Sobi Capital Markets Day 2019

rare **strength**

14 May 2019

Forward looking statements

In order to utilise the 'Safe Harbor' provisions of the United States Private Securities Litigation Reform Act of 1995, Swedish Orphan Biovitrum AB (publ) is providing the following cautionary statement. This presentation contains forward-looking statements with respect to the financial condition, results of operations and businesses of Swedish Orphan Biovitrum AB (publ), By their nature, forward-looking statements and forecasts involve risk and uncertainty because they relate to events and depend on circumstances that will occur in the future. There are a number of factors that could cause actual results and developments to differ materially from that expressed or implied by these forward-looking statements. These factors include, among other things, the loss or expiration of patents, marketing exclusivity or trade marks; exchange rate fluctuations; the risk that R&D will not yield new products that achieve commercial success; the impact of competition, price controls and price reductions; taxation risks; the risk of substantial product liability claims; the impact of any failure by third parties to supply materials or services; the risk of delay to new product launches; the difficulties of obtaining and maintaining governmental approvals for products; the risk of failure to observe ongoing regulatory oversight; the risk that new products do not perform as we expect; and the risk of environmental liabilities.

Presenters

Guido Oelkers
CEO

Henrik Stenqvist
CFO

Milan Zdravkovic
Head of R&D and CMO

Philip Wood
Head of Haemophilia

Norbert Oppitz
Head of Specialty Care

Armin Reininger
Head of Medical and Scientific Affairs

Introduction

Guido Oelkers
CEO

We remain committed to our strategic direction

Drive Haemophilia penetration

Develop Immunology

Grow US business and strengthen position in EMENAR

Strengthen late-stage pipeline

I’m very pleased to **welcome** you to the first Capital Markets Day during my tenure

We are stronger than ever and have over the past two years made significant achievements

- New management team leading the change
- Two-and-a-half times the size we were in 2016 and on a whole new trajectory
- Earnings guidance for 2019 at same level as 2016's sales
- More than tripled the number of haemophilia patients treated since end of 2016
- Two transformational acquisitions completed
- Built a substantial North American presence
- Strengthened our pipeline

New management team leading the change

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CEO

Henrik Stenqvist
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Philip Wood
Head of Haemophilia

Norbert Oppitz
Head of Specialty Care

Armin Reininger
Head of Medical and Scientific Affairs

Milan Zdravkovic
Head of R&D, Chief Medical Officer

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General Counsel, Head of Legal Affairs

Christian Dreger
Head of Region NEMER

Sofiane Fahmy
Head of Region SWENA

Amy Pott
Head of Region NA

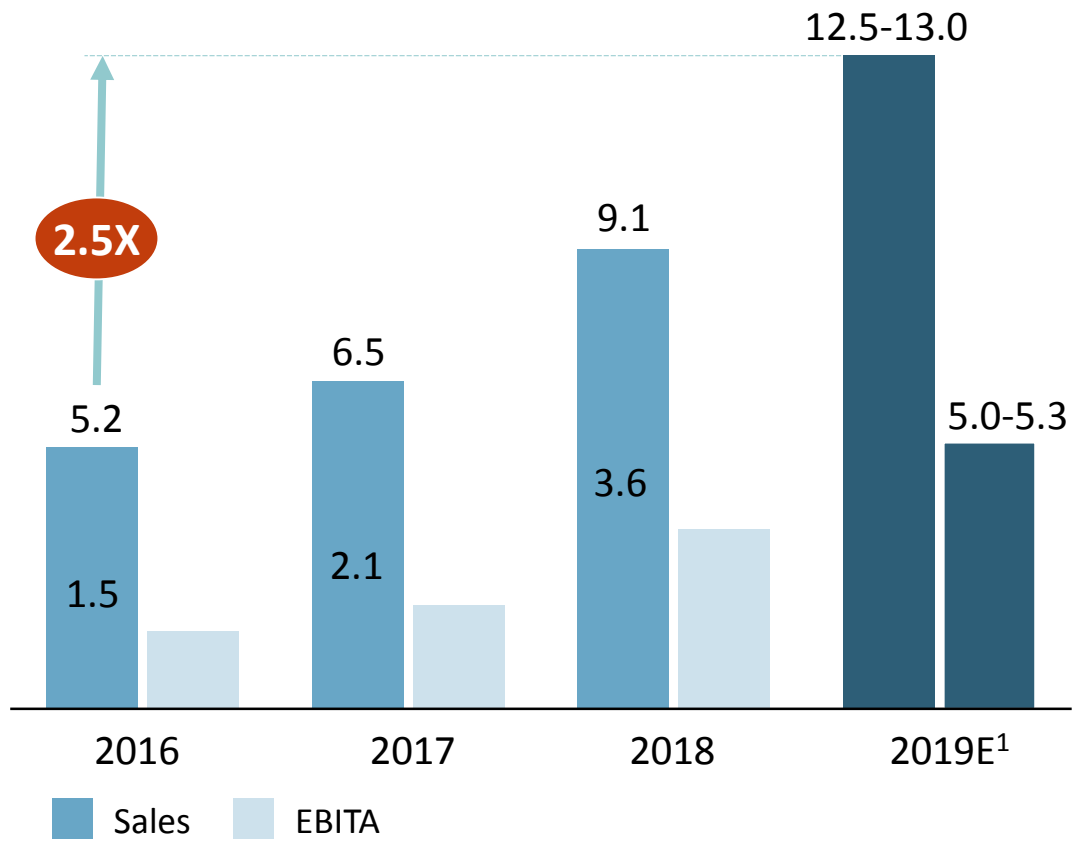
Anne Marie de Jonge Schuermans
Head of Technical Operations

Paula Treutiger
Head of Communication and Investor Relations

Fredrik Wetterlundh
Head of HR

2.5X the size we were in 2016 and on a whole new trajectory

Overall evolution (SEK bn)



Portfolio and sales development

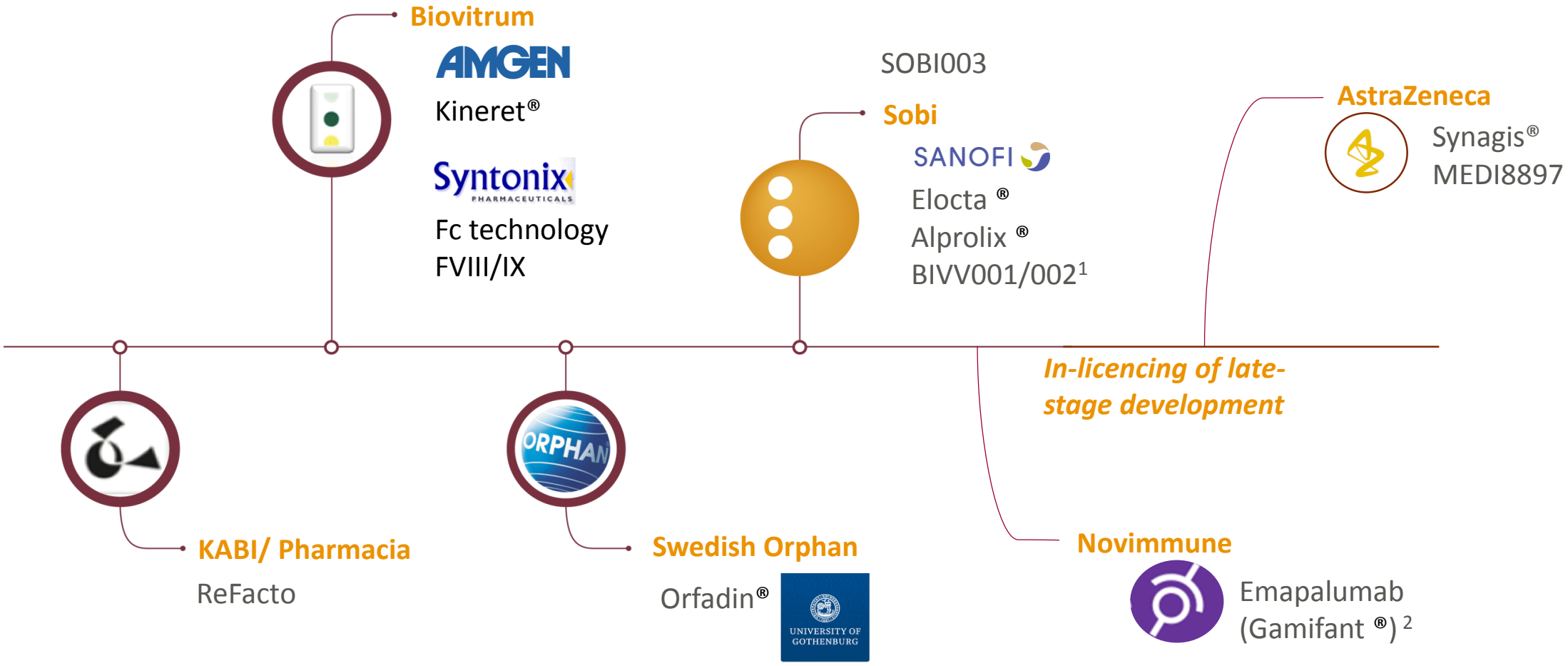
- Haemophilia has been the prevailing growth engine
- M&A (on market and late stage)
- Step-change in geographic footprint towards North America
- Other Specialty Care reduced in importance, secondary focus

Strategy and culture developments

- Increased commercial awareness and savviness
- Clear strategic focus on core opportunities
- Evolution towards high performance culture

1 At current exchange rates as of 20 February 2019; the outlook was first published on 20 February 2019.

Two deals completed – sourcing innovation is central to who we are



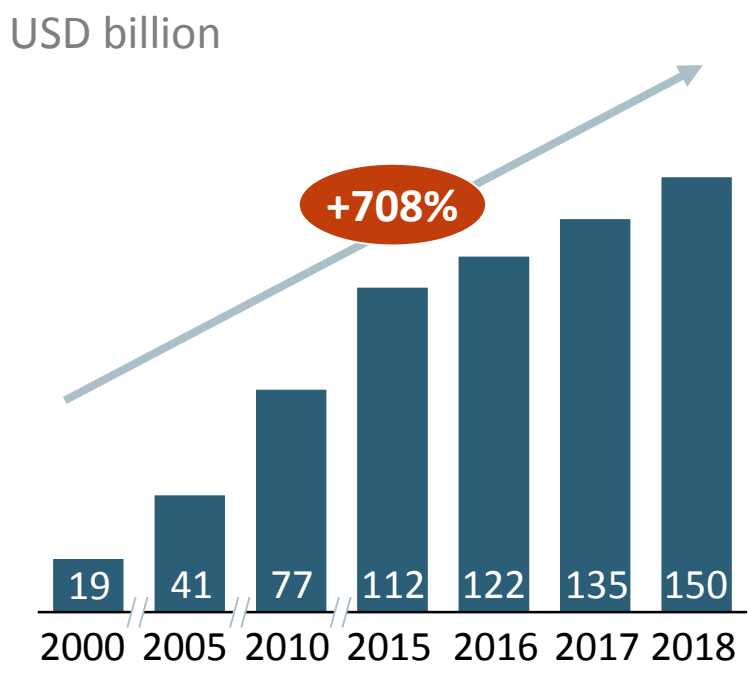
1 BIVV001/002 are Sanofi development programmes, Sobi has elected to add programmess to the collaboration agreement but not yet opted-in
2 Global licensing agreement with Novimmune

I see ample opportunity to take Sobi to the next level

- Fundamentally attractive market
- Our portfolio is strong and well-positioned for growth
- We will continue to pursue M&A

The rare disease space is very attractive in the long-term

Worldwide orphan drug market[1] has grown around 7x since 2000…



… with limited pressure vs. the rest of the pharmaceuticals industry

- **High unmet need:** Approximately 7,000 rare diseases globally – around 95% have no FDA approved treatment
- **Attractive opportunity:** Rare disease therapeutics can generally command a higher price than non-orphan products (e.g., Alexion's Soliris c. $410K per year)
- **Faster time-to-market:** multiple ways to speed up R&D projects (e.g., orphan development designation, priority review by FDA, conditional approvals in case of unmet medical needs)
- **Limited competition:** few companies active in orphan indications – translating to sustainably high share for first entrants
- **Limited generic threat:** orphan drugs less likely to face generic competition, often less attractive targets for biosimilars vs. much larger specialty biologics

1 Evaluate estimates total orphans drugs sales by adding up the orphans drugs sales of individual companies. Thus this chart shows estimated sales in orphan indications only (as opposed to total sales by drugs with certain orphans indications) . 2000-2012 data are estimates. 2017-18 and forecasts

SOURCE: Evaluate, Thomson Reuters

Large unmet need and life-saving Sobi treatments

50%
of primary HLH patients fail to reach HSCT due to inadequate response to conventional therapies

Median survival
<2 months
if HLH untreated after diagnosis

Without treatment, hereditary tyrosinaemia (HT-1), quickly becomes life-threatening owing to liver failure and coagulation deficiencies

~57k RSV
hospitalisations each year in the US with
associated morbidity

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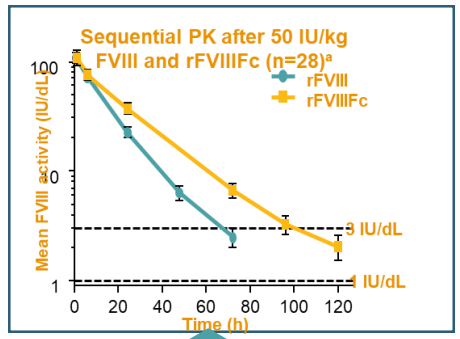
In summary: Sobi's portfolio is well positioned for growth

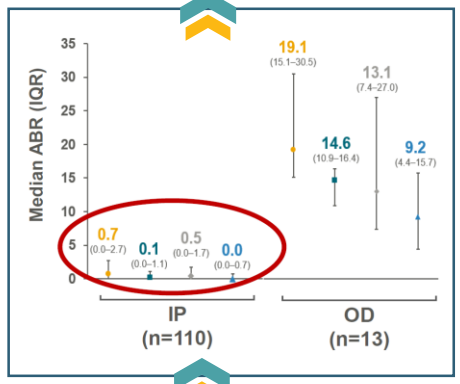
2019 guidance of SEK 12.5-13.0 bn revenues and SEK 5.0-5.3 bn EBITA remains unchanged

Our competitive portfolio positions us well for the new realities

Example: ELOCTA® (efmoroctocog alfa (recombinant human coagulation factor VIII, Fc fusion protein))



Competitive PK profile



Individualising therapy

Liberate life campaign

Five important facts:

1. European markets are more complex than US
2. Our portfolio is differentiated and competitive
3. Sobi is totally focused on continuing our success; current trends are encouraging
4. Opportunities for growth related to penetration and internationalisation
5. BIVV001 is likely to become an important pillar in future treatment

Preparing the future on a solid footing

gamifant® emapalumab

SYNAGIS® PALIVIZUMAB

Kineret® (anakinra)

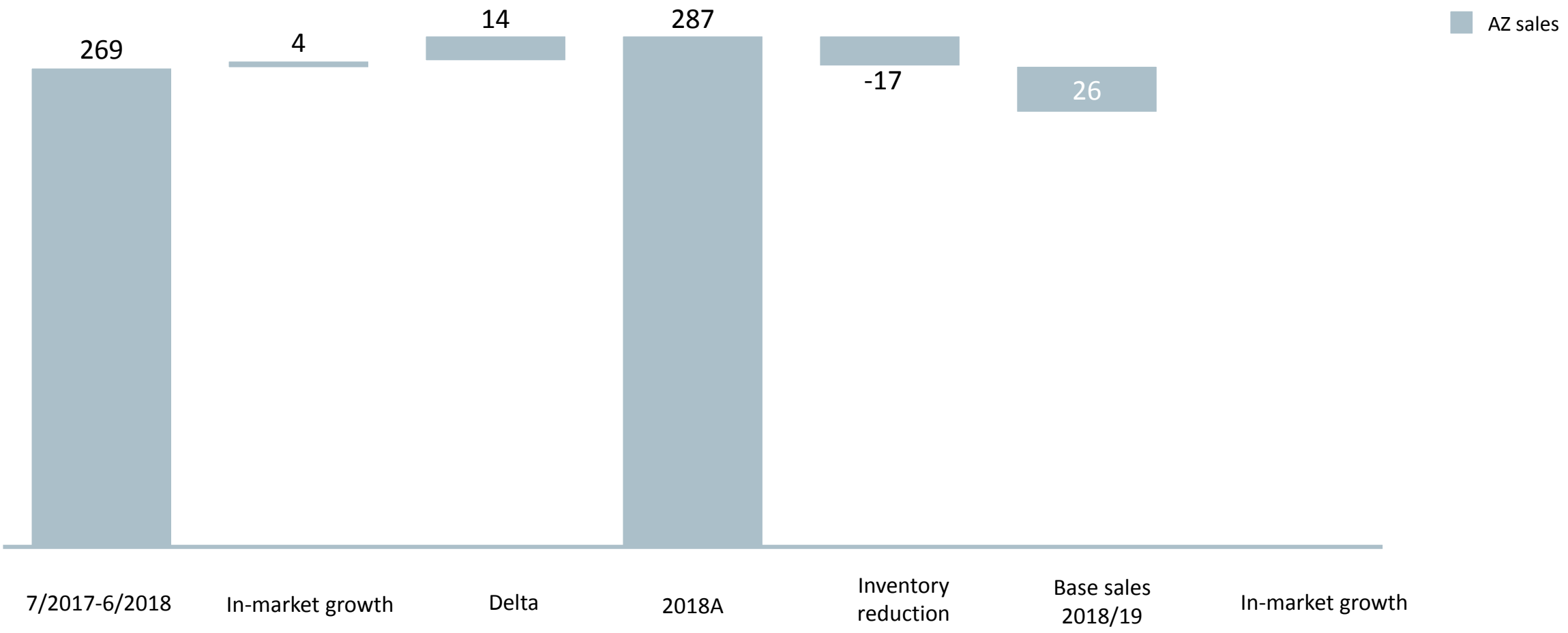
Strategic Imperatives

1. Significant unmet medical need in HLH
2. First approved treatment in primary HLH
3. Good start of launch, but more to gain
4. Material opportunity in indication expansion (secondary HLH, HSCT) and internationalization

