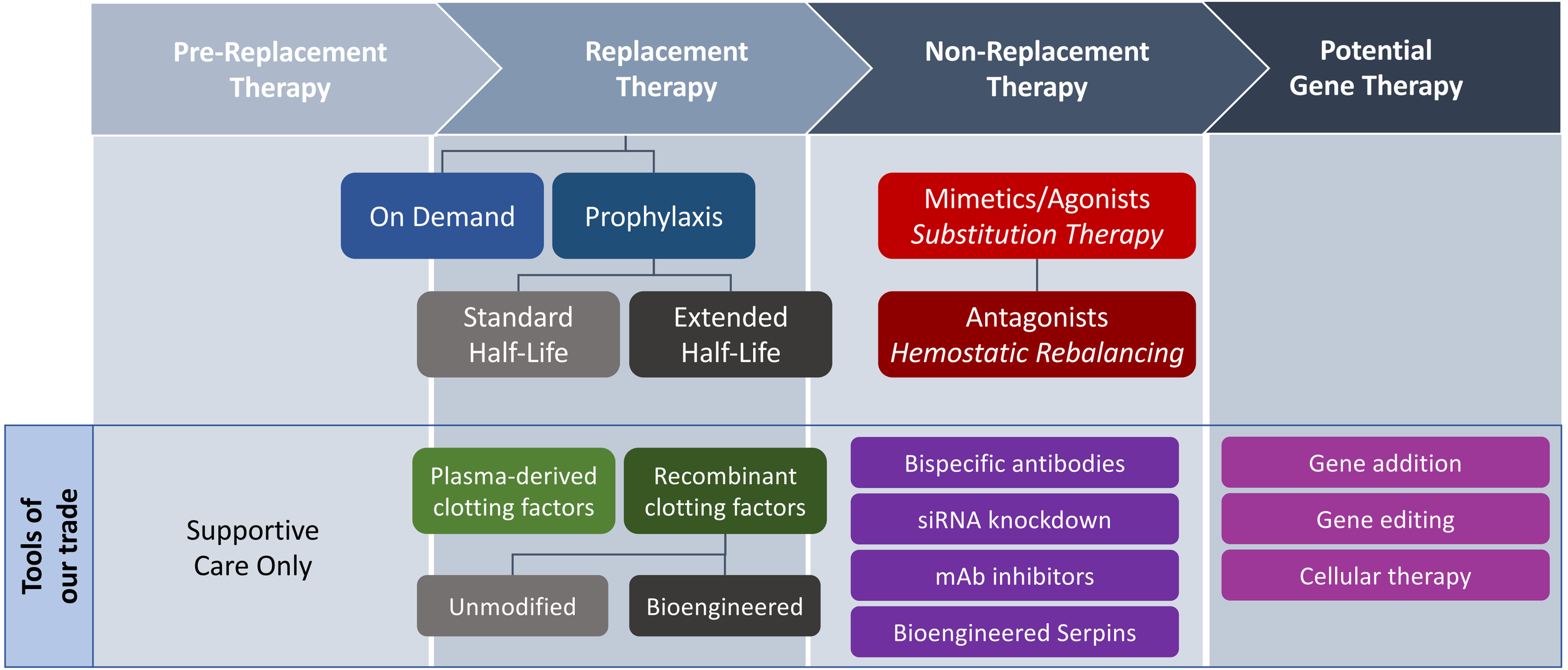
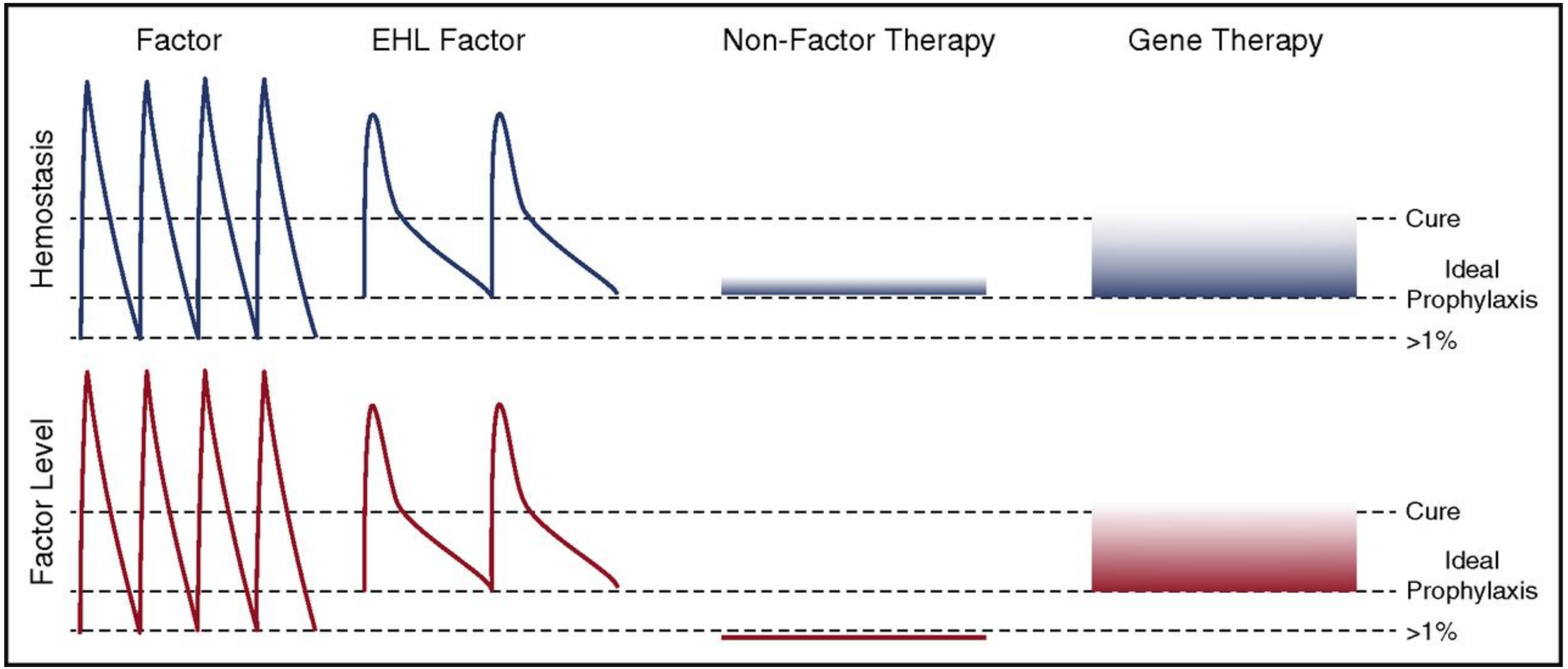
Hemophilia:
Current and future approaches to care



Pipe SW. *Hematology Am Soc Hematol Educ Program*. 2016;2016(1):650-656.

Novel Approaches to Hemophilia Therapy



Arruda VR, et al. *Blood*. 2017;130:2251-2256

Trends in Modern Hemophilia Therapeutics

- Shift from “minimally effective” prophylaxis to “optimized/personalized prophylaxis”
  - Emphasis on higher trough levels through:
    - more intensive prophylaxis
    - Utilization of extended half-life clotting factors
- Bioengineered molecules with enhanced properties
- Steady-state prophylaxis rather than “peaks and troughs”
- Subcutaneous delivery over intravenous
- Cross-segment therapeutics
  - Efficacy in presence and absence of inhibitors
  - Efficacy across a number of bleeding disorders

New paradigm of current and potential treatments

Substitution & hemostatic rebalancing therapies

Pros

- SQ delivery, low burden
- Steady state hemostasis
- Pediatric and adult application
- Inhibitor/non-inhibitor efficacy

Cons

- Likely not achieving “normal” but maybe “curative”
- **Thrombotic risk**
- Assay issues
- **Managing peak bleeding risk events**
- Annual expense

Investigational gene therapy

Pros

- “One and done”
- Steady state hemostasis
- “curative” levels if not even “normal”
- Annual cost savings

Cons

- Eligibility
  - Not for pediatric or inhibitors (yet)
  - Pre-existing immunity
- Known/unknown risks
  - Immunologic, cellular stress, integration risk?
- Uncertain durability, ability for redosing
- High initial costs

ORIGINAL ARTICLE

Safety analysis of rFVIIa with emicizumab dosing in congenital hemophilia A with inhibitors: Experience from the HAVEN clinical program

Gallia G. Levy[1] | Elina Asikanius[2] | Peter Kuebler[1] | Soraya Benchikh El Fegoun[3] | Sille Esbjerg[4] | Stephanie Seremetis[5]

J Thromb Haemost. 2019 May 24. doi: 10.1111/jth.14491.