1. Product has been growing in- market (2% in Q1)
2. We believe in opportunities for value creation

1. Growing scientific interest in Kineret
2. Strong underlying trend

2019 impacted by one-off adjustments

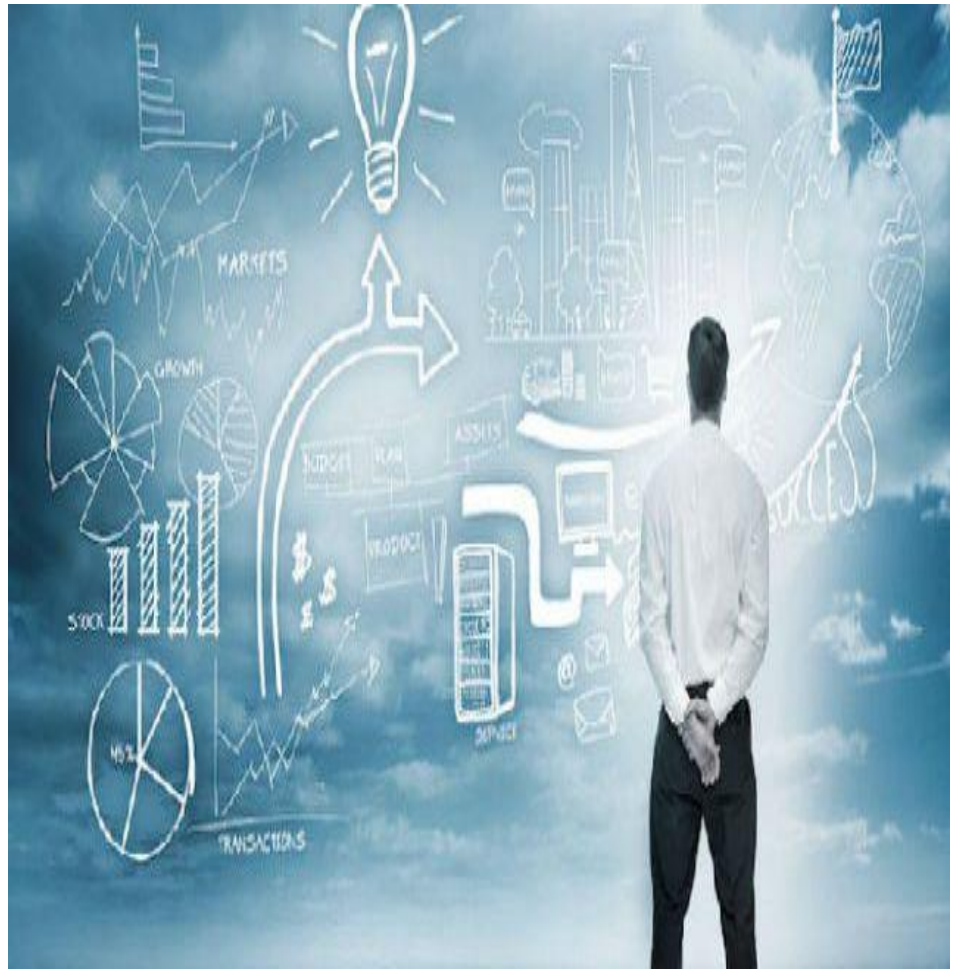


Continued M&A – we are looking into all three types

	Bolt-ons 1	Geography 2	Bold move 3
Objective	• Continue to build and partner adjacencies across franchises	• Build scale geographically	• Build scale across pipeline and commercial capabilities
Focus	• Late stage, on-market	• Commercial infrastructure in countries with no/limited presence	• Transformational M&A – large acquisition/merger

Key messages

- Rare diseases is a highly attractive market segment
- Our haemophilia business continues being competitive and has significant growth potential
- Gamifant has the potential to become a material growth driver for Sobi
- Synagis is a growing asset under our leadership
- Kineret continue to deliver strong double digit growth
- Our main pipeline assets BIVV001 and MEDI8897 are progressing well have the potential to change the scale of Sobi
- SOBI003 is on a good way and is delivering against milestones set out

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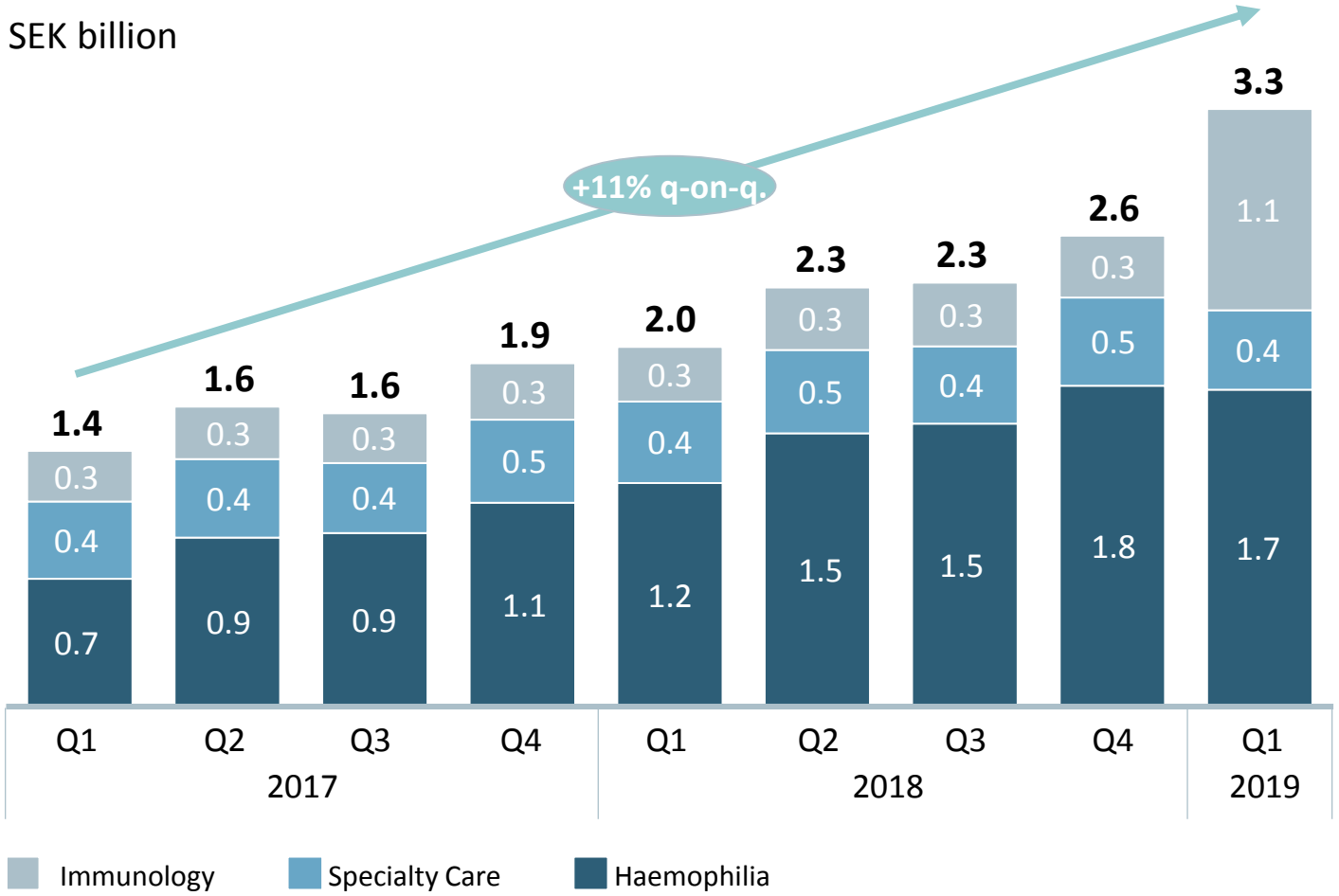
Financial update

Henrik Stenqvist
CFO

Strong revenue growth in focus business areas

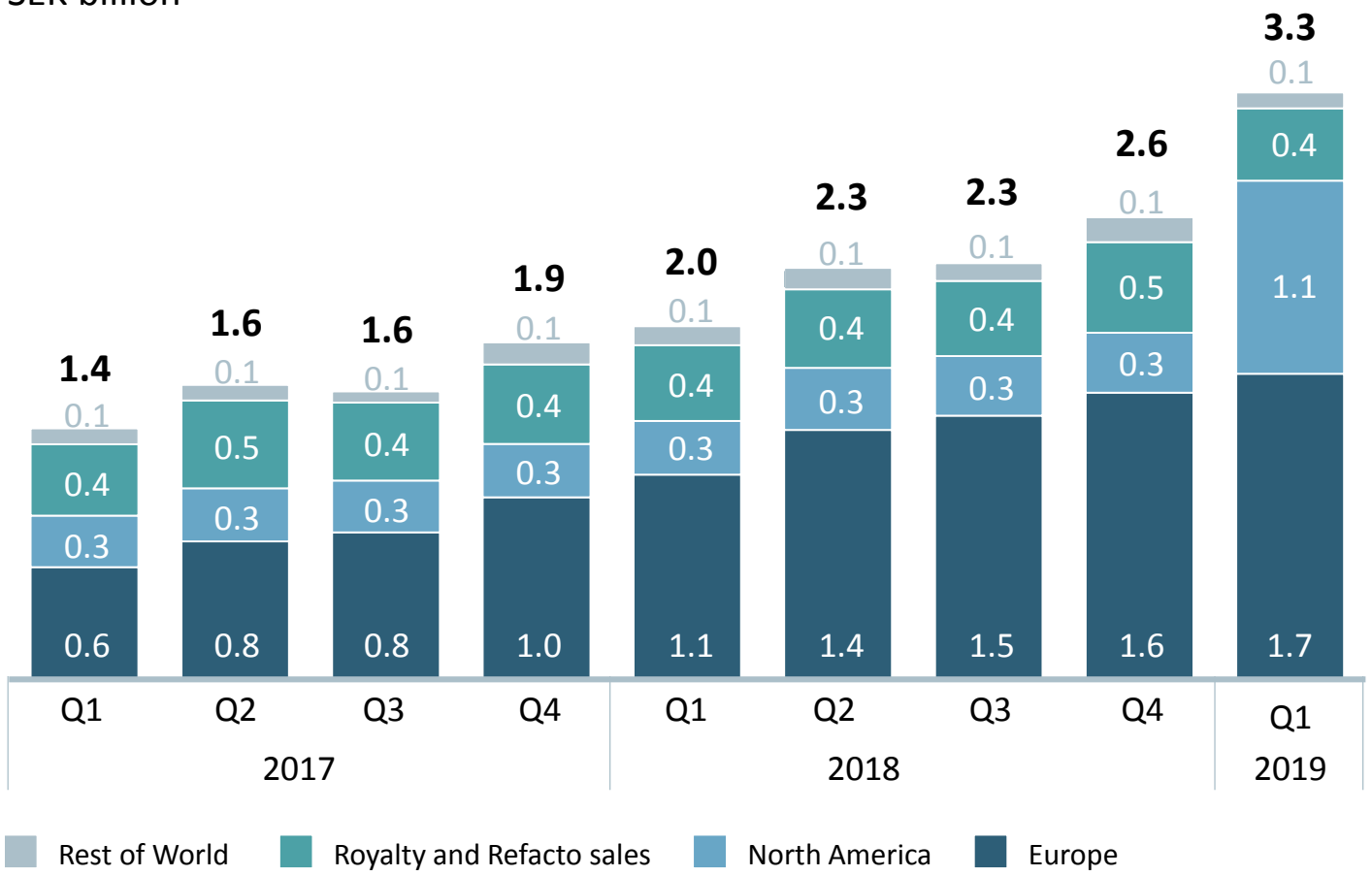


Comments

- Continued strong growth in Haemophilia
- Impact from Immunology acquisitions transforming the company
  - Synagis
  - Gamifant
- Stable performance in Specialty Care
  - Generic impact Orfadin

Regional revenue development

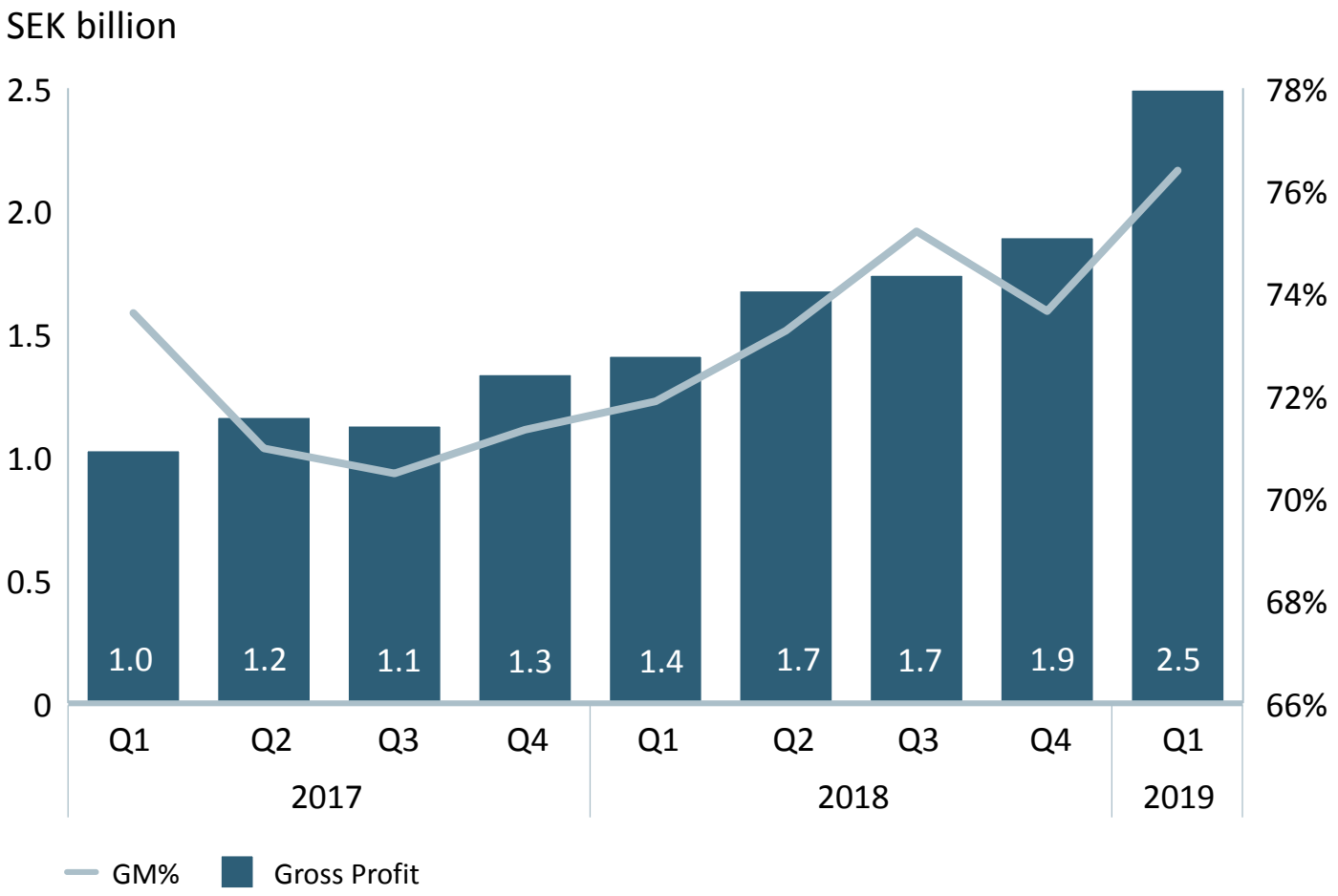
SEK billion



Comments

- Strong growth in Europe from Haemophilia
  - Further fuelled by Gamifant launch
- Larger footprint in the US from Synagis introduction and Gamifant launch
- Balanced geographical presence

Gross profit

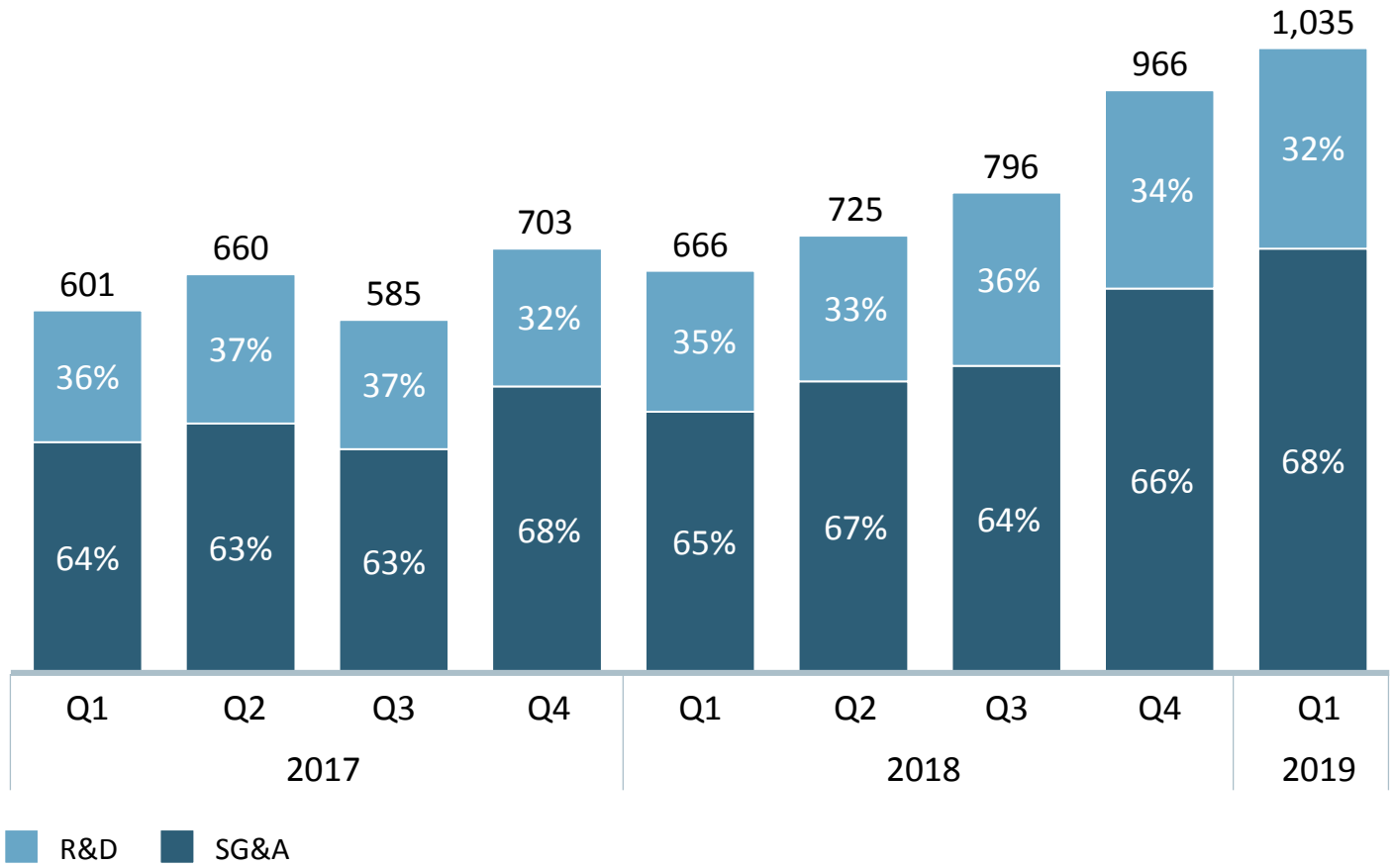


Comments

- Strong margin trend
- Mainly driven by increased sales from products like Haemophilia , Synagis and Gamifant
- Positive impact from improved Cogs

OPEX development

SEK million

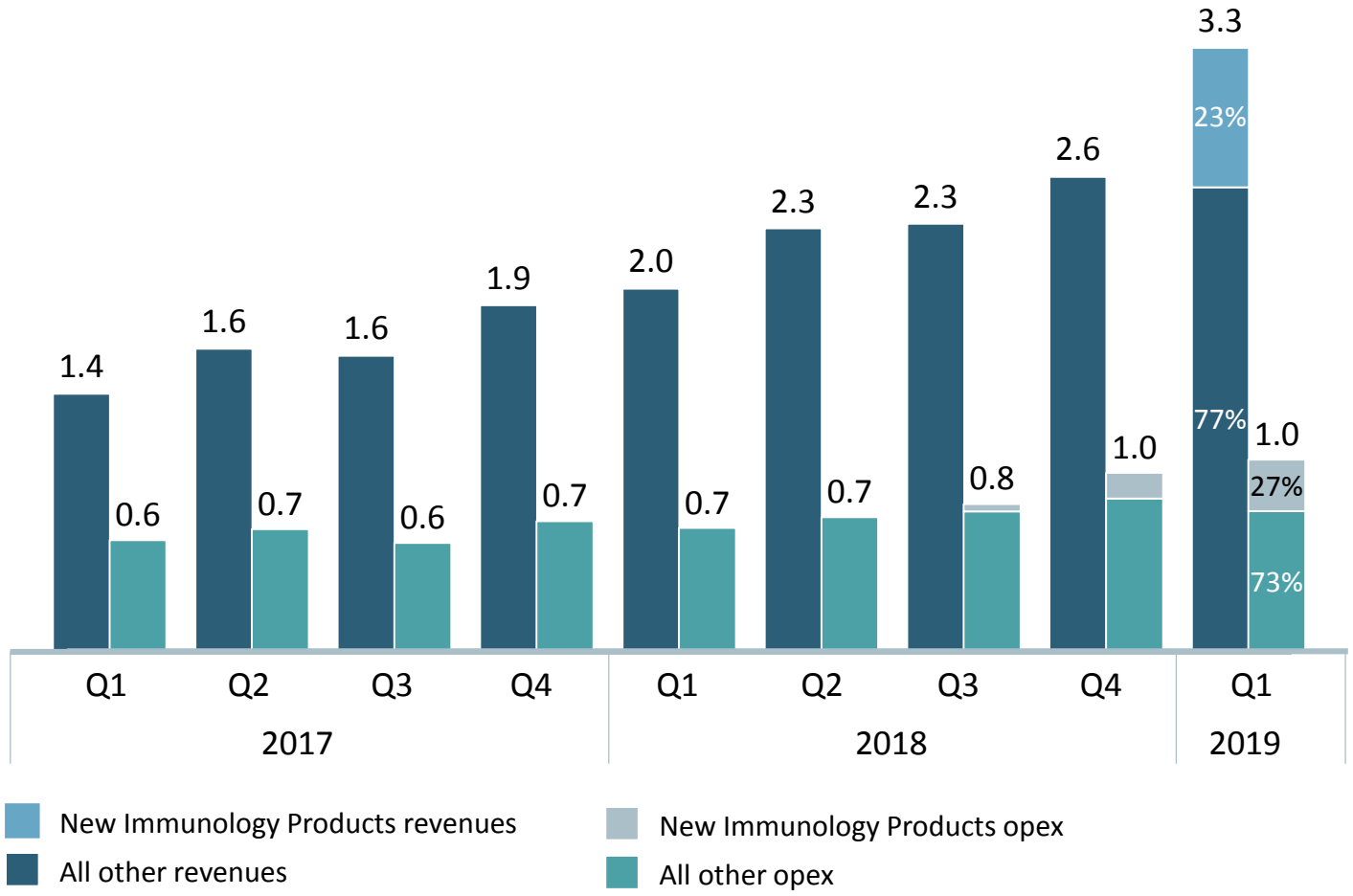


Comments

- Increasing investments to fuel short term and long term growth
  - Immunology franchise; Synagis takeover and Gamifant launch
  - Expanding R&D activities to capture Emapalumab opportunity
  - Haemophilia commercial investments

OPEX development – impact from new immunology products

SEK billion

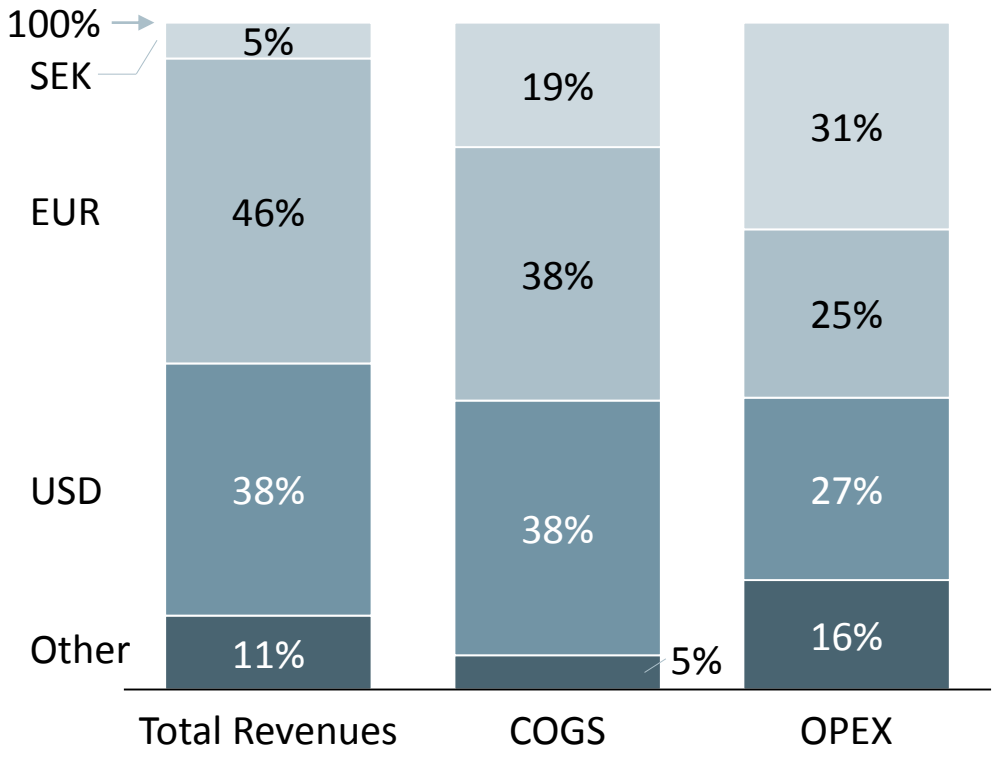


Comments

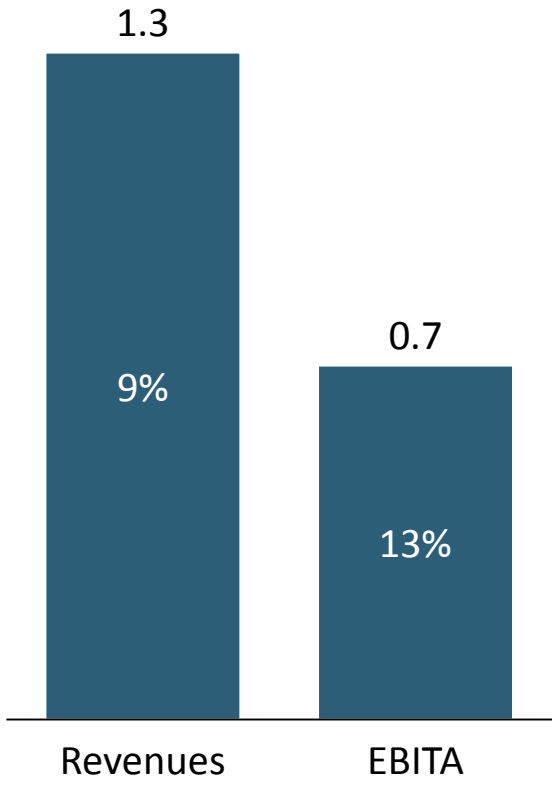
- Opex increase from investments in new assets
  - Synagis
    - US sales force
    - Commercial activities
  - Emapalumab
    - Research project portfolio
    - Gamifant launch in the US
    - Launch preparations in Europe
- Other opex increase from investments in Haemophilia

P&L currency exposure

Currency Mix by P&L Line
(Percent)

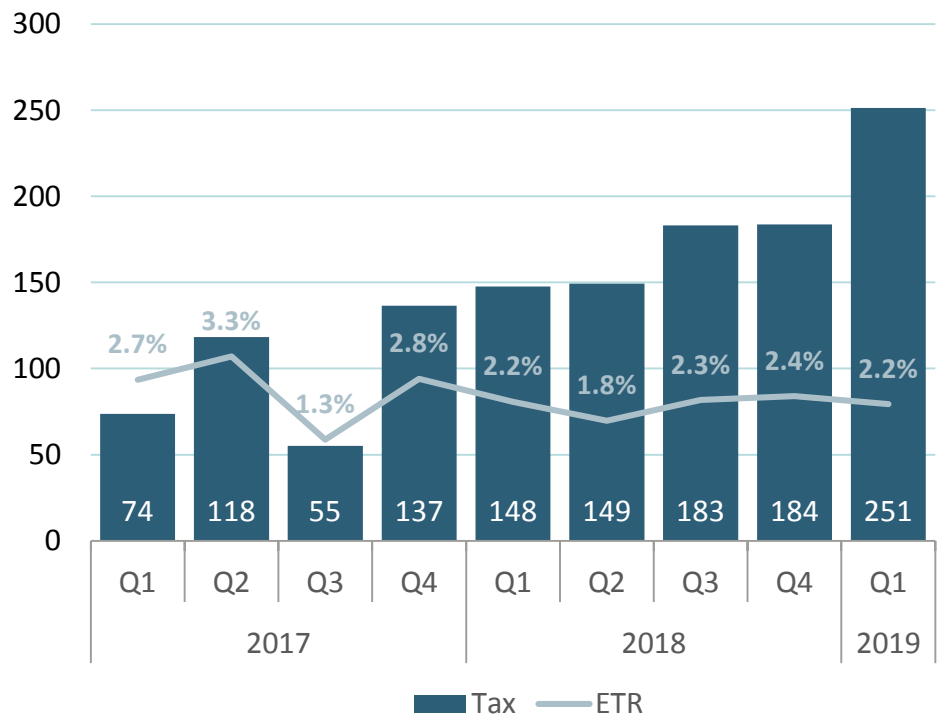


Sensitivity analysis (SEK 10% change vs all other currencies) (SEK billion)



Tax

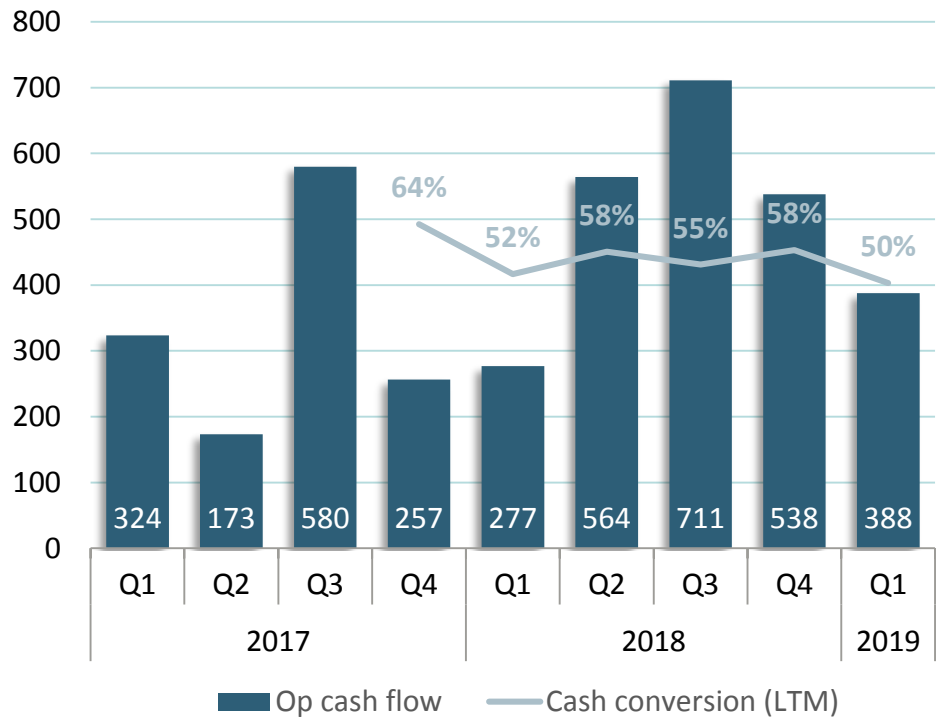
Tax development (SEK million)



- Lower ETR driven by reduced tax rate in Sweden (the dominating country from a tax perspective)
  - Marginal impact from Synagis and US tax
  - Impact from increased costs in Switzerland (emapalumab) has a marginal negative impact on ETR

Cash flow

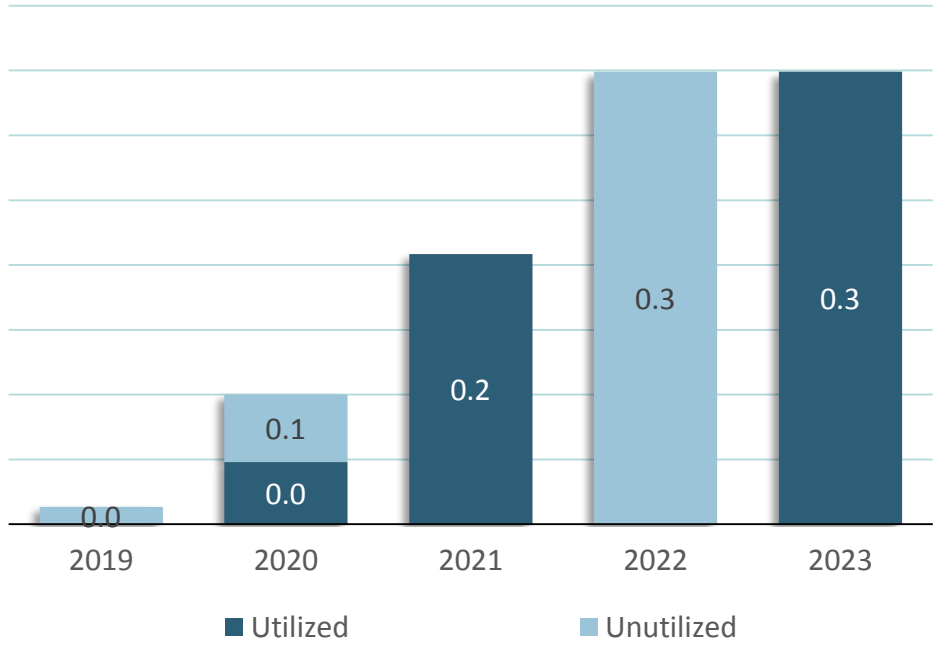
Operating cash flow development (SEK million)