Improved Bypassing Agents

- Recombinant VIIa likely to remain the primary agent for regular treatment of breakthrough bleeding for hemophilia A with inhibitors on emicizumab
  - Limited by short half-life, requirement for IV administration, variability in inter- and intra-individual efficacy
- Recombinant VIIa primary agent for acute and prophylactic bleed control in congenital factor VII deficiency and Glanzmann's Thrombasthenia
  - Prophylaxis challenging given limitations as above
- Bioengineered molecules
  - Enhanced efficacy, potential for subcutaneous delivery, prophylaxis that can achieve meaningful steady-state hemostasis, potential for more rapid bleed control with subcutaneous delivery

Howard Levy, MD, Ph.D., MMM

CMO, Catalyst Biosciences

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The Catalyst Biosciences subcutaneous solution

Nasdaq: CBIO

Our highly potent candidates

+ Quick & simple SQ injection
+ Allows for self-administration
+ Ideal for pediatric patients
+ Much higher & more stable factor levels
+ Keeps patients at protective levels continuously

The new standard in hemophilia prophylaxis

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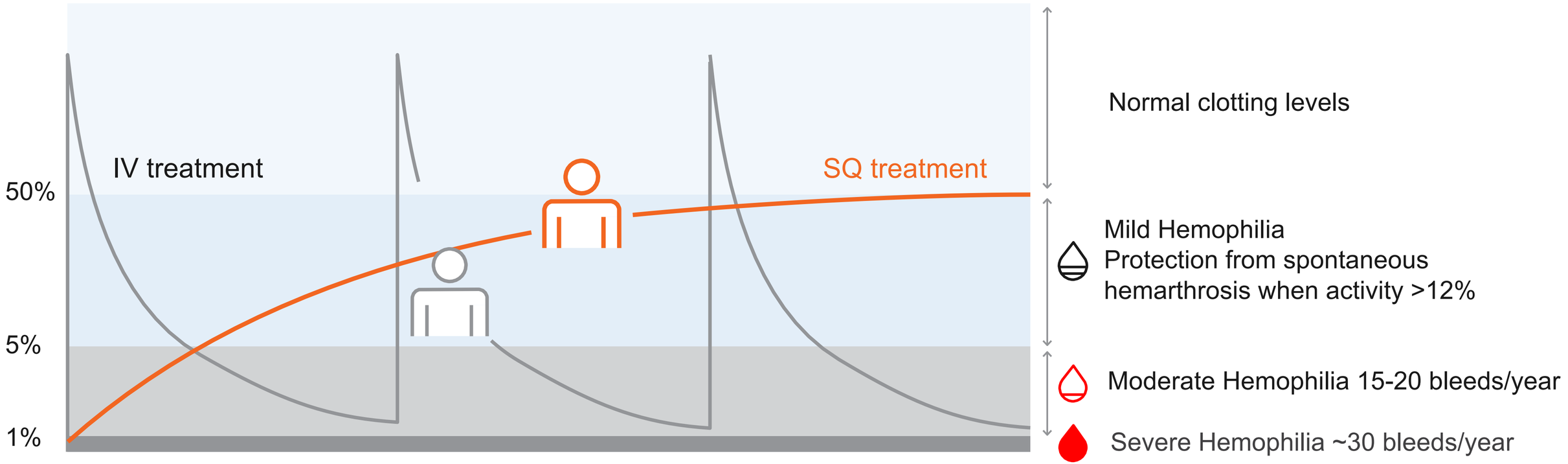
Patients in high mild range are protected from spontaneous bleeds



- Our concept of prophylactic treatment is to keep severe & moderate hemophilia patients in the high mild range
- Subcutaneous factor treatments build up over time, offering long-term stability in clotting levels

Addressing unmet needs in orphan bleeding disorders

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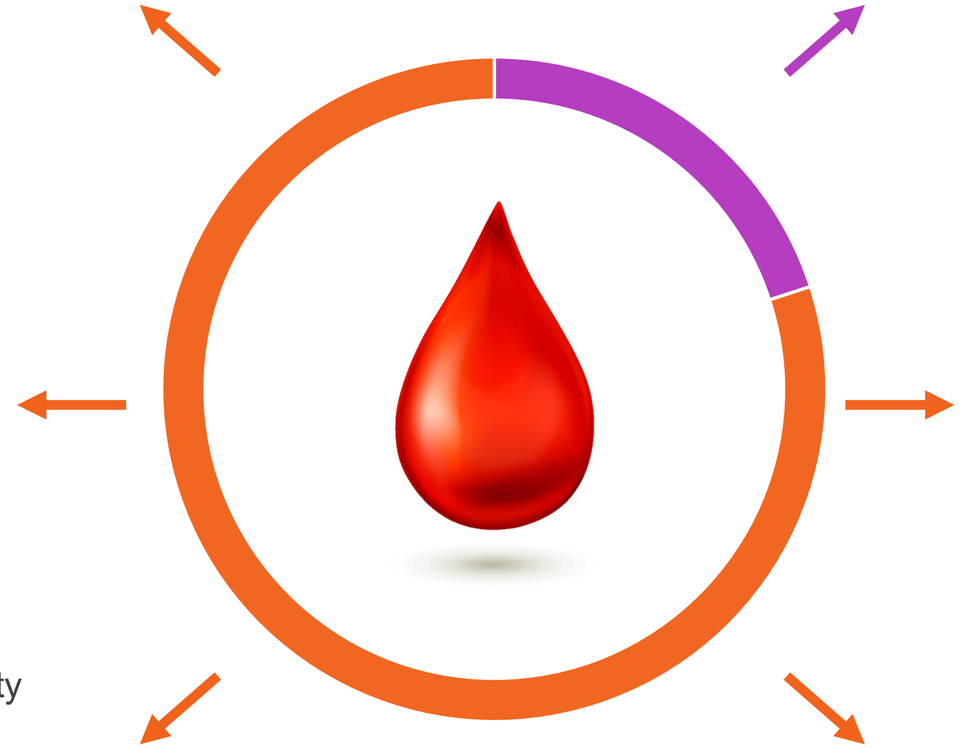
MarzAA & DalcA



Hemophilia A with inhibitors

Anti-FVIII antibodies that neutralize activity

– 30% of Hem A patients

– Treatments: SQ Hemlibra®, IV FVIIa, FEIBA®

SQ treatment of bleeds & Hemlibra non-responders

Hemophilia B with inhibitors

Anti-FIX antibodies that neutralize activity

– 5% of Hem B patients

– Treatments: IV FVIIa, FEIBA

SQ prophylaxis & SQ treatment of bleeds

Factor VII deficiency – Glanzmann Thrombasthenia

Congenital lack of FVII – Platelet abnormality

– Treatments: IV plasma FVII or FVIIa

SQ prophylaxis in severe patients & SQ treatment of bleeds

Hemophilia B

Congenital lack of functional FIX

– Treated with IV FIX products

SQ prophylaxis

Hemophilia A

Congenital lack of functional FVIII

– Treatments: IV FVIII or SQ Hemlibra

SQ treatment of bleed

Acquired Hemophilia

Rare disorder, caused by anti-FVIII nAbs

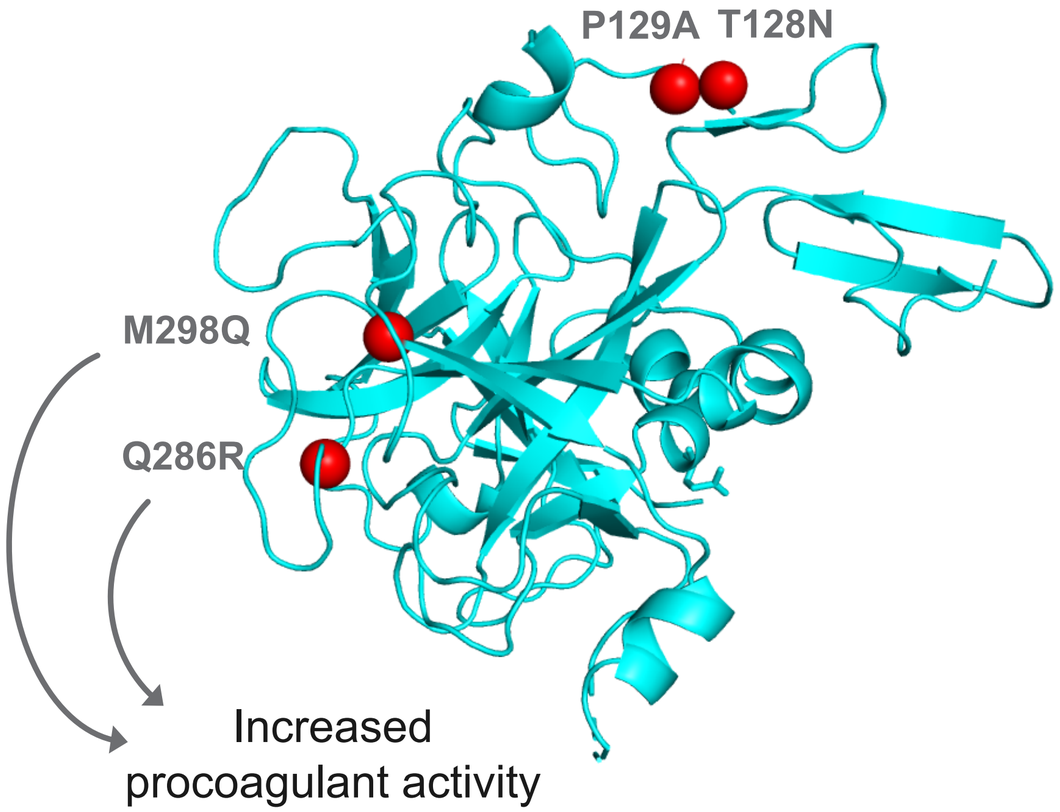
– Treated with immunosuppressants + IV FVIIa, FEIBA or Obizur®