- Continued strong cash conversion
- Cash conversion and operating cash flow will have a seasonal impact due to Synagis

Financing and leverage

Maturity profile of credit facilities (SEK billion)



	Utilized	Unutilized	Total
Average time to maturity, years	3.7	3.3	3.5

- Net Debt SEK 5.6 bn
- Pro forma leverage of 1
- Underlying strong cash flow decreases leverage
- Considerable debt capacity for further M&A
- Funding is M&A driven, leverage of 3-4

Summary

- Building new pillars of growth: Immunology
- Continuous strong and balanced growth
- Strong ongoing trend in gross margin
- Maintained strong profitability – despite focused investments in growth areas
- Low leverage and continued strong cash generation – creating headroom for M&A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Haemophilia

Philip Wood
Head of Haemophilia

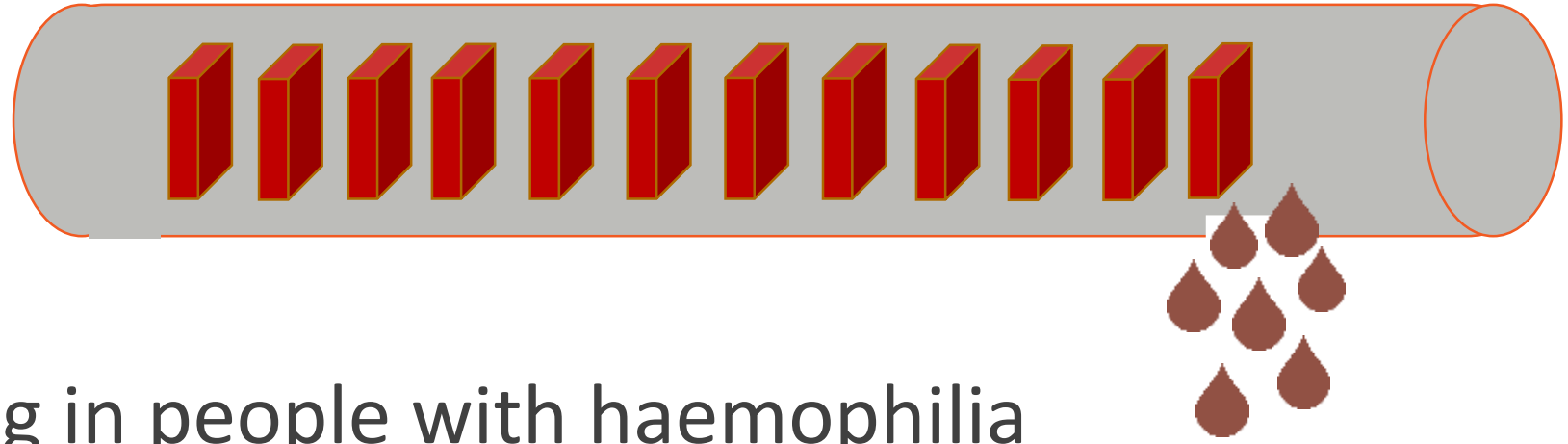
Armin Reininger
Head of Medical and Scientific Affairs

Haemophilia is chronic disease that affects peoples' lives

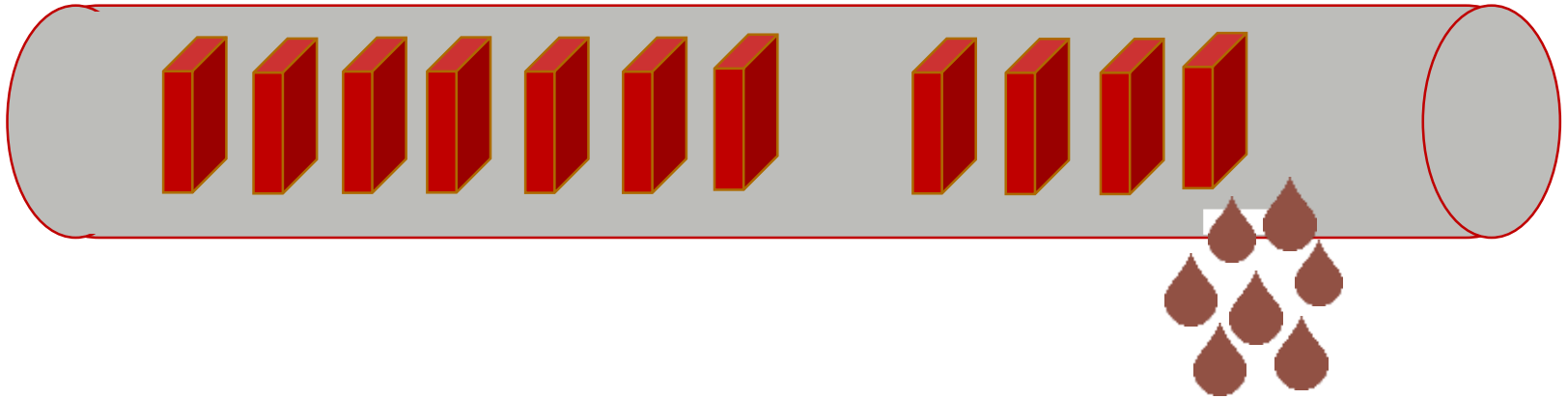
Haemophilia touches all stages of a life-span with clinical, psychological and social implications that require customized care

Infant (Caregiver)	Child (Caregiver)	Adolescent	Adult	Elderly
				
• Diagnosis • Concern about the future	• Early treatment • Burden of disease and treatment	• Independence • Prophylaxis fatigue • Changing lifestyle • Embarrassment	• Thinking about the future • Changing priorities • Prophy access	• Physical and mental comorbidities • Dependency • Complications of haemophilia

Clotting in healthy individuals

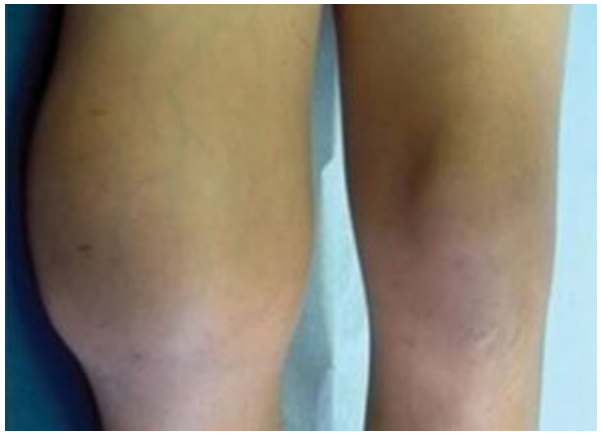


Clotting in people with haemophilia



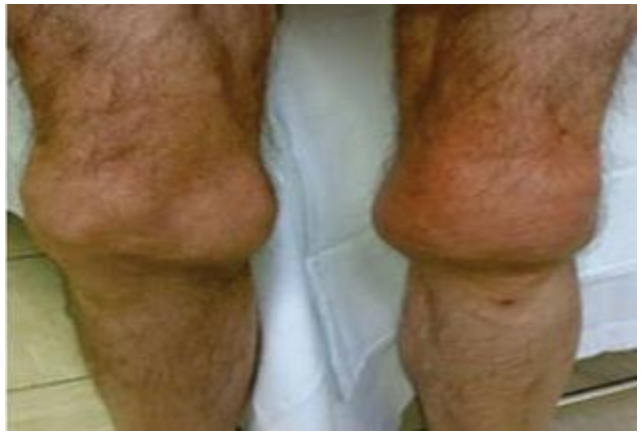
Haemophilia clinical manifestation and consequences

HAEMOPHILIA BLEEDINGS



- Joint bleeding - haemarthrosis
- Muscle hemorrhage
- Soft tissue
- Life threatening-bleeding

HAEMOPHILIA COMPLICATIONS



- Joint arthritis/arthropathy
- Flexion contractures
- Chronic pain
- Muscle atrophy
- Compartment syndrome
- Neurologic impairment

Haemophilia also has significant psycho-social impact

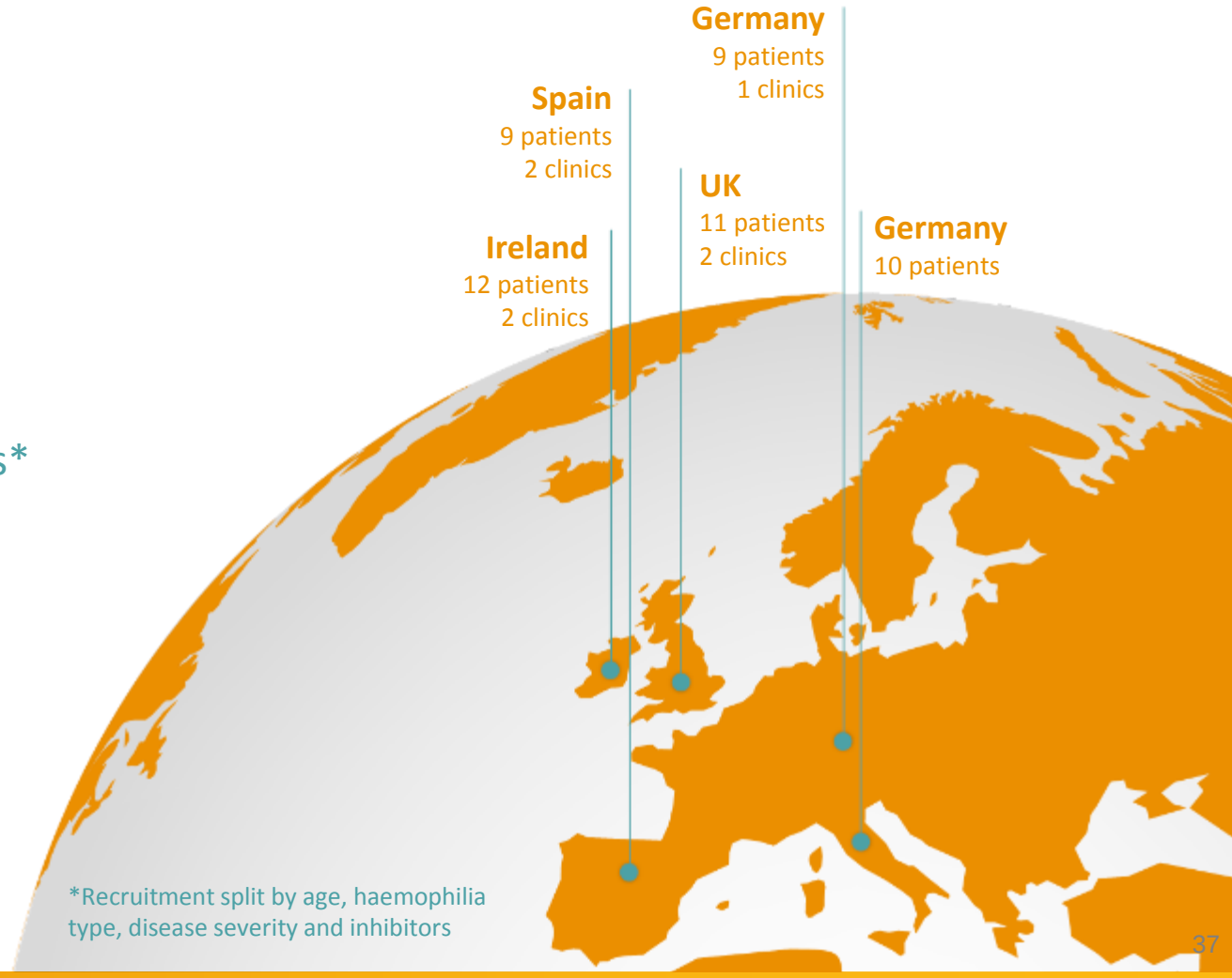
In 2018, Sobi undertook a large-scale, pan-European ethnographic study of the lives of people living with haemophilia

18
HCPs

51
PwH and their families*

5 experts

500+
Hours of ethnographic research

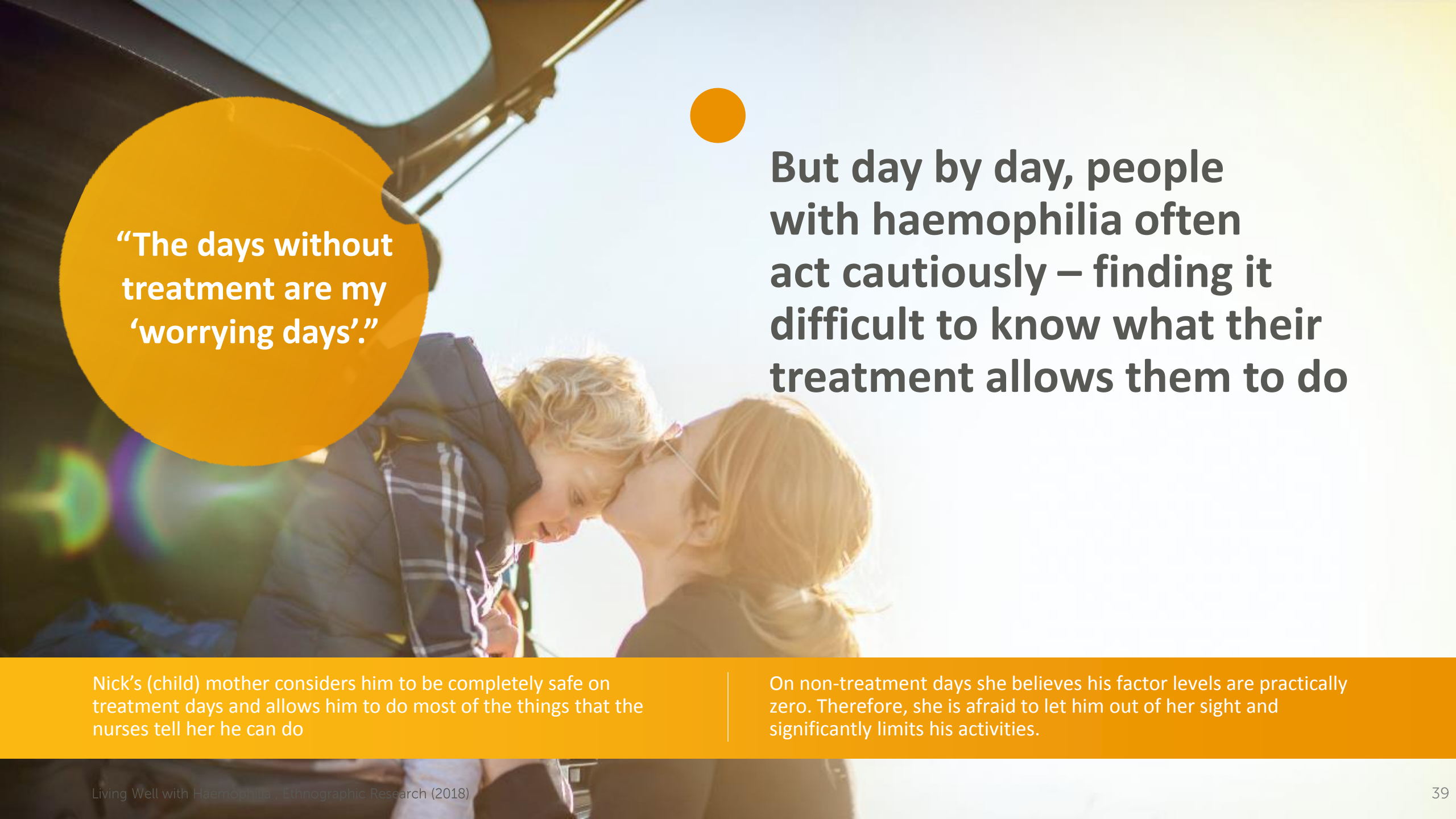


*Recruitment split by age, haemophilia type, disease severity and inhibitors

All names have been changed by the research agency to ensure anonymity. All photos used are stock images

In general, people with haemophilia and their carers perceive their lives as entirely “normal”

Living Well with Haemophilia, Ethnographic Research (2018)



“The days without treatment are my ‘worrying days’.”

But day by day, people with haemophilia often act cautiously – finding it difficult to know what their treatment allows them to do

Nick’s (child) mother considers him to be completely safe on treatment days and allows him to do most of the things that the nurses tell her he can do

On non-treatment days she believes his factor levels are practically zero. Therefore, she is afraid to let him out of her sight and significantly limits his activities.

Living Well with Haemophilia , Ethnographic Research (2018)

“Will I be in a wheelchair when I grow older? Will I be able to be there for my grandchildren? These things I fear.”