SQ treatment of bleeds & SQ prevention of re-bleeds

Marzeptacog alfa (activated): MarzAA rFVIIa

Nasdaq: CBIO

SQ prophylaxis and SQ treatment of a bleed are clear unmet needs in hemophilia and other bleeding disorders



- Four engineered amino acid substitutions within the FVIIa protein
- 9-fold more potent catalytic activity than NovoSeven RT
- **Allows subcutaneous dosing**
- Half-life prolonged when using subcutaneous dosing

Granted Orphan Drug Designation in the US and EU

OC 11.4: Phase 2/3 Trial of Subcutaneous Engineered FVIIa Marzeptacog Alfa (Activated) in Hemophilia A or B with Inhibitors: Efficacy, Safety and Pharmacokinetics

Johnny Mahlangu, Howard Levy, Heghine Khacchatryan, Marina V. Kosinova, Levani Makhaldiani, Bartosz Korczowski, Genadi Iosava, Frank Del Greco, Frank V. M. Booth, MAA-201 Marzeptacog alfa (activated) study group

ISTH 7 July 2019

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MarzAA phase 2/3 SQ clinical trial MAA-201 design

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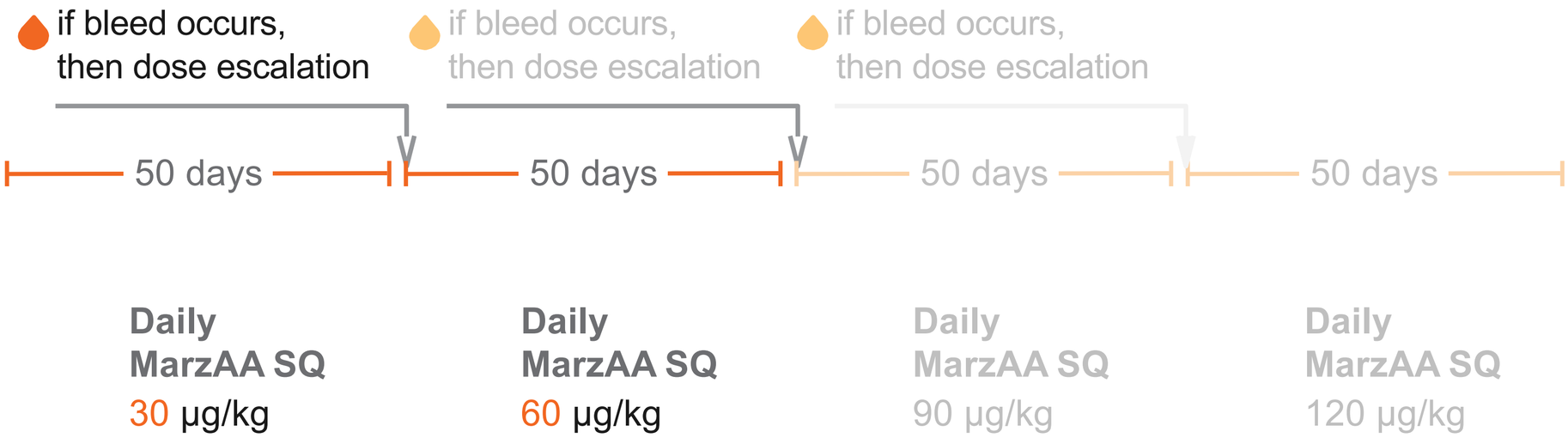
MarzAA IV
18 µg/kg
PK 24 hours

MarzAA SQ
30 µg/kg
PK 48 hours

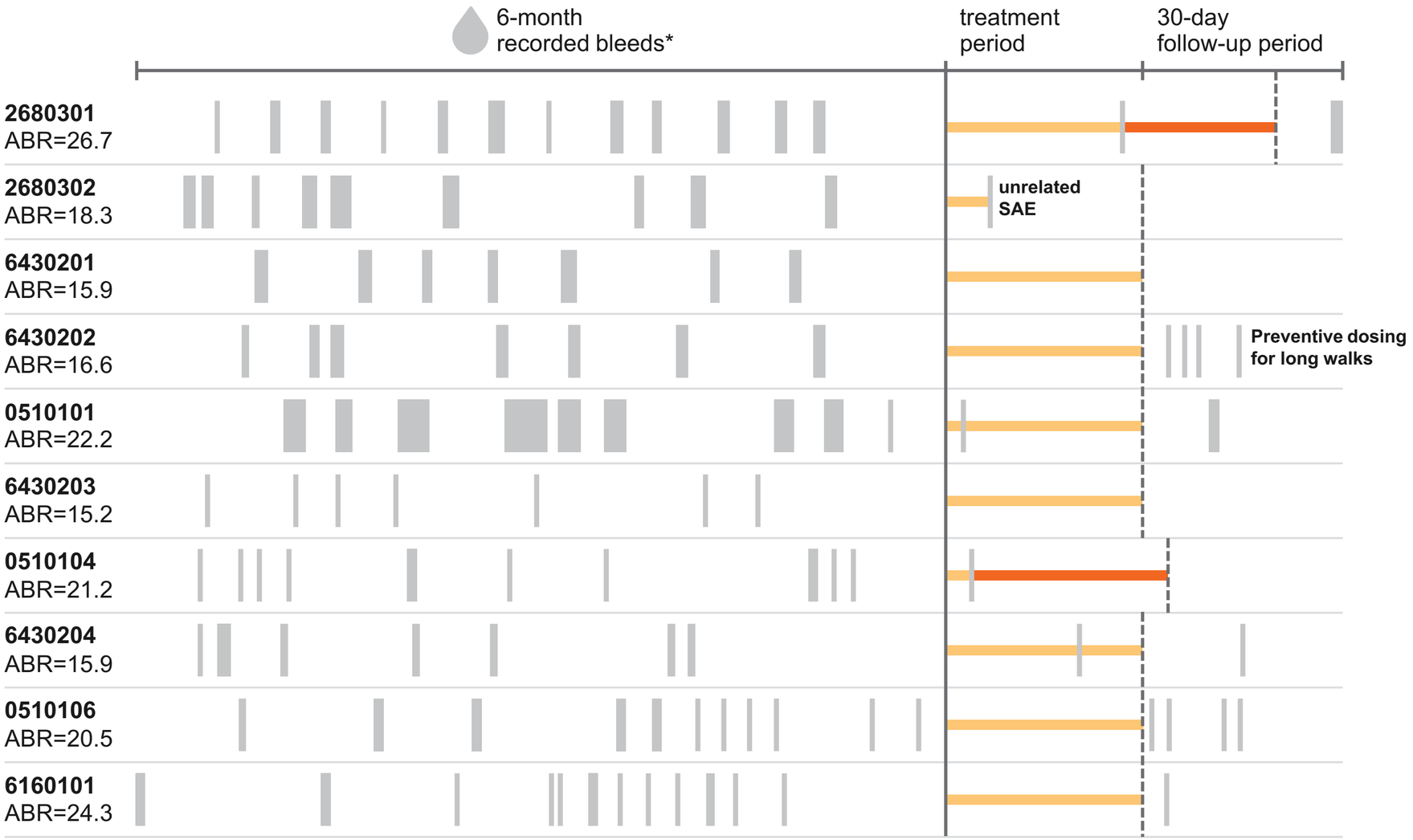


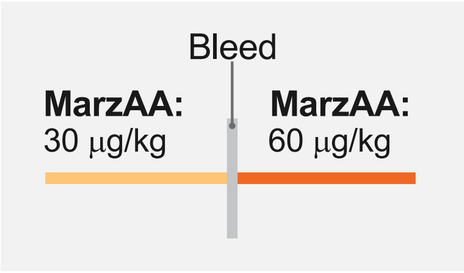
Endpoint achieved if ABR decreases from ≥12 to ≤6

- Patients with documented annual bleeding rate (ABR) >12
- Open label SQ study with individual dose escalation if needed in Hemophilia A or B with inhibitors
- Primary endpoint: reduction in annualized bleed rate **at final dose level**
- Secondary endpoints: safety and tolerability, inhibitor formation

MarzAA: Robust reduction in annualized bleed rate (ABR)

Nasdaq: CBIO



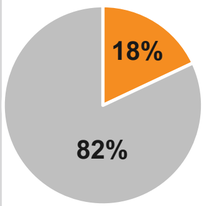
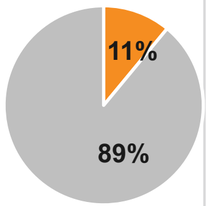
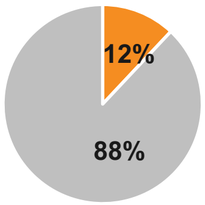
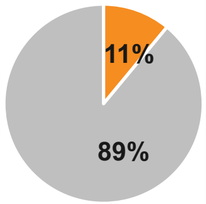
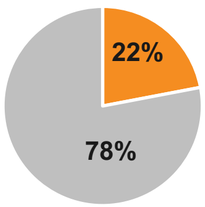
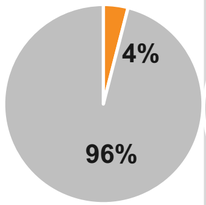
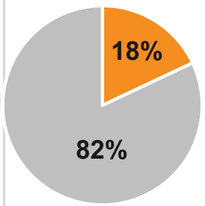
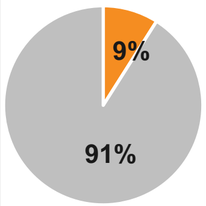
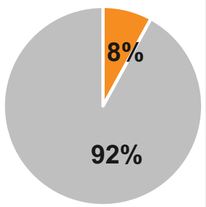
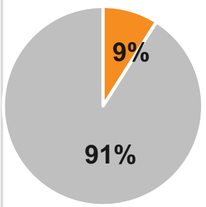
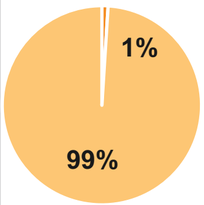
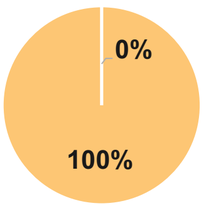
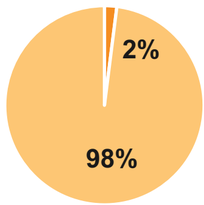
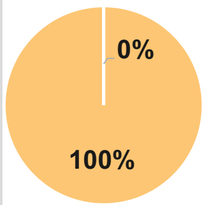
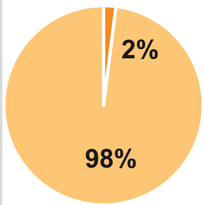
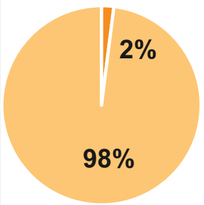


*The width of each grey bar represents bleed duration: 1 to 9 days

Significant reduction in Proportion of Days with Bleeding (PDB)

Nasdaq: CBIO

Median Proportion of Days with Bleeding reduced to zero

Subject	2680301	2680302	6430201	6430202	0510101	6430203	0510104	6430204	0510106	6160101
Pre-treatment										
On-treatment		Unrelated SAE								

Orange denotes the Proportion of Days with Bleeding during period of observation

+ Average **pre-treatment** percentage of days of bleeding was **12.3%** (SD 5.8%) [median = 11.0%]
+ Average **on-treatment** percentage were reduced to **0.8%** (SD 0.9%) [median 0%]
+ Analysis of these pairwise differences by Wilcoxon signed-rank test has p=0.009 for 93.8% reduction

Marzeptacog alfa (activated) Phase 2: Clinical efficacy

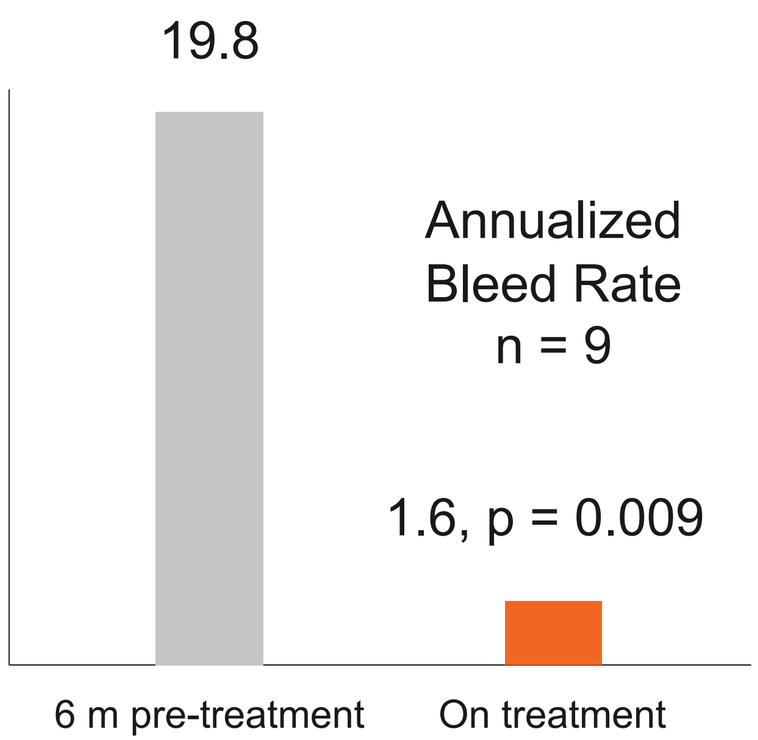
Nasdaq: CBIO

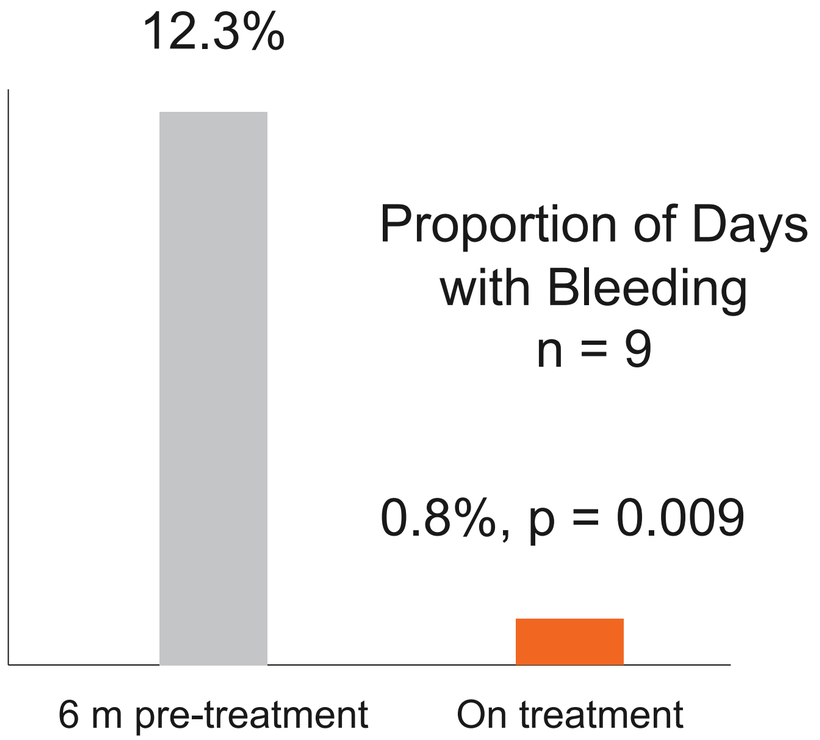
7 of 9 subjects had no bleeding (spontaneous or traumatic) at final dose level

Greater than 90% reduction in all bleeding; Median ABR zero; Median bleeding days zero

Mean Annualized Bleeding Rates (ABR) significantly reduced from 19.8 to 1.6

Mean Proportion of Days with Bleeding (PDB) significantly reduced from 12.3% to 0.8%





MAA-201 safety

Safe & well tolerated

No anti-drug antibodies were detected

+ One fatal unrelated SAE: intracerebral hemorrhage due to untreated hypertension
+ 517 SQ injections were administered
  - 6 injection site reactions in 2 subjects
    - 1 moderate swelling that resolved without sequelae in one subject
    - 2 mild and 3 moderate redness that resolved without sequelae in the other subject and did not occur with subsequent SQ injections

Marzeptacog alfa (activated)

Phase 3 studies to initiate in 2020

- Clinical efficacy & tolerability demonstrated
- Subcutaneous dose escalation PK study initiated, final data in 2020
- Pivotal trial guidance obtained from EMA & MHRA
- FDA end-of-phase 2 meeting expected in late 2019

Clinical Development & Medical Affairs Team

Nasdaq: CBIO

Chief Medical Officer

Howard Levy, M.B.B.Ch., Ph.D., M.M.M.

18 years
In hematology

Senior Director, Medical Affairs

Angie Dale, M.B.A.

14 years in
hematology

VP, Clinical Development

Linda Neuman, M.D., M.B.A.

14 years
in biotech

Executive Director, Clinical Operations

Frank Del Greco, M.B.A.

20 years
in biotech

Grant Blouse, Ph.D.