Living Well with Haemophilia, Ethnographic Research (2018)

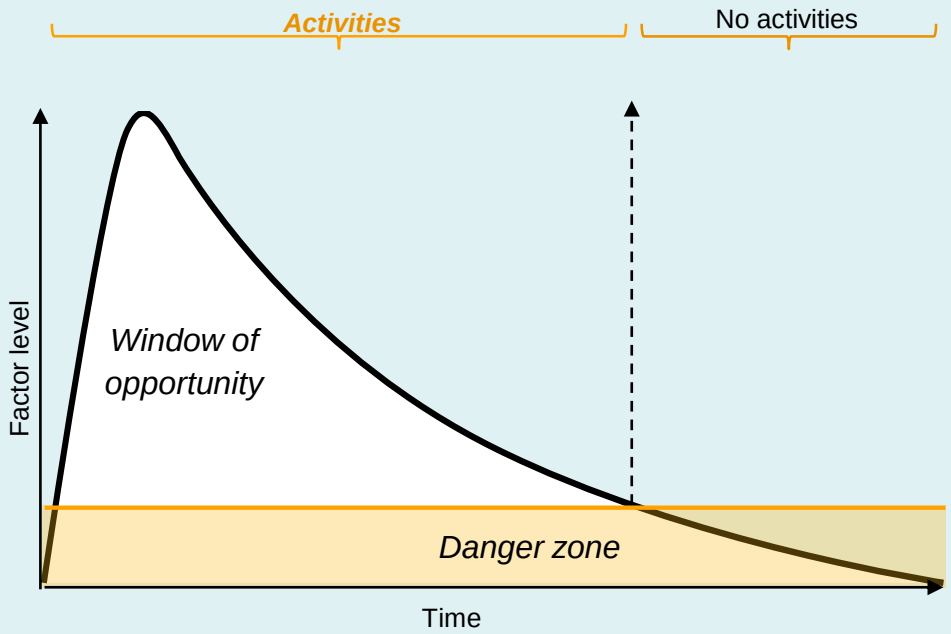
and many feel they have to make trade-offs on activity levels

based on assumptions about future quality of life

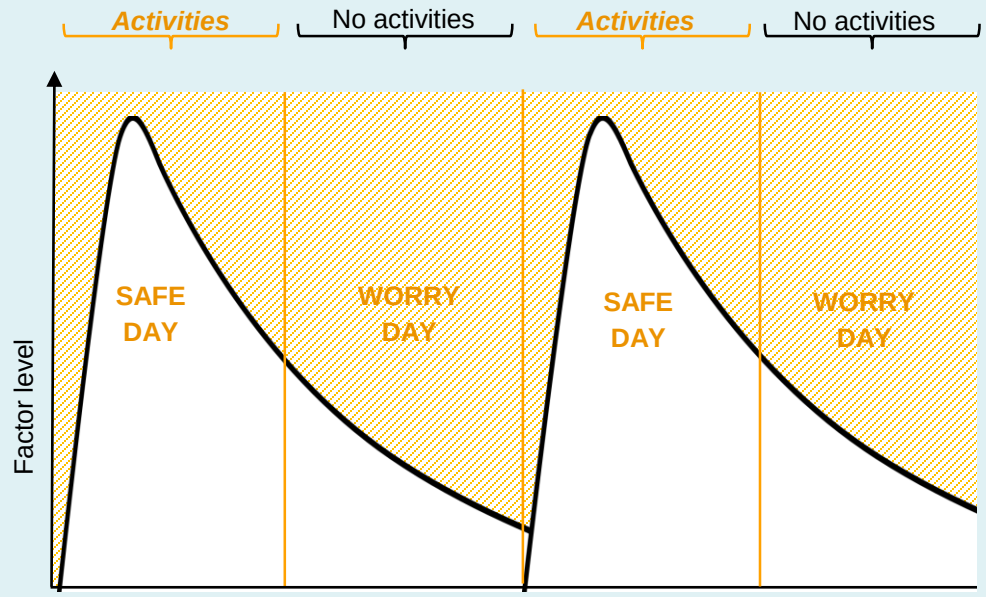
Mia (20s) is aware that the bleeds she has now will affect her mobility in the future. Therefore she tries to arrange her life so that she will have to walk the 500 meters into town only once a day

The patient's understanding and perception of factor levels seldom match the medical community's view

While HCPs have a clear, clinical understanding of protection and activities based on factor levels…



…people living with haemophilia develop mental models of their own to make sense of protection



*Graphs are illustrative

SOURCE: Living Well with Haemophilia , ReD Associates (2018)

Higher expectations for protection beyond bleeds

No safety compromises
across age groups

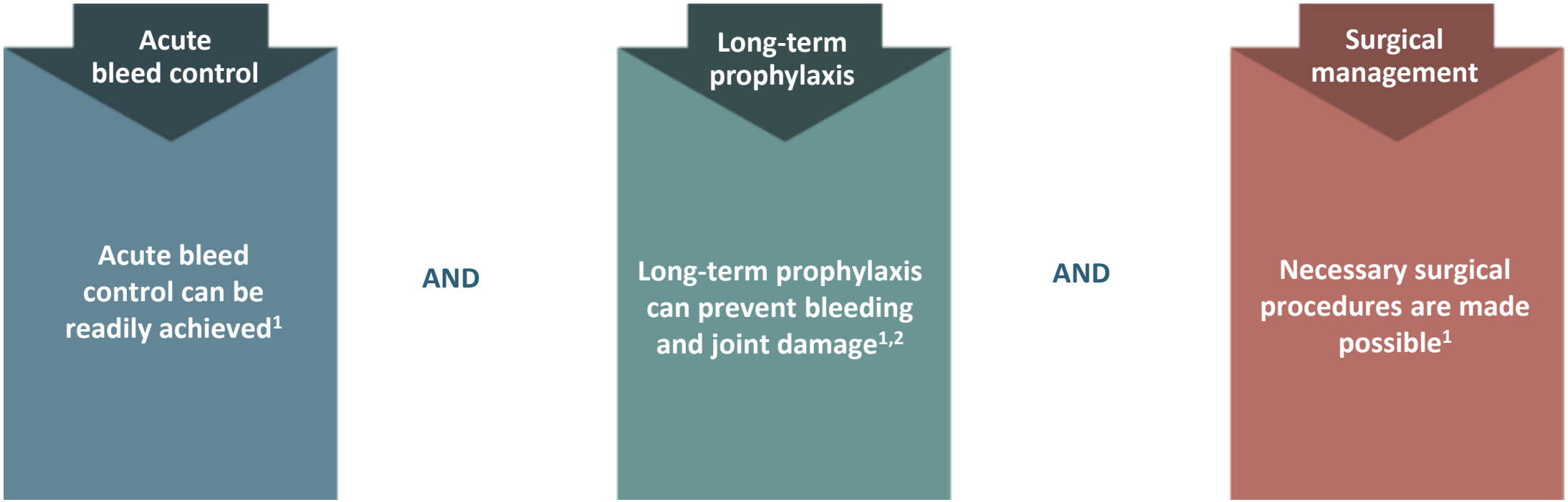
Long-term
protection from
bleeds

Long-term protection
of joint health

Removal of burdens of haemophilia

Clotting factor replacement can manage all clinical situations a patient can experience throughout the entire life[1,2]

Clotting factor replacement therapy provides:



1 Srivastava A, Brewer AK, Mauser-Bunschoten EP, Key NS, Kitchen S, Llinas A, et al. Guidelines for the management of haemophilia. Haemophilia. 2013;19(1):e1-e47.
2 Rocino A, Frachini M, Coppola A. Treatment and prevention of bleeds in haemophilia patients with inhibitors to factor VIII/IX. J Clin Med. 2017;6(4):46.

Benefits of extended half-life technologies in haemophilia treatment

Standard Half Life factors[1-5]

- frequent injections
- delayed start of prophylaxis
- suboptimal adherence to therapy
- breakthrough and subclinical bleeds
- joint disease

Extended Half Life factors[6-15]

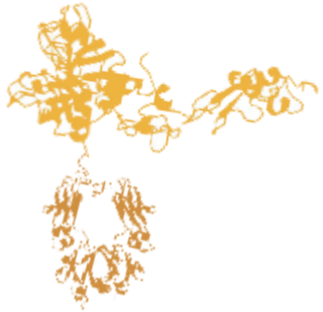
- higher protection for longer
- improve bleed prevention
- optimize number of weekly injections
- optimize weekly consumption

- supports health-related quality of life through increased protection against bleeds, reduced treatment burden and improved adherence

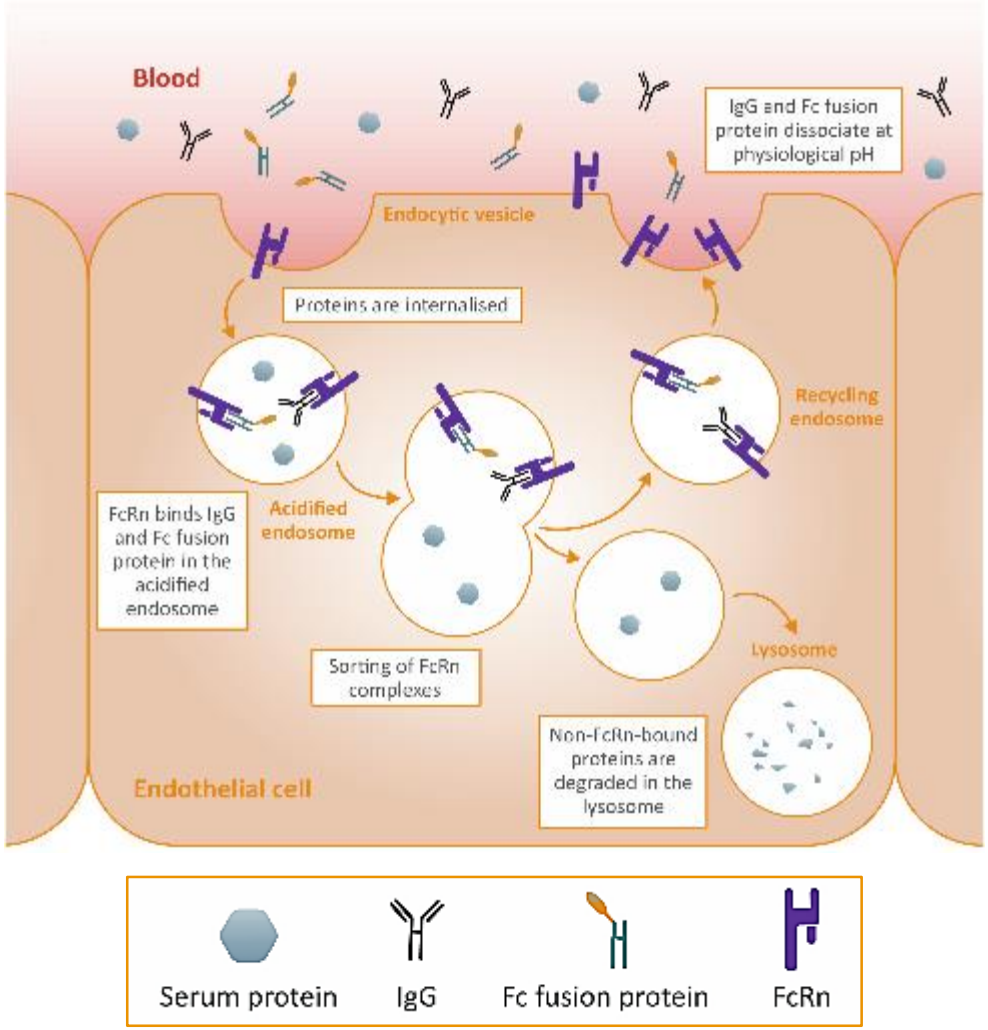
1 Carcao. Haemophilia 2014; 2 Ahnström et al. Haemophilia 2004; 3 Berntorp et al. Haemophilia 2017; 4 Oldenburg et al. Blood 2015; 5 Gringeri et al. Haemophilia 2014
6 Pipe. Thromb Res 2009; 7 Dumont et al. Blood 2012; 8 Shapiro et al. Blood 2012; 9 Berntorp et al. Haemophilia 2017; 10 Berntorp et al. Haemophilia 2016; 11 Shapiro et al. J Thromb Haemost 2014; 12 Powell et al. NEJM 2013; 13 Powell et al. Br J Haematol 2015; 14 Dunn et al. Haemophilia 2018; 15 Wang&Young Haemophilia 2018
NOTE: Approximate values taken from Summaries of Product Characteristics for Refacto AF, Kogenare/Helixate FS, Advate, NovoEight, Nuwiq, Kovaltry and Afstyla; BeneFIX and Rixubis

Fc technology used in Elocta® and Alprolix®

Elocta (rFVIIIFc) and **Alprolix (rFIXFc)** utilise:



- Natural components and a natural metabolic pathway[1–5]
- A human cell line[6]
- Well-established Fc technology to extend half-life[2,3,7]



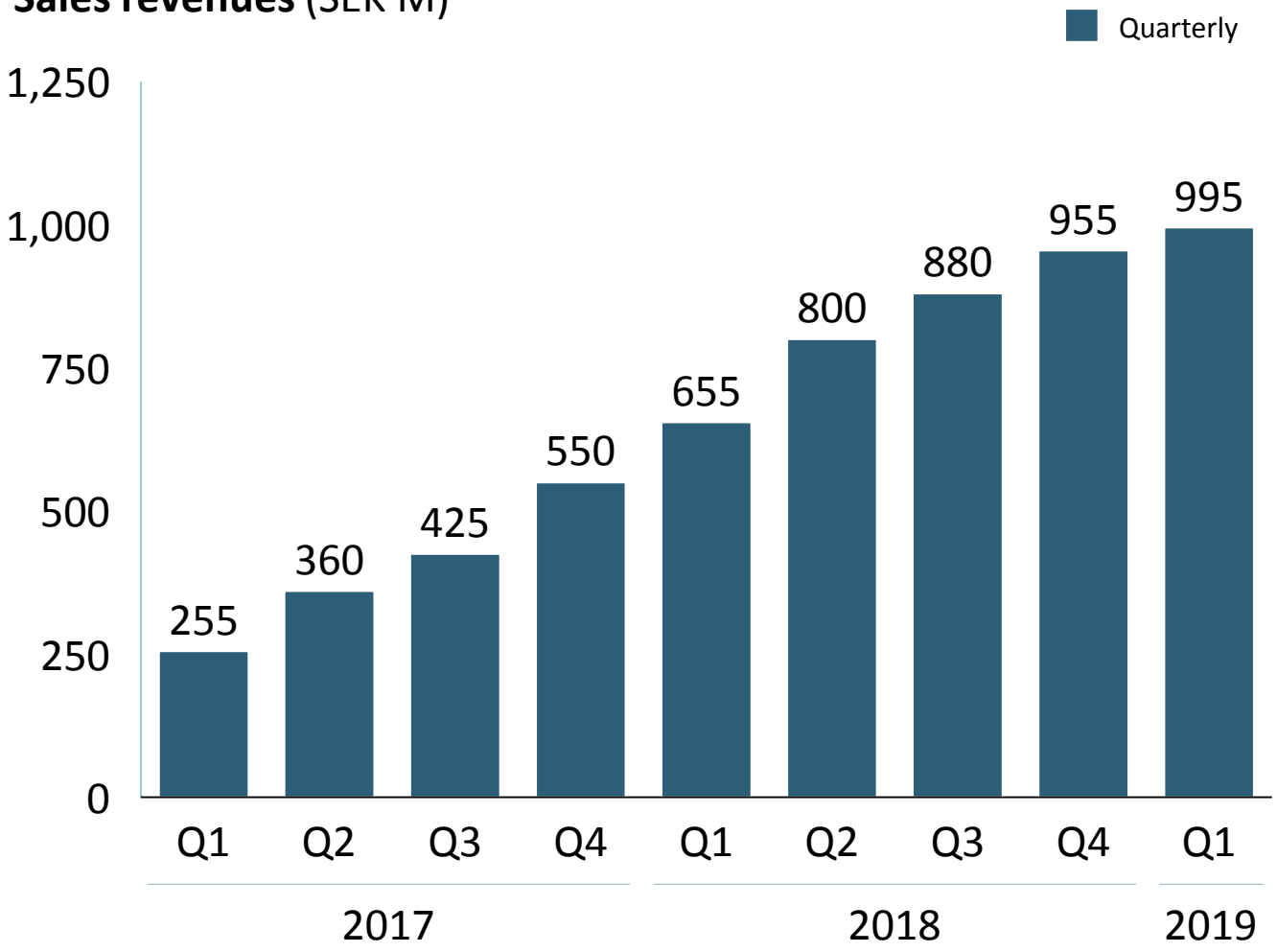
1 Peters et al. J Thromb Haemost 2013; 2 Dumont et al. Blood 2012; 3 Powell et al. Blood 2012; 4 Roopenian & Akilesh. Nat Rev Immunol 2007; 5 Shapiro. Expert Opin Biol Ther 2013; 6 McCue et al. Biologicals 2015; 7 Rath et al. Crit Rev Biotechnol 2015

Elocta and Alprolix best-in-class EHL products

- Well-established safety and efficacy profiles – real-world experience from thousands of patients
- Replacing the missing factor – fundamental in haemophilia treatment
- Standard of care in many countries
- Suitable for people with haemophilia across all age groups and clinical settings, including surgery, with strong potential for individualised treatment
- Creates possibilities to live an active life with less worry about the suboptimal protection and effectiveness of their therapy

Elocta – individualising therapy is gaining further momentum

Sales revenues (SEK M)



FY 2018 product revenues of SEK 3,261 M (1,557)

- 109 per cent revenue growth (98 per cent at CER)

Q1 product revenues of SEK 991 M (649)