VP Translational Research, Catalyst Biosciences

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SQ treatment of a bleed is an unmet need

36% of patients on Hemlibra® had one or more bleeds[1]

Patients will not be proficient with use of IV products

Time to receive treatment for a bleed is typically hours

SQ MarzAA for Treatment of a Bleed

- ✓ Fast and early treatment
- ✓ Effective to stop a bleed
- ✓ Convenient to administer

[1]Jiménez-Yuste *et al*. (2019) STASEY: interim analysis results Presented at the ISTH 2019 Congress in Melbourne

Properties required for SQ treatment of a bleed

Fast Onset and Long Duration of Effect

For effective SQ treatment of a bleed the onset of action should be **rapid**, **robust**, and **sustained**

Dose Dependent Effect

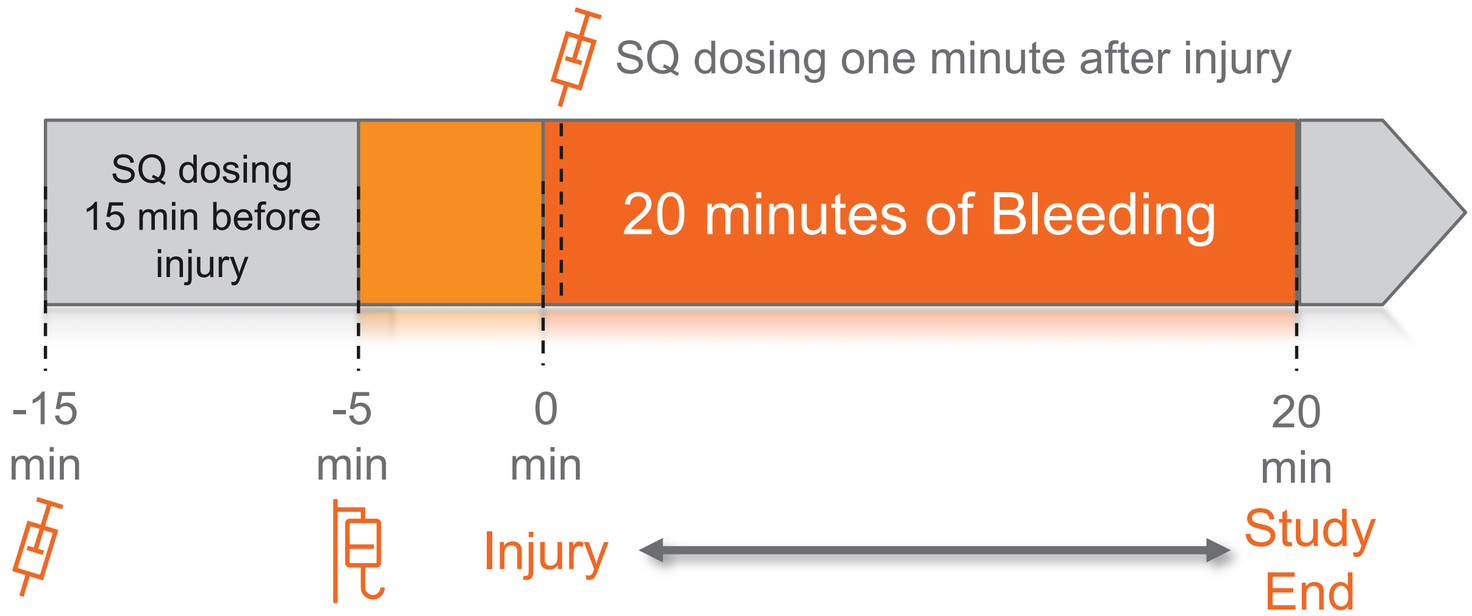
Demonstration of a **dose dependent effect** is desired for an **SQ** treatment of a bleed

Efficacy that Rivals SoC

The efficacy should be **on par or better** than that of current standard of care products administered by IV injection

Preclinical evaluation of bleeding in hemophilia mice

Acute injury model with SQ dosing *after* the injury



Acute injury model with SQ dosing *prior* to injury

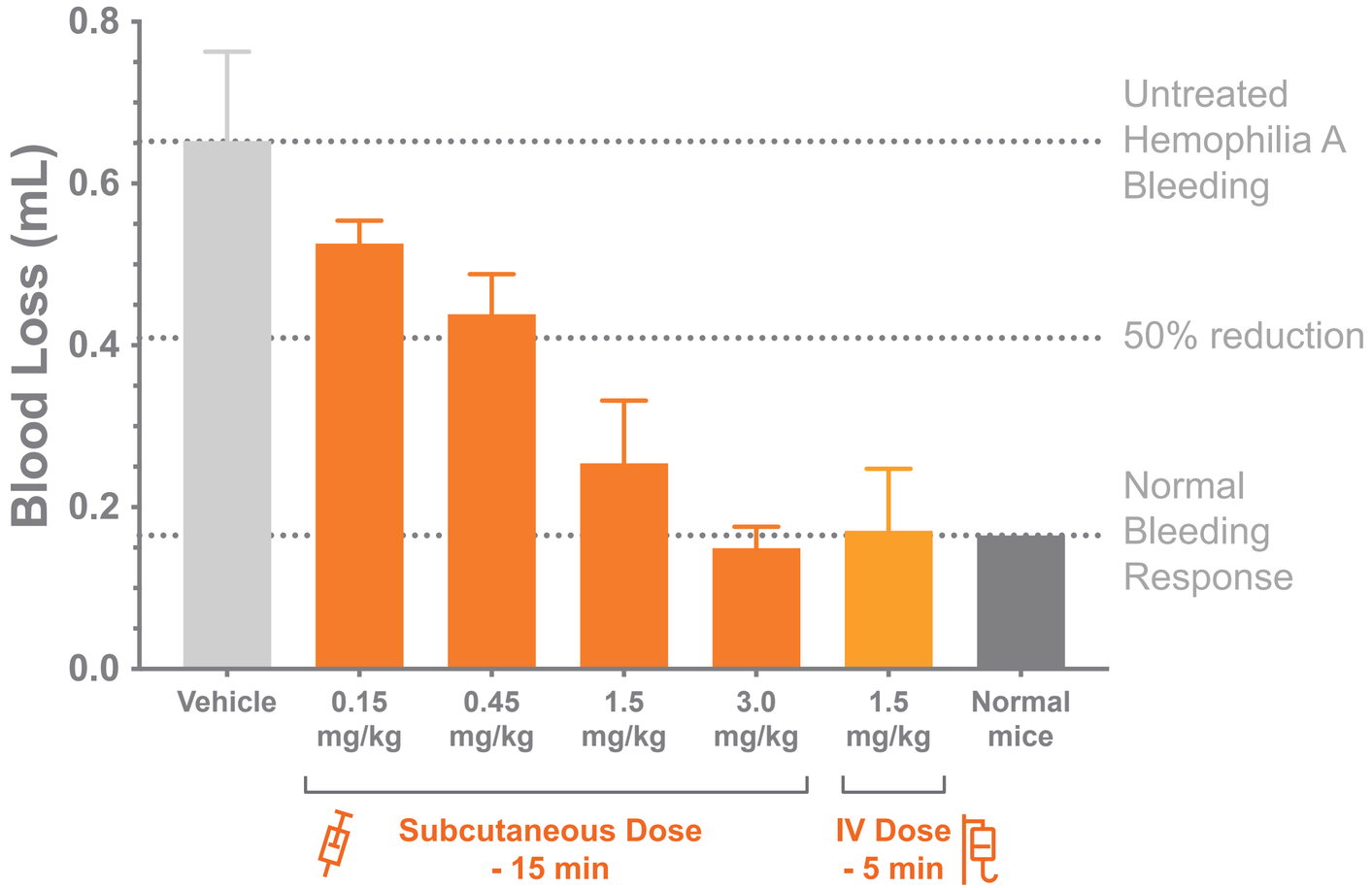
Preclinical hemophilia A mouse model

+ **Standardized** bleeding models are used to evaluate efficacy of hemostatic agents
+ Represents a **traumatic** injury – **not spontaneous** bleeding
+ The **standard acute injury model** is IV treatment of the agent 5 min prior to injury to the tail that induces bleeding
+ **Two approaches** to evaluate SQ MarzAA in a hemophilia A mouse model
  + **SQ treatment *prior* to injury**
  + **SQ treatment *after* injury**