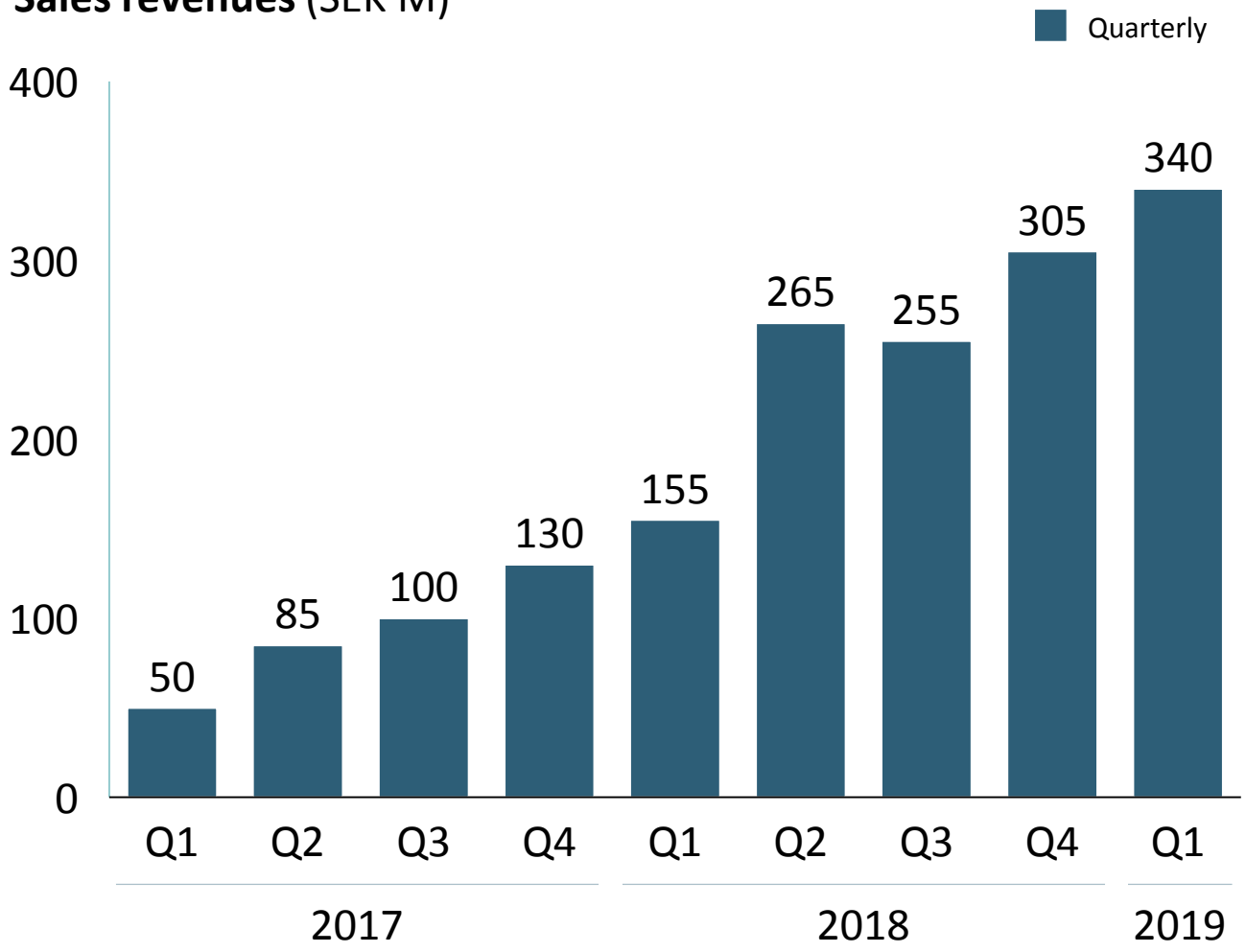
- 53 per cent revenue growth (46 per cent at CER)

Reimbursed in 26 countries

Focus on further penetration in current markets

Alprolix – continued impressive performance

Sales revenues (SEK M)



FY 2018 product revenues of SEK 974 M (363)

- 168 per cent revenue growth (153 per cent at CER)

Q1 2019 product revenues of SEK 337 M (153)

- 120 per cent revenue growth (110 per cent at CER)

Reimbursed in 22 countries

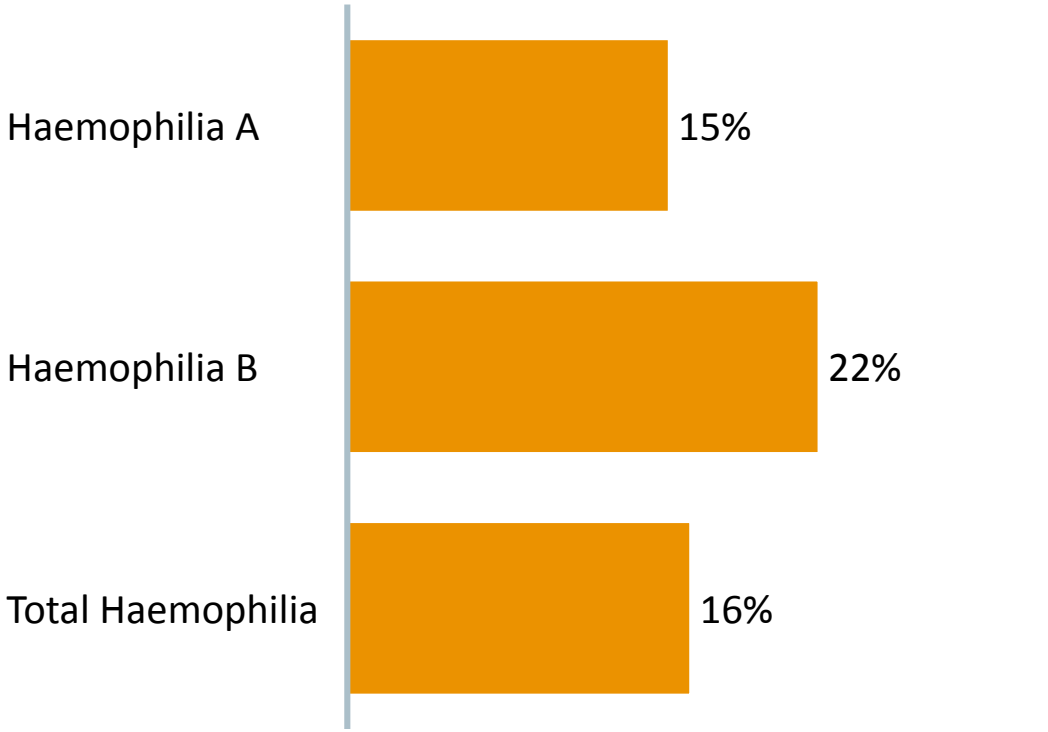
A few more markets to enter

Focus on further penetration in existing markets

Our market shares will approach our patient share over time

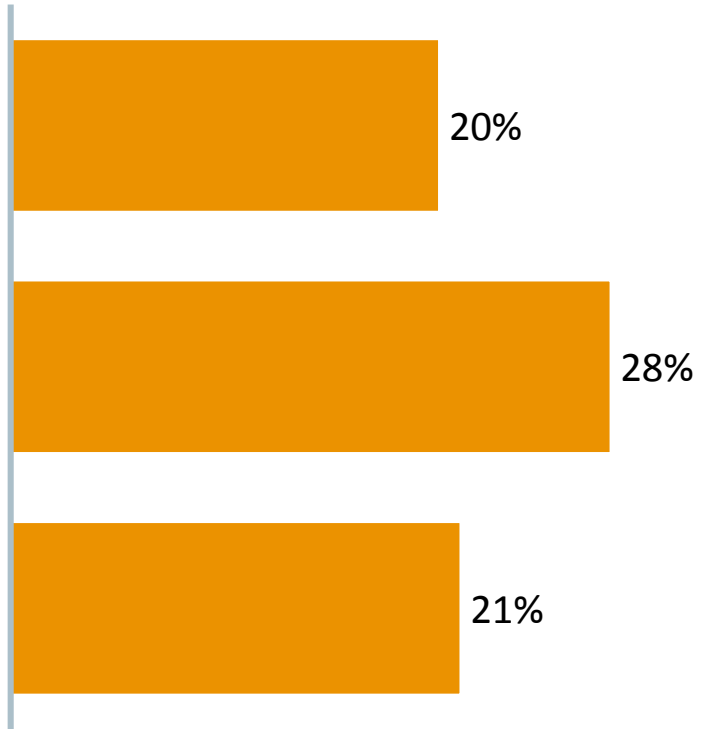
Sobi value market share

Per cent, end-of-2018



Sobi prophylaxis patient share

Per cent, end-of-2018

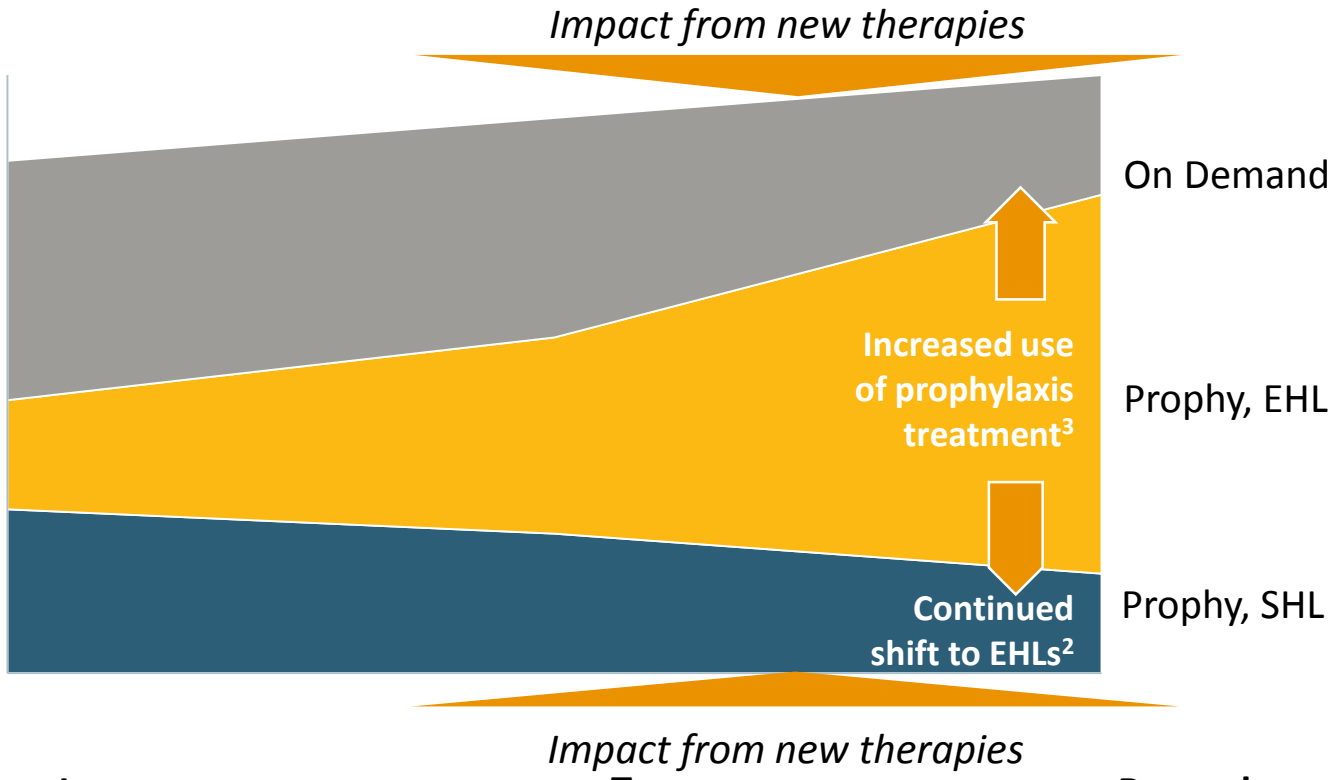


Based on company estimates in the Sobi territory

Growth further fuelled by SHL-to-EHL conversion and on demand-to-prophylaxis conversion

Good opportunity for Elocta to expand its position in the FVIII market

Patients, treated for haemophilia A, in Sobi territories[1]



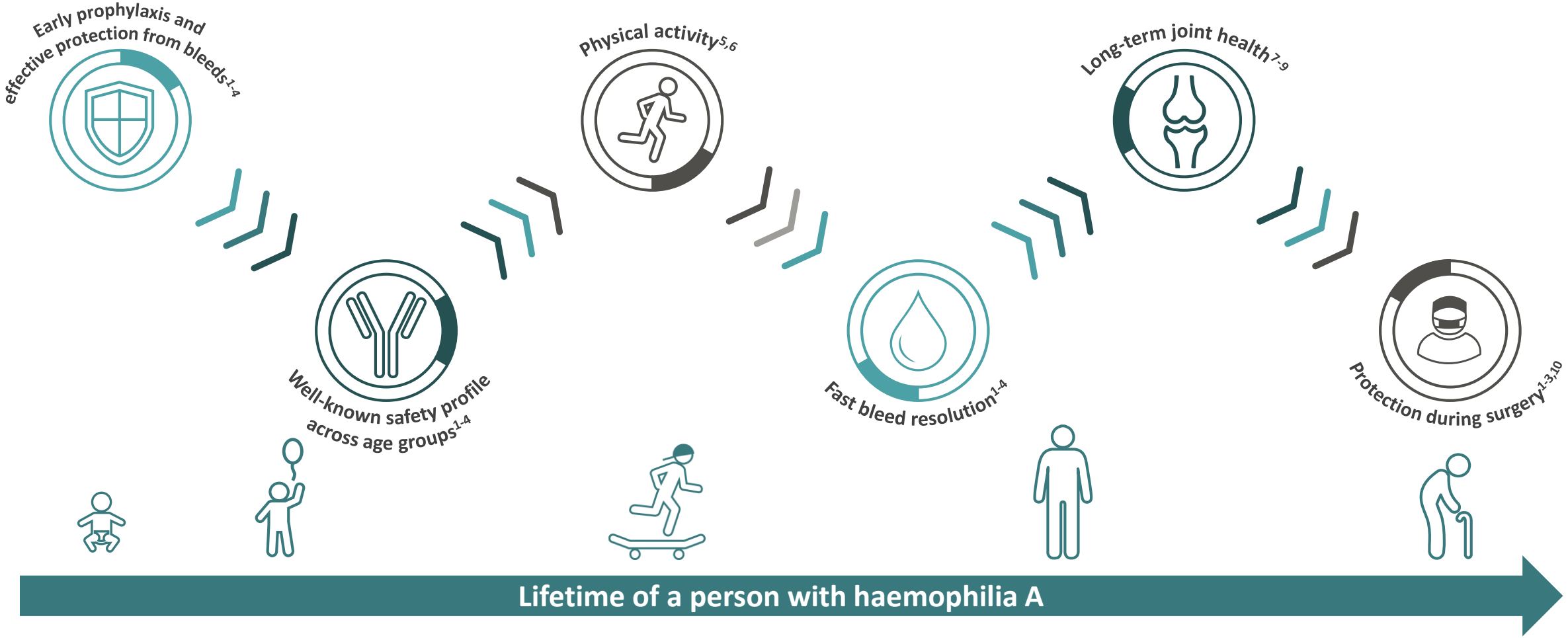
1 Represents treated moderate and severe haemophilia A
2 EHL category includes Elocta, Adynovi, Jivi, and Esperoct
3 Expect prophylaxis usage to grow to 80 per cent of moderate and severe patients over long term

SOURCE: WFH Annual Global Survey, country-specific market data sources, internal Sobi data

Our thoughts:

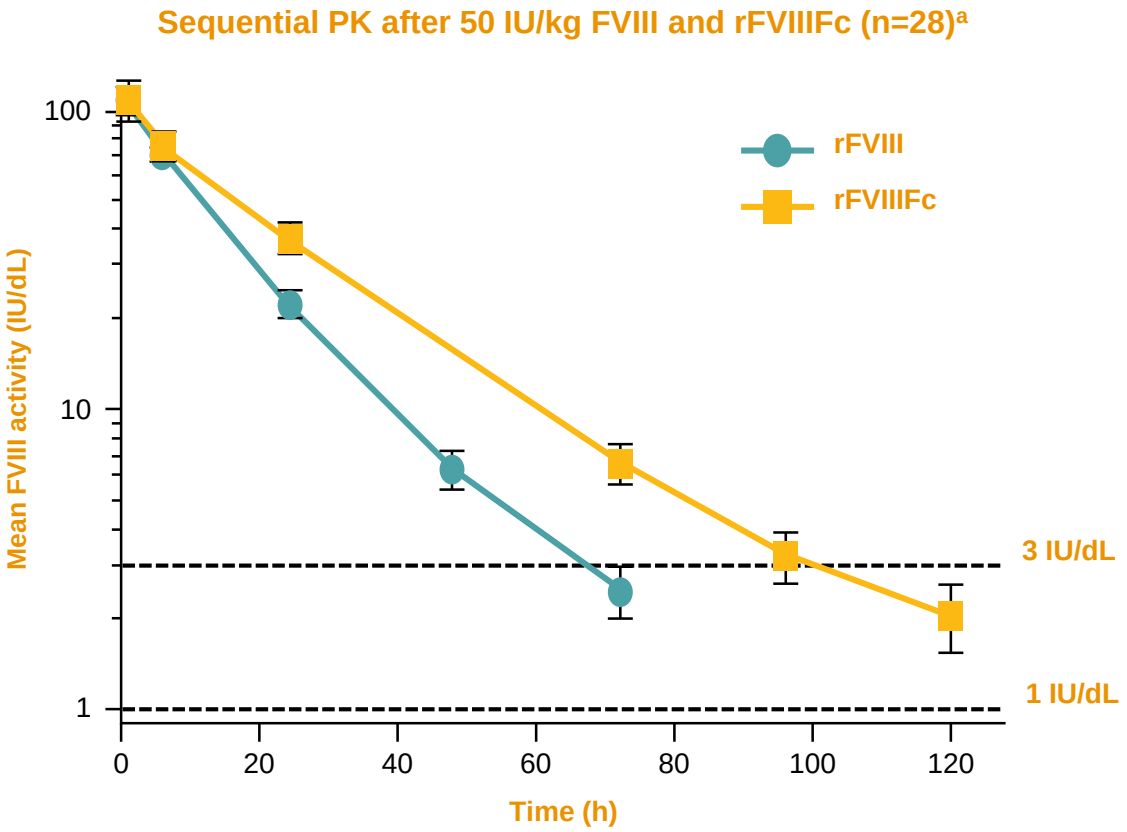
- Switches will accelerate with increased competition
- Safety appears to rank higher in Europe than US
- Europe is a more complex landscape
- Sobi is well prepared for a change in landscape