Fast onset of action for SQ MarzAA in Hemophilia A mice

Nasdaq: CBIO

Acute mouse injury model with dosing *prior* to injury

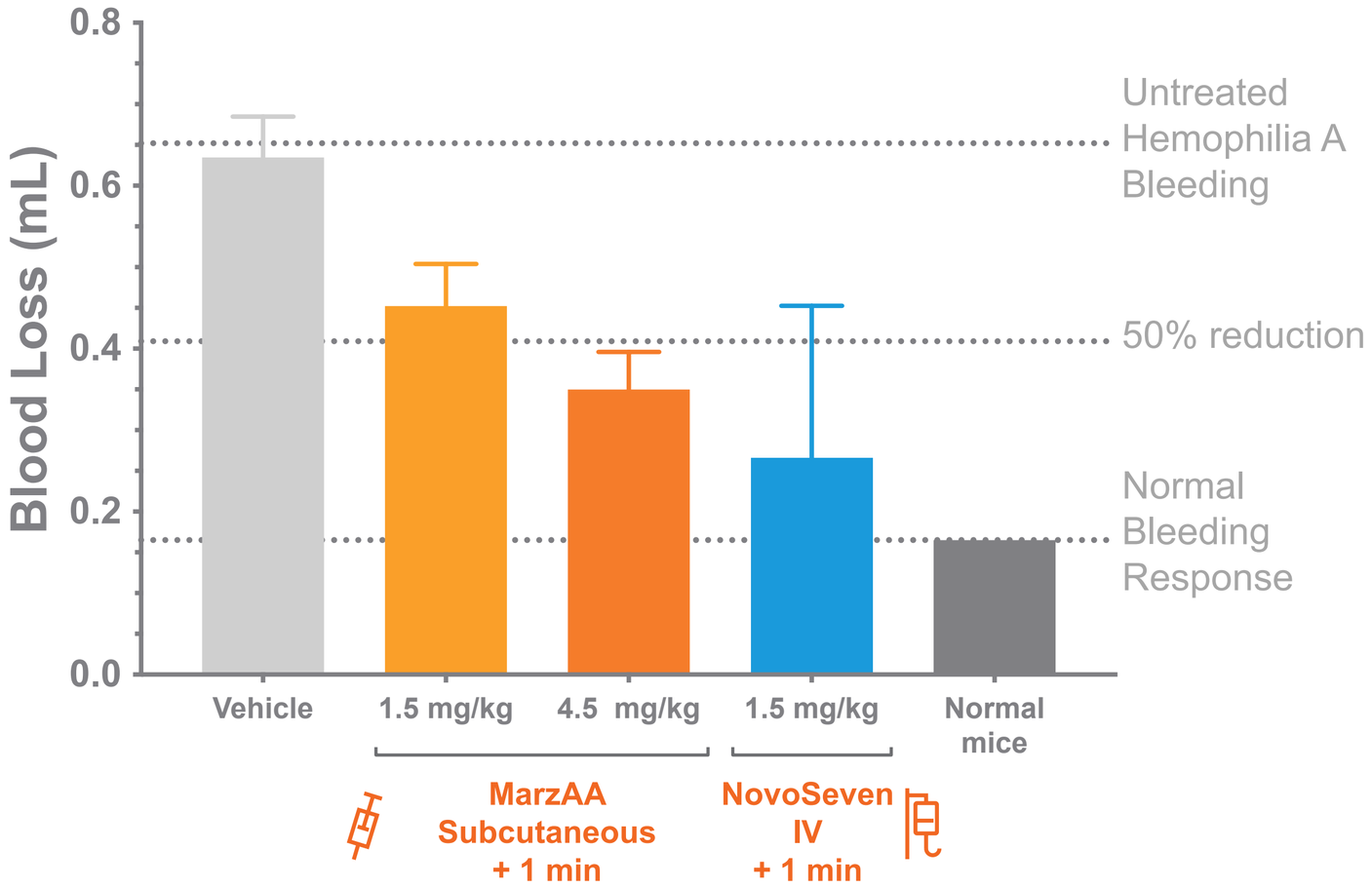


SQ MarzAA normalizes bleeding

+ **SQ treatment** of MarzAA 15 min prior to injury normalizes bleeding
+ Normalization of bleeding demonstrated at comparable SQ and IV doses
+ Clear **dose dependent** effect
+ **Fast onset of action** as short as 15 min
+ These doses translate to the **range of doses** (μg/kg) being explored in clinical trials

SQ MarzAA reduces bleeding when dosed *After* the Injury

Acute mouse injury model with dosing *after* the injury



Reduced bleeding *After* Injury

+ Hemophilic mice bleed **considerably more** than normal mice
+ **SQ treatment** of MarzAA one min after traumatic bleeding has started significantly **reduces blood loss** and **stops the bleed**
+ The effect is **dose dependent**
+ Reduction in blood loss **is *on par* with IV NovoSeven**

In a world of SQ prophylaxis

Patients need an SQ treatment of a bleed option

Individuals on Hemlibra® may need additional treatment

NovoSeven® is safe but is only administered by IV

FEIBA lacks a safety margin and is administered by IV

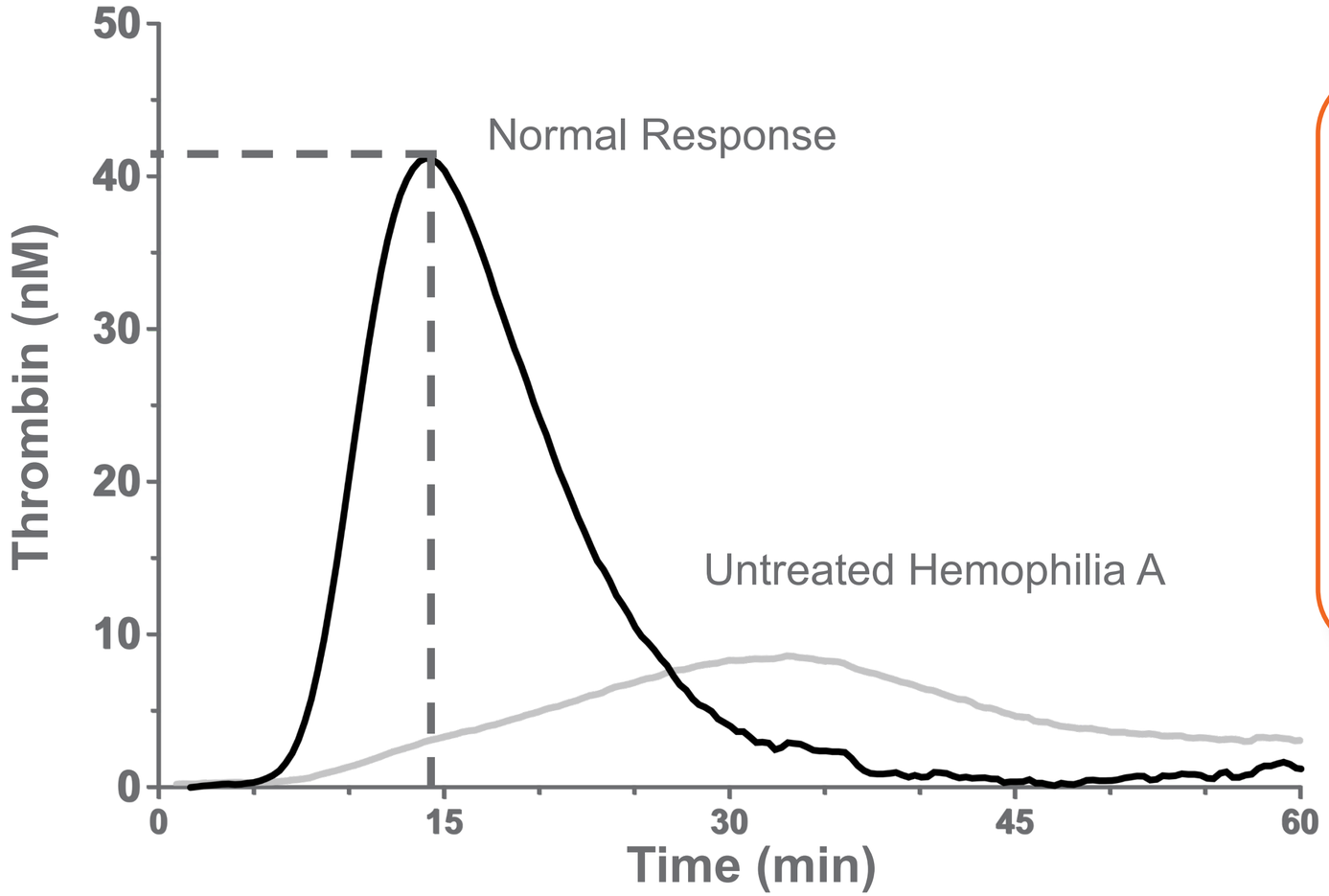
SQ MarzAA Meets the Profile for an Ideal Solution

- ✓ Fast and easy to administer
- ✓ Ability to stop bleeding
- ✓ Potential to combine with other treatment regimens

Thrombogenicity risk can be evaluated using *in vitro* methods

Thrombogenicity risk can be evaluated *in vitro*

The thrombin generation assay is an effective model of coagulation



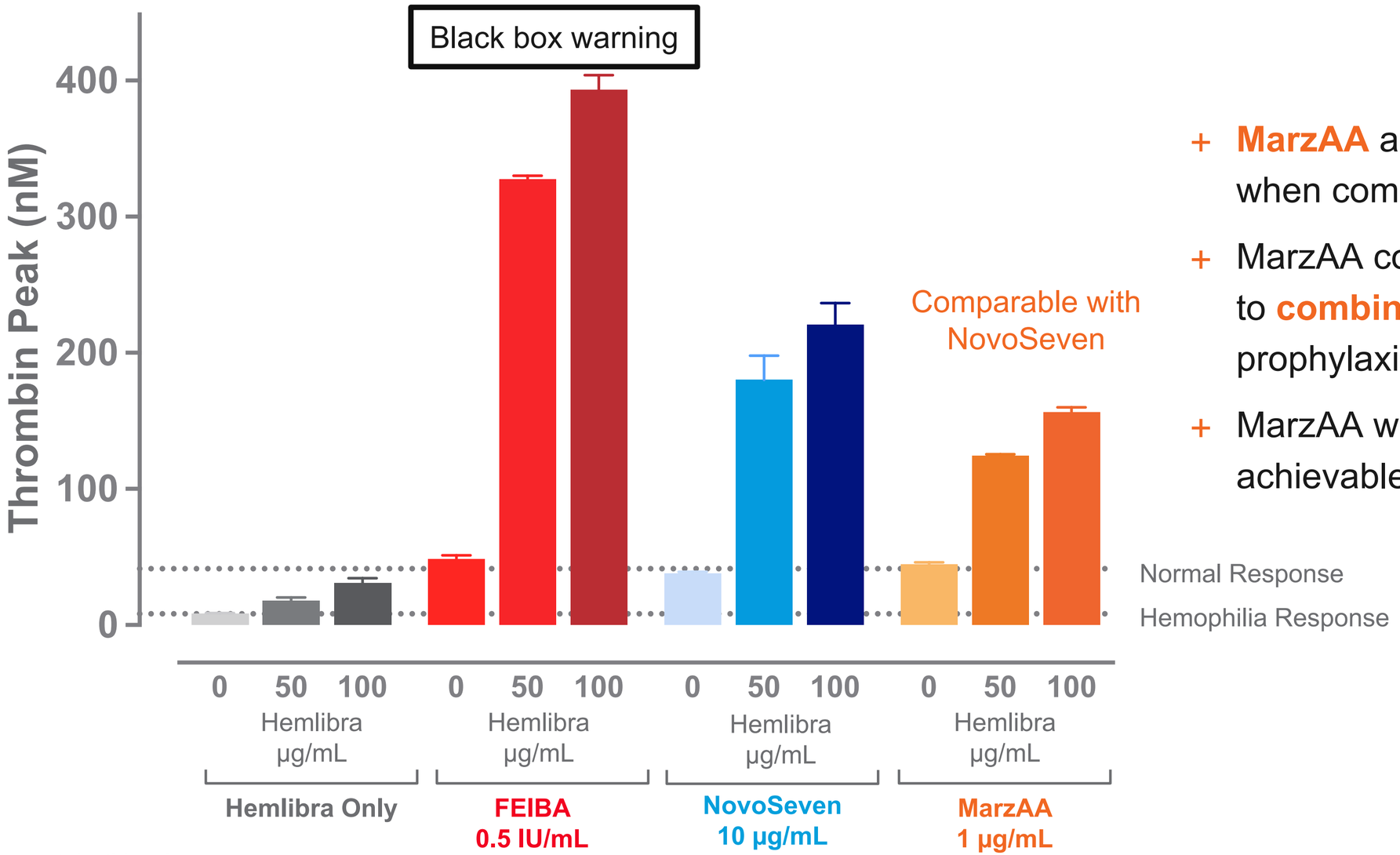
Thrombin Generation Assay

- ✓ Standard assay
- ✓ Highly accepted
- ✓ Representative of *in vivo* coagulation

Potential to treat break through bleeds in patients on Hemlibra

Nasdaq: CBIO

MarzAA has a preferred coagulation profile that is *on par* with NovoSeven



+ **MarzAA** and **NovoSeven** behave similarly when combined **with Hemlibra**
+ MarzAA could allow hemophilia A patients to **combine two SQ therapies** - "sports prophylaxis" or treat breakthrough bleeds
+ MarzAA works well at plasma levels achievable with SQ dosing

Data supports the potential use of SQ MarzAA for treatment of a bleed

Nasdaq: CBIO

SQ MarzAA rapidly reaches therapeutic concentrations in humans

Fast onset of action demonstrated in preclinical models

SQ MarzAA reduces bleeding *after* an injury in preclinical models

MarzAA + Hemlibra is similar to NovoSeven + Hemlibra *in vitro*

Round Table Discussion

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Discussion of unmet needs in bleeding disorders

What are your thoughts on MarzAA role in:

- SQ treatment of bleeds
  - In combination with Hemlibra
- SQ prophylaxis and treatment of bleeds in FVII deficiency
- SQ prophylaxis and treatment of bleeds in Hemophilia B with inhibitors
- Please can you comment on non-factor therapies
  - Safety and Efficacy
- SQ prophylaxis and treatment of bleeds in Glanzmann Thrombasthenia
- Treatment of acquired hemophilia

Marzeptacog alfa (activated) program

Moving forward in clinical development to address key unmet needs

- Robust SQ prophylaxis clinical efficacy demonstrated
- Safe and well tolerated
- No anti-drug antibodies detected
- Exploring the use of SQ MarzAA in additional indications including SQ treatment of a bleed
- Moving forward with Phase 3 study planning

Jeff Landau

VP Business Development, Catalyst Biosciences

CATALYST BIOSCIENCES

MarzAA – The only bypass agent for both SQ prophylaxis and SQ treatment of bleeds

Attractive Commercial Profile

MarzAA targets a large existing $2.2B Bypass Agent (BPA) market

IV NovoSeven ($1.2B 2018 sales) is the most broadly used BPA and validates FVIIa mechanism in many rare bleeding disorders:

+ Hemophilia A or B with inhibitors
+ Severe Factor VII Deficiency
+ Glanzmann Thrombasthenia
+ Acquired Hemophilia A

SQ MarzAA has a superior profile to IV NovoSeven – over 100 clinicians surveyed:

+ SQ MarzAA preferred over IV NovoSeven for the treatment of bleeds
+ SQ MarzAA can create & expand multiple prophylaxis markets

Adivo Associates

Nasdaq: CBIO

Data and analytics experts in hemophilia and plasma protein markets

+ Global company founded on the premise that hemophilia market and utilization data across channels was lacking
+ Unique and proprietary access to global hemophilia product utilization data
+ Deep contacts with hemophilia prescribers, purchasers and stakeholders

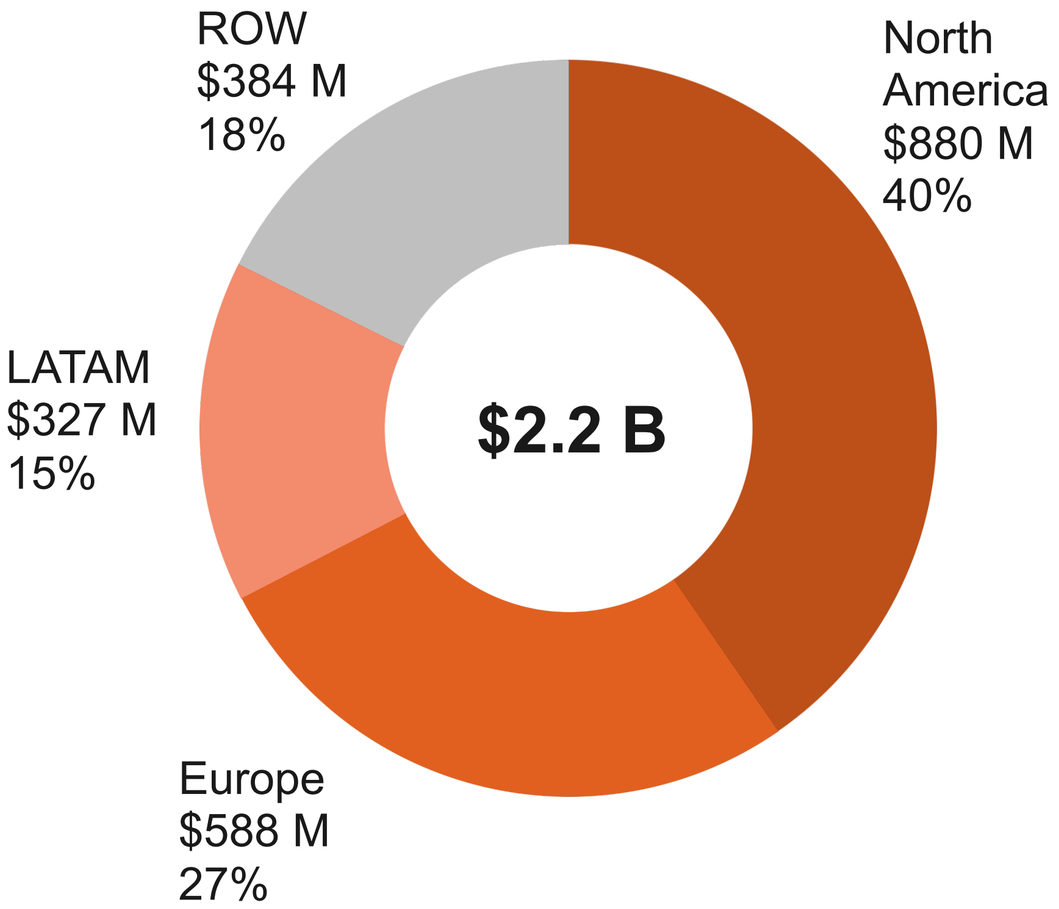
Catalyst MarzAA demand market research:

+ Survey of 40 US and 75 EU adult and pediatric high volume treating physicians
+ SQ Treatment of a bleed: Hemophilia A with inhibitors
+ SQ Prophylaxis: Hemophilia A or B with inhibitors, Factor VII Deficiency, Acquired Hemophilia A