Elocta experience across age groups and clinical situations



1. Mahlangu et al. *Blood* 2014 **2.** Young et al. *J Thromb Haemost* 2015 **3.** Nolan et al. *Haemophilia* 2016 **4.** Konkle et al. EAHAD 2019 Poster P039 **5.** Su et al. ISTH 2017 Poster PB-1783 **6.** Quon et al. *Haemophilia* 2017 **7.** Oldenburg et al. EAHAD 2019 Poster P158 **8.** Oldenburg et al. *Haemophilia* 2018 **9.** Oldenburg et al. ISTH 2017 Poster PB946 **10.** Mahlangu et al. *Thromb Haemost* 2016

A-LONG: rFVIIIFc and its prolonged haemostatic protection

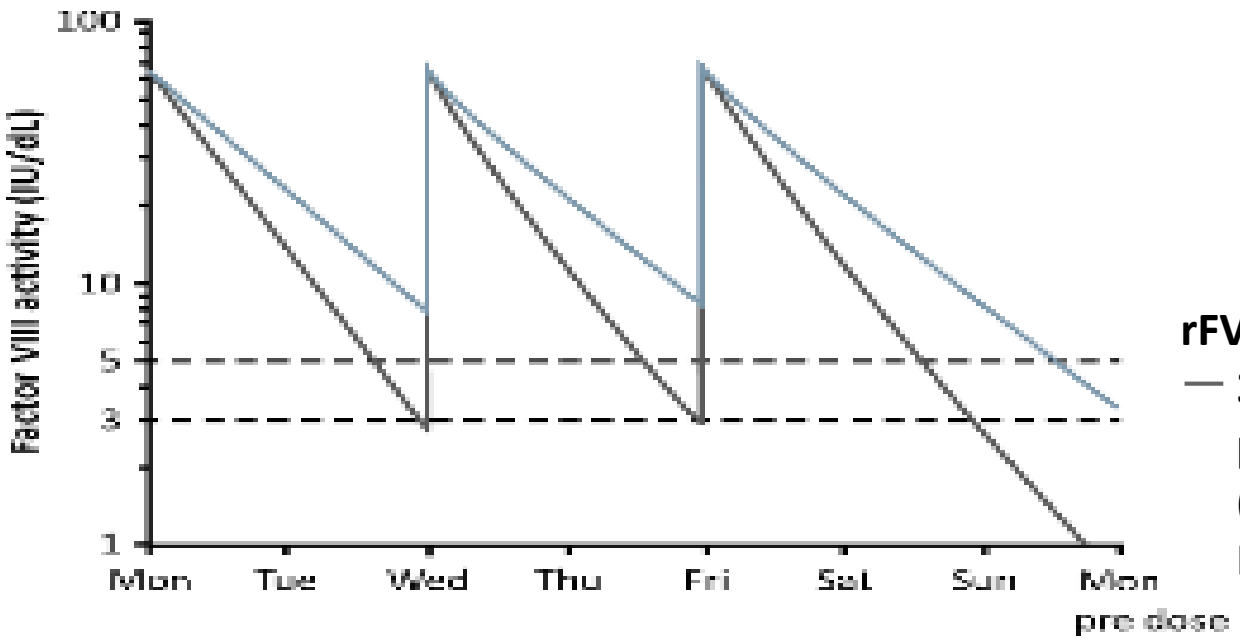


Compared with FVIII, rFVIIIFc showed on average:

- **33% lower clearance[b]**
  (2.0 versus 3.0 mL/h/kg[c])
- **56% higher AUC[b]**
  (51.2 versus 32.9 IU x h/dL per IU/kg[c])
- **1.5-fold longer half-life**
  (19.0 versus 12.4 hrs[c])
- **1.5-fold longer time to 1 and 3 IU/dL (%)**

A Sampling up to 72 hours for rFVIII and up to 120 hours for rFVIIIFc
B Calculated from Mahlangu et al. Blood 2014
C $p<0.001$
SOURCE: Mahlangu et al. Blood 2014

Improved patient protection with individual dosing



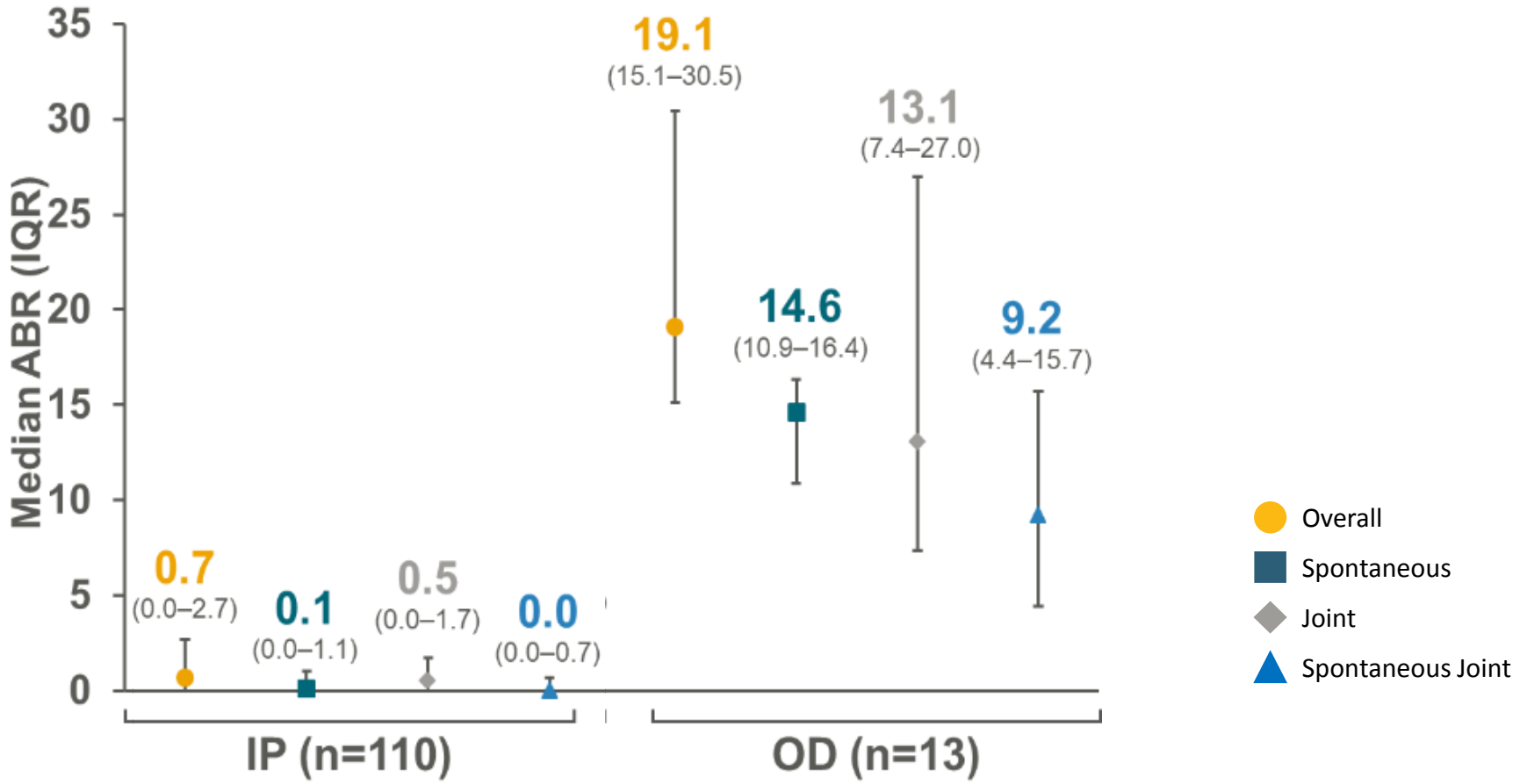
rFVIII
— **3 x 30 IU/kg per week (Mon, Wed, Fri)**

rFVIIIFc
3 x 30 IU/kg per week (Mon, Wed, Fri)

Injections/week	=
Weekly factor consumption	=
Factor VIII level	↑↑↑

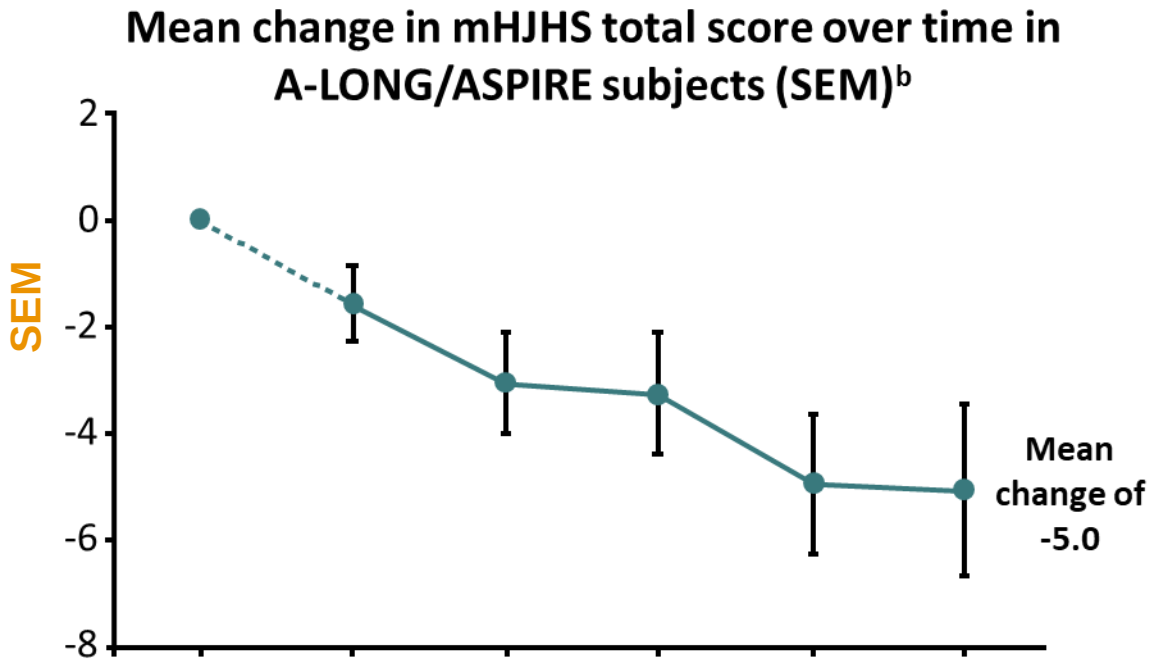
1 Simulations shown are an example for rFVIIIFc only, and are based on a hypothetical 73 kg adult patient with typical PK parameters
SOURCE: Adapted from Berntorp et al. Haemophilia 2016

Elocta: Individualising therapy improves patient outcomes



IP: Individualised prophylaxis
IQR: Interquartile range
OD: On-demand treatment
SOURCE: Adapted from Nolan et al. ASH 2018 Poster 1192

Continuous improvement in joint health score after long-term Elocta prophylaxis



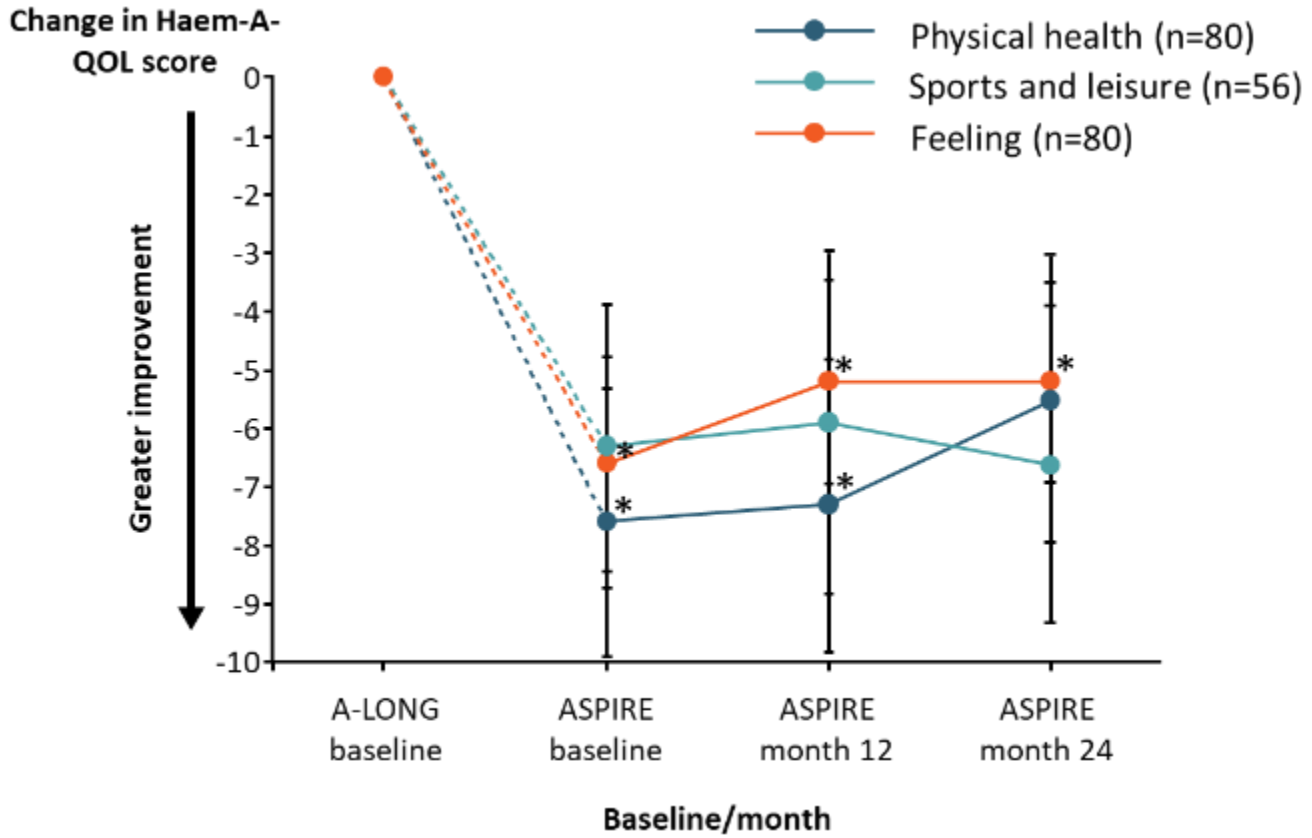
- Assessed using modified Haemophilia Joint Health Score in adolescents and adults
- **Benefits** were seen **despite pre-existing target joints and also in patients with severe arthropathy**
- **mHJHS components** with the **greatest improvement were swelling, range of motion and strength**
- Post-hoc analysis

NOTE: As of second ASPIRE interim data cut (8 December 2014); Number of subjects listed were those who were always on prophylaxis and had baseline mHJHS/HJHS from A-LONG/Kids A-LONG and at least one assessment in ASPIRE at a major assessment visit. Dashed line indicates variable follow-up time between A-LONG to ASPIRE baseline, median: 8.3 months

SOURCE: Adapted from Oldenburg et al. EAHAD 2019 Poster P158 , Oldenburg et al. Haemophilia 2018, Oldenburg et al. ISTH 2017 Poster PB946 and Nolan et al EAHAD 2019

Improved quality of life in patients on Elocta prophylaxis[a,1]

Improved health scores "Sports & Leisure," "Physical Health" and "Feeling" in adult subjects (≥17 yrs) ***vs.*** **A-LONG baseline**[a,1]



*p≤0.01; Error bars stand for standard error of the mean [a]As of third ASPIRE interim data cut (11 January 2016)

1. Adapted from Su et al. ISTH 2017 Poster PB-1783

Summary – Elocta: Features and outcomes

- Elocta represents an innovative treatment option, with demonstrated **efficacy** and a well-established **safety** profile for people with haemophilia A[1-3]

- **Elocta is the first and only FVIII using Fc technology** to achieve **half-life extension via a natural recycling pathway**, and which **might convey other immunomodulatory properties** that are currently being investigated[4,5]

- Elocta has demonstrated **long-term joint protection**, **0 median spontaneous joint bleeds, 99.6% of target joints resolved** and **continuous improvements in HJHS**[6-8]

- Confidence with Elocta can be supported by **8 years of clinical experience** and **over 4 years of real-world experience** where Elocta demonstrated a consistent long-term safety profile[1-4]

- Elocta is indicated across **all clinical settings** and in **all age ranges**[2,3]

- Elocta can be **easily measured with a variety of assays** for routine management of treatment as well as for any other need[9]

HJHS: Haemophilia Joint Health Score

1. Nolan et al. Haemophilia 2016 2. Eloctate USPI 3. Elocta SmPC 2019 4. Shapiro Expert Opin Biol Ther 2013 5. Oldenburg et al Haemophilia 2018 6. Oldenburg et al. EAHAD 2019 P158 7. Nolan et al. ASH 2019 P1192 8. Konkle et al. EAHAD 2019 P039 9. Sommer et al. Haemophilia 2014