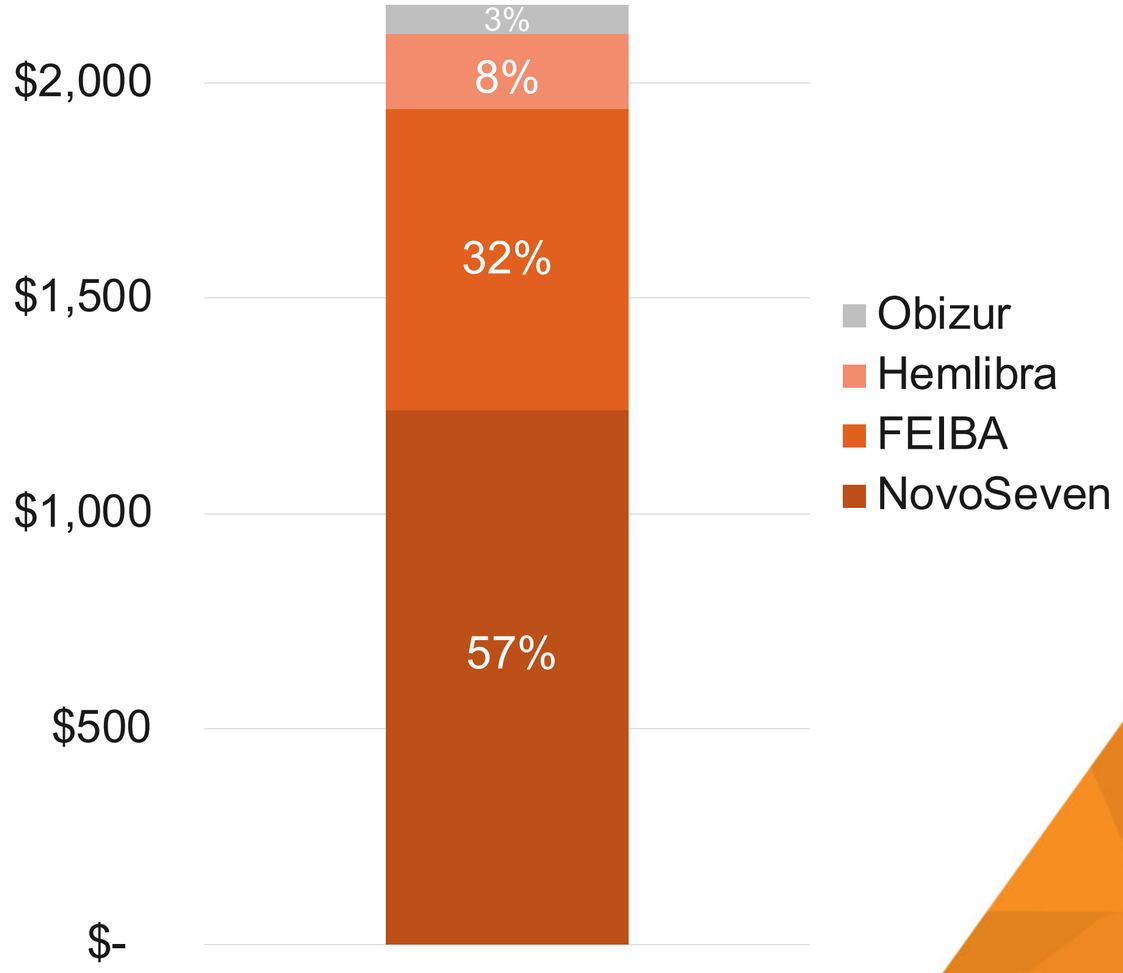
2018 global bypass agent sales were $2.2B

Nasdaq: CBIO

Global bypass agent sales by region



Global bypass agent sales by brand



IV NovoSeven ($1.2B 2018 sales) – most broadly used BPA

Nasdaq: CBIO

	Hem A with Inhibitors	Hem B with Inhibitors	Severe Factor VII Deficiency	Glanzmann Thrombasthenia	Acquired Hemophilia A
Treated Patients	~3,300	~315	~1,200	~1,100	~1,000
NovoSeven Sales	$630M	~$130M	~$60M	~$75M	~$90M
Approved Therapies	NovoSeven® Recombinant Factor VIIa; FEIBA; HEMLIBRA emicizumab-kxwh injection for subcutaneous use 150 mg/mL	NovoSeven® Recombinant Factor VIIa; FEIBA	NovoSeven® Recombinant Factor VIIa	NovoSeven® Recombinant Factor VIIa	NovoSeven® Recombinant Factor VIIa; FEIBA; Obizur
Unmet Need(s)	SQ Treatment of Bleeds	SQ Prophylaxis; SQ Treatment of Bleeds	SQ Prophylaxis; SQ Treatment of Bleeds	SQ Prophylaxis; SQ Treatment of Bleeds	SQ Prophylaxis; SQ Treatment of Bleeds

MarzAA's superior profile can create & expand multiple indications

SQ MarzAA directly competes with IV NovoSeven

SQ MarzAA creates new prophylaxis market

	Hem A with Inhibitors	Hem B with Inhibitors	Severe Factor VII Deficiency	Glanzmann Thrombasthenia	Acquired Hemophilia A
Treated Patients	~3,300	~315	~1,200	~1,100	~1,000
NovoSeven Sales	$630M	~$130M	~$60M	~$75M	~$90M
Approved Therapies	NovoSeven® Recombinant Factor VIIa, FEIBA, HEMLIBRA emicizumab-kxwh injection for subcutaneous use 150 mg/mL	NovoSeven® Recombinant Factor VIIa, FEIBA	NovoSeven® Recombinant Factor VIIa	NovoSeven® Recombinant Factor VIIa	NovoSeven® Recombinant Factor VIIa, FEIBA, Obizur
Unmet Need(s)	SQ Treatment of Bleeds	SQ Prophylaxis SQ Treatment of Bleeds	SQ Prophylaxis SQ Treatment of Bleeds	SQ Prophylaxis SQ Treatment of Bleeds	SQ Prophylaxis SQ Treatment of Bleeds

SQ MarzAA has a superior profile to NovoSeven

Market Needs	MarzAA	NovoSeven® Recombinant Factor VIIa
2018 Sales	-	$1.2B
Administration	SQ	IV
Combines with Hemlibra	✓	✓
SQ Treatment of bleeds	✓	✗
SQ Prophylaxis	✓	✗
Zero median ABR on prophylaxis	✓	✗
Creates new high unmet need prophylaxis markets	✓	✗
Targeted Indications	Hem A Inh Hem B Inh FVII Deficiency AHA Glanzmann	Hem A Inh Hem B Inh FVII Deficiency AHA Glanzmann

Marzeptacog alfa (activated)

Attractive Commercial Profile

Targeting **large $2.2B BPA market**: FVIIa mechanism is clinically and commercially validated in multiple indications

MarzAA is the only BPA **"single drug solution"** which can deliver **SQ prophylaxis and SQ treatment of a bleed**

SQ MarzAA profile is clearly **superior to IV NovoSeven** ($1.2B 2018 sales) according to a survey of over **100 US and EU high volume BPA prescribers**

Fletcher Payne

CFO, Catalyst Biosciences

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Financial information

Nasdaq: CBIO

Selected data

Financial results	Q2 2019	YE 2019 Full Year Estimate
Cash & Cash Equivalents	$94.0 M	~$70M
Operating Expense	$30.1 M	~$56M
Net Loss	($28.9M)	
Net Loss per share	($2.41)	

Share data

Common Stock Outstanding	12,008,528
Officer & Director ownership	8.4%
Fully Diluted Shares*	14,621,038
Average Volume	106,850
Market Capitalization as of 14 August 2019	$87 M

* Includes ~1M options available for issuance

2019 Milestones

Nasdaq: CBIO

	Q1	Q2	Q3	Q4	2020
MarzAA (FVIIa)	**P2 efficacy**	**Initiate P1 PK/PD**	**Final P2 Data**	**FDA EoP2**	**P1 PK/PD data** **Phase 3**
DalcA (FIX)	**Initiate P2b**			**Phase 2b update**	**Final P2b data**
CB 2679d-GT (FIX)	**Preclinical efficacy**				
CB 2782-PEG (dAMD)		**Ocular EHL PK/PD**			

Summary

Disruptive approach to a $3.7 billion market

Subcutaneous prophylactic dosing of novel factors is less painful, more convenient and potentially more efficacious, especially for children – **Clinical efficacy demonstrated for both MarzAA & DalcA**

FVIIa: MarzAA ~$2.2 Billion market

>90% reduction in ABR & PBD in P2

No ADAs or nAbs observed to date

+ Pivotal trial guidance obtained from EMA

+ FDA EoP2 in 2019, P3 expected in 2020

Anti-C3 dAMD: CB 2782-PEG >$5B market

Preclinical long acting anti-C3 protease with best-in-class profile; anticipated intravitreal dosing 3 to 4 times per year

FIX: DalcA >$1.5 billion market

High mild, >30% activity levels achieved

Most advance SQ FIX in the clinic

+ Phase 2b initiated

+ Phase 2b final data in Q1 2020

FIX: CB 2679d-GT

Preclinical gene therapy asset with superior activity *vs* current clinical constructs

Strong financial position, ~2 years cash runway

THANK YOU

Nasdaq: CBIO

catalystbiosciences.com

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