How we will continue to grow

Our sources of business, our value proposition

- In future replacement factors will remain dominant
  - The natural solution, with corresponding safety
  - This is a highly conservative market, safety conscious
- Evolution of standards of care
  - Prophylaxis remains key focus for treaters and truly achieving Zero bleeds (all bleeds)
  - Value of prophy over on demand increasingly recognised by payer community when backed with date
  - Inhibitor management remains a key unmet medical need
- People with Haemophilia are all individuals
  - Personalised treatment is needed as a result, intensified to enable people to live beyond their haemophilia
  - Providing patients with certainty, enabling psychological and physical freedom
  - Only replacing the missing factor enables this


sobi
rare strength

Immunology

Norbert Oppitz
Head of Specialty Care

Why Immunology will drive Sobi's future

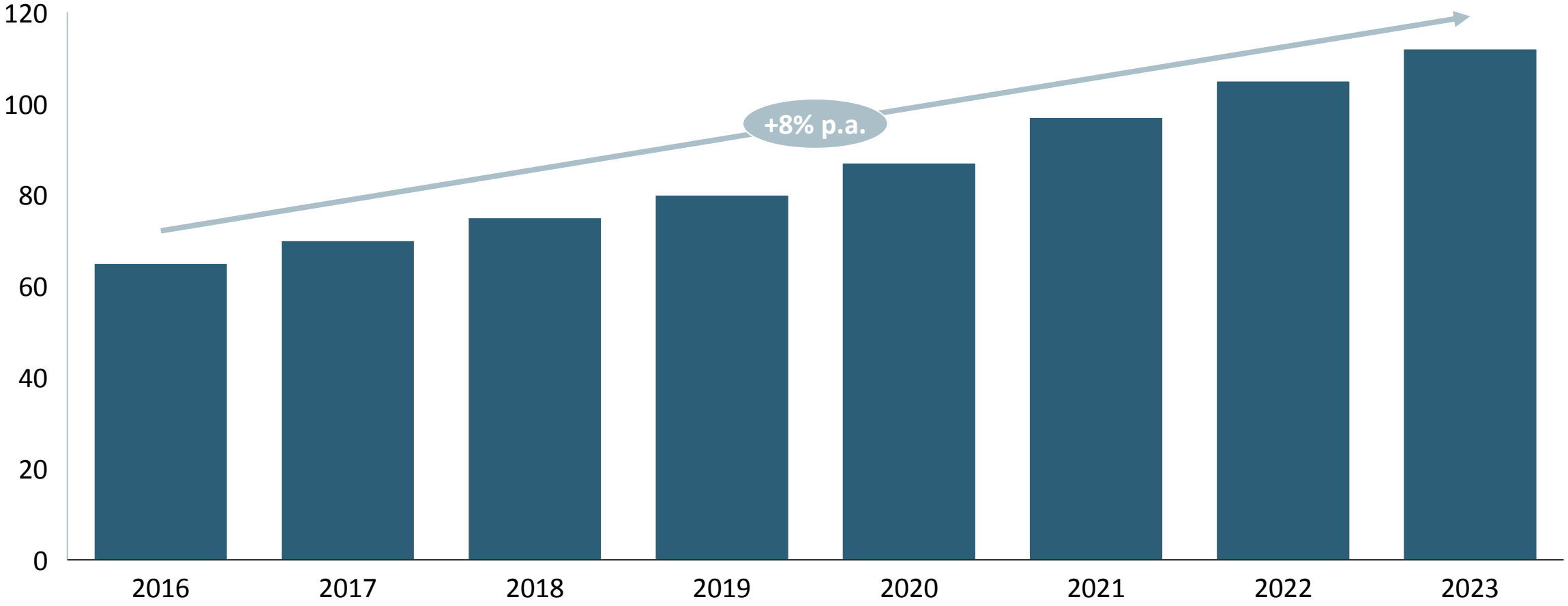
1. **We have deep understanding within Immunology**
   Immunology is at the core of what we do
   Kineret: extensive expertise in commercialisation and mining new indications

2. The **immunology market** is poised to grow **to total USD 113 B by 2023, with immuno-oncology becoming an attractive segment**

3. **Emapalumab and Synagis will allow us to establish a significant platform in Immunology**

Immunology drug market projected to display solid growth at a CAGR of 8% from 2016 to 2023

Global immunology drug sales, USD billions



SOURCE: GBI Research

Sobi currently has three strong assets in immunology

SYNAGIS® PALIVIZUMAB

gamifant® emapalumab-lzsg

Kineret® (anakinra)

Synagis

Introduction to RSV and Synagis

What is respiratory syncytial virus?

- Seasonal viral infection causes ~57,000 hospitalisations annually in the US in children under 5
- A leading global cause of death in children under five years of age (~ 50,000)
- Can develop into potentially life-threatening bronchiolitis or pneumonia, particularly in premature babies and those with heart or lung diseases
- No treatment currently available, so prevention during RSV season (~October – May) is important for susceptible babies

What is Synagis (palivizumab)?

- Seasonal immunoprophylaxis, not vaccine, that is the only marketed product to protect against RSV
- Infants typically receive 5 monthly injections during RSV season
- Eligibility for treatment limited to premature babies or children with heart or lung disease[1]
- Approved in 1998
- Global standard of care for RSV prevention and the only approved therapy to prevent RSV
- Synagis has protected ~3 million babies globally

1 A history of premature birth (≤35 weeks gestational age) and who are 6 months of age or younger at the beginning of the RSV season; Bronchopulmonary dysplasia (BPD) that required medical treatment within the previous 6 months and who are 24 months of age or younger at the beginning of the RSV season; Haemodynamically significant congenital heart disease (CHD) and who are 24 months of age or younger at the beginning of the RSV season
SOURCE: US CDC, US FDA

Synagis integration is going well

135/135 FTE offers accepted. Employees transferred on Day 1

16 Integration workstreams managed by a central Integration Management Office

100% of TSA tracking towards successful cutover, with first wave transitioning 30 June

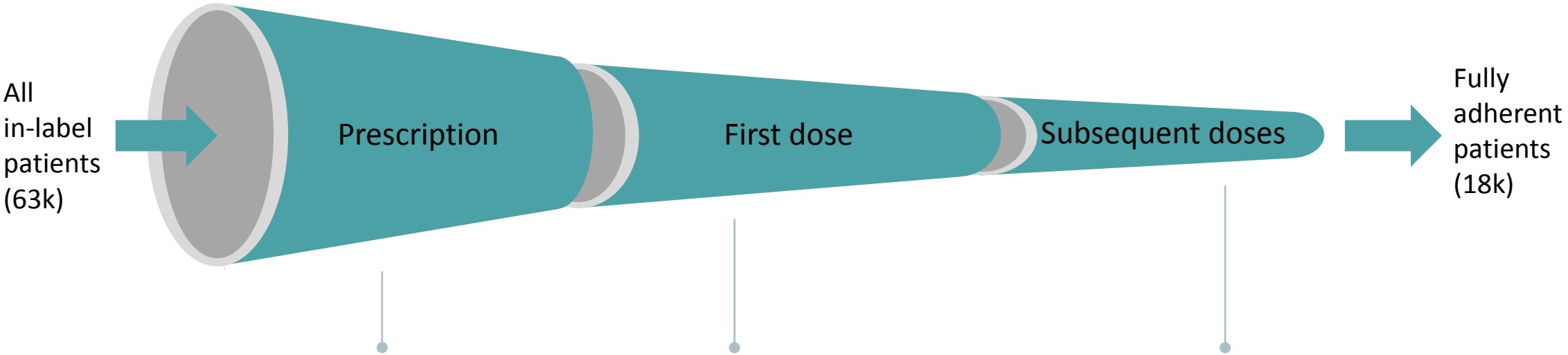
35+ new employees already hired to support Synagis with more planned before the 2019/2020 season

9.5+ /10 Average self-rating from surveyed employees about working at Sobi

"The integration was seamless. The priority we have is to continue to protect the babies which we have been able to do without distractions."

–Employee who joined Sobi from AZ

Large number of pre-term babies eligible for Synagis not currently receiving treatment



Identified root causes for patient loss

- Physicians unfamiliar with AAP guidelines
- Caregiver lack of awareness / information or resistance

- Physician offices unfamiliar with referral or appeal process
- Cumbersome payer approval processes
- Access challenges (at payer or SP level)

- Caregivers not taking babies in for remaining shots
- Access challenges (at payer or SP level)

2019 Synagis brand plan guided by three priorities

A

Secure Synagis access for <29wGA and CHD/CLD patients

- Ensure all stakeholders are educated on the critical need for RSV protection in this patient population
- Streamline administrative processes to limit unintended patient drop-off

B

Activate all in-label patient populations at risk of contracting RSV

- Present recent data on increased RSV hospitalisations to emphasise the consequences of RSV contraction

C

Leverage clinical data to deepen engagement with external stakeholders

- Utilise KOLs and up-to-date clinical studies to highlight the evidence-based value proposition of Synagis
- Deploy a comprehensive advocacy plan that uses a diverse portfolio of data-driven materials to engage all key audiences relating to RSV and Synagis

Gamifant (emapalumab)

Gamifant addresses a high unmet medical need in HLH

~200

Patients with primary HLH
in the US and EU (2023 estimate)

~4,200

Patients with secondary HLH
(2023 estimate)

HLH is a rare but dramatic health crisis that presents as a heterogeneous syndrome of rapidly progressive, life-threatening disease

- High fever
- Infection
- Rash

- Hyperferritinemia
- Coagulation defects
- Severe cytopenia

- Hepatosplenomegaly
- Liver impairment
- Jaundiced appearance

Two types of HLH: primary and secondary[1-4]

Primary
(pHLH)

- Genetic mutations cause primary HLH
- Can be suspected on the basis of family history
- Patients are more frequently infants or children
- An infection is often the trigger of the disease

Secondary
(sHLH)

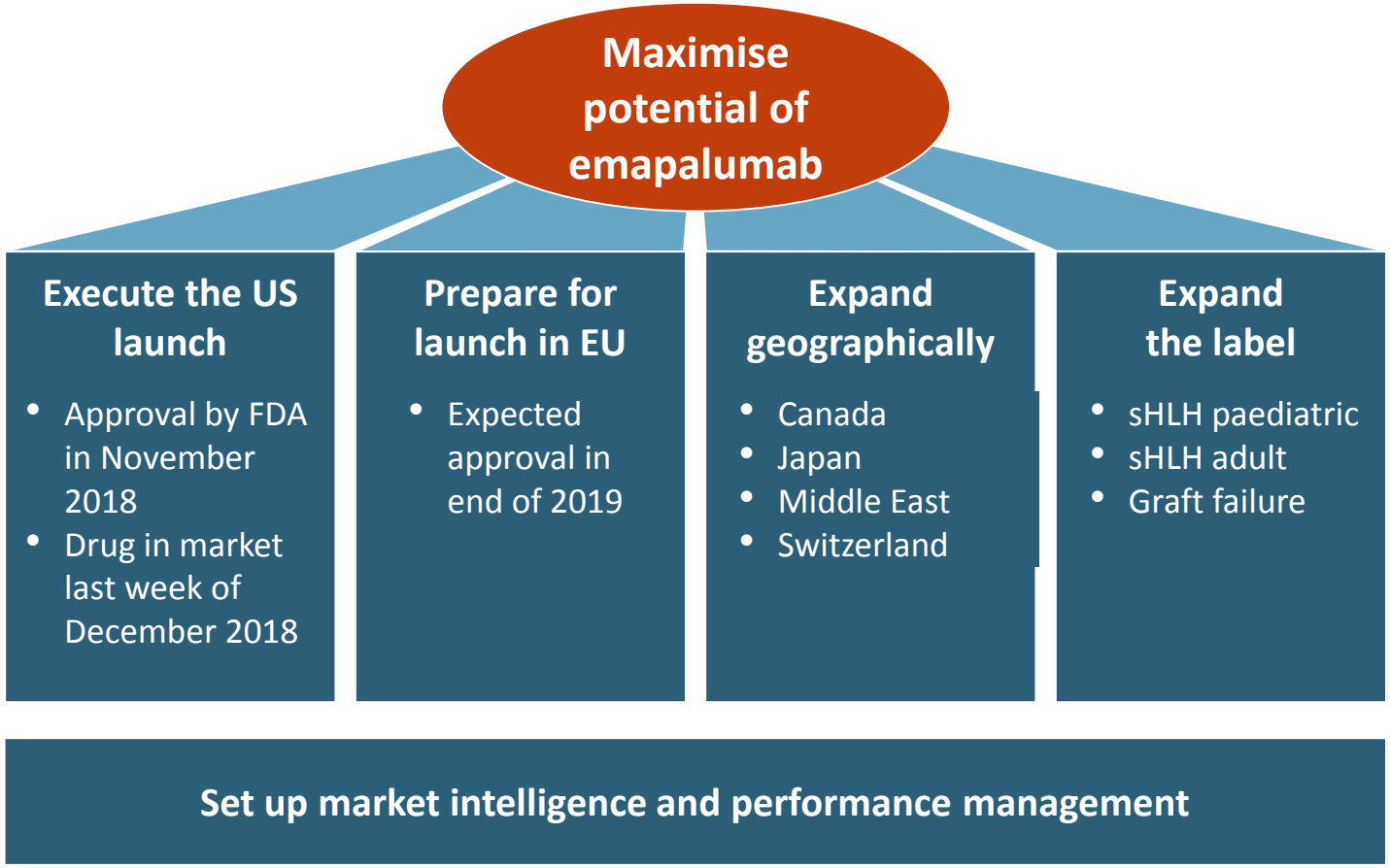
- Also called acquired HLH
- Can occur at any age
- Causes include:

  Infections, autoimmune/inflammatory diseases, malignancies

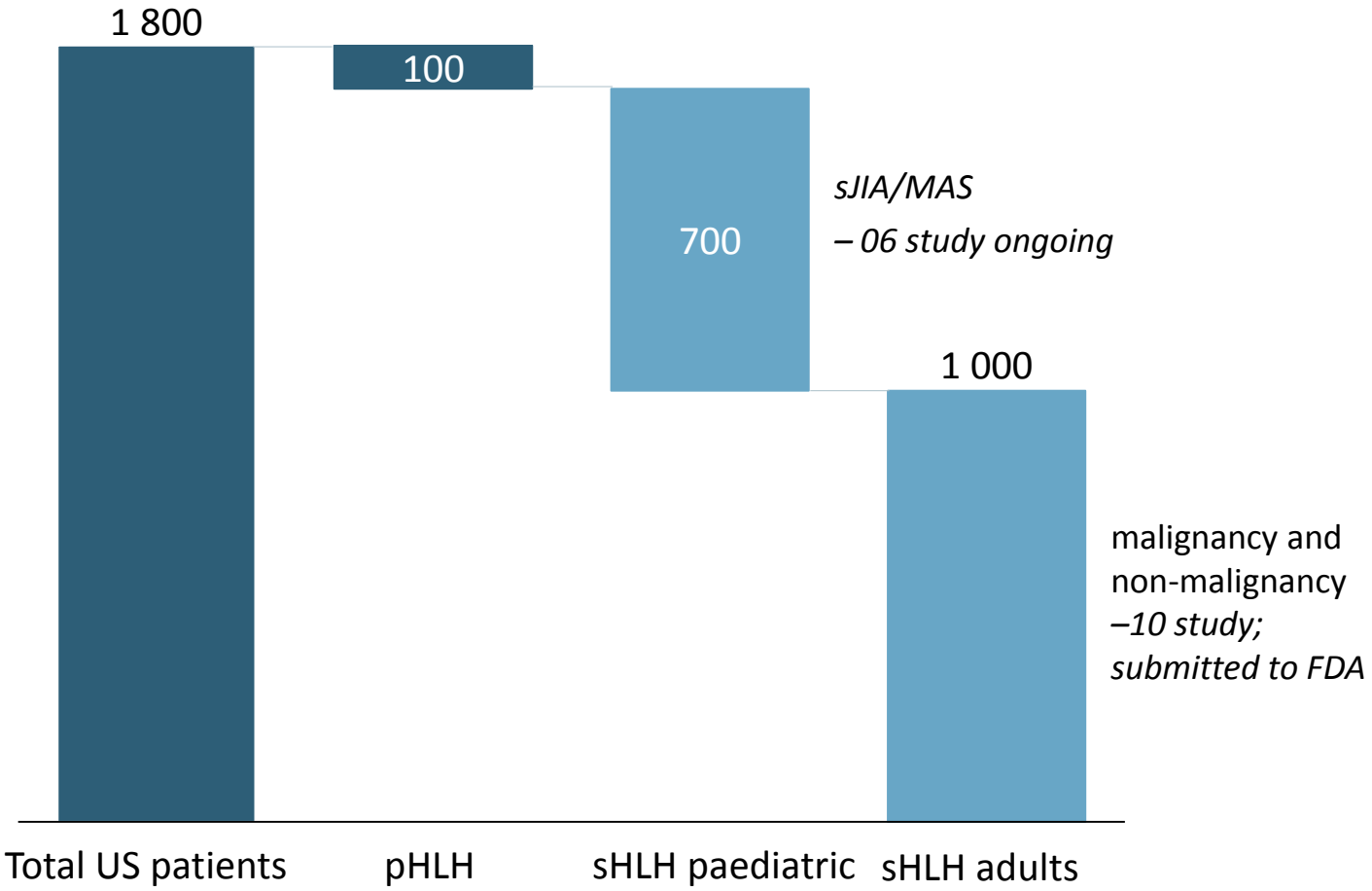
FHL: familial HLH; HLH, haemophagocytic lymphohistiocytosis; pHLH: primary HLH; sHLH: secondary HLH

1. Brisse et al. *Br J Haematol* 2016 **2.** Jordan et al. *Blood* 2011 **3.** Marsh, Haddad. *Br J Haematol* 2018 **4.** Ramachandran et al. *Blood Cells Mol Dis* 2017

Expansion strategy for emapalumab - promising start in Q1



Emaplumab – significant potential beyond primary HLH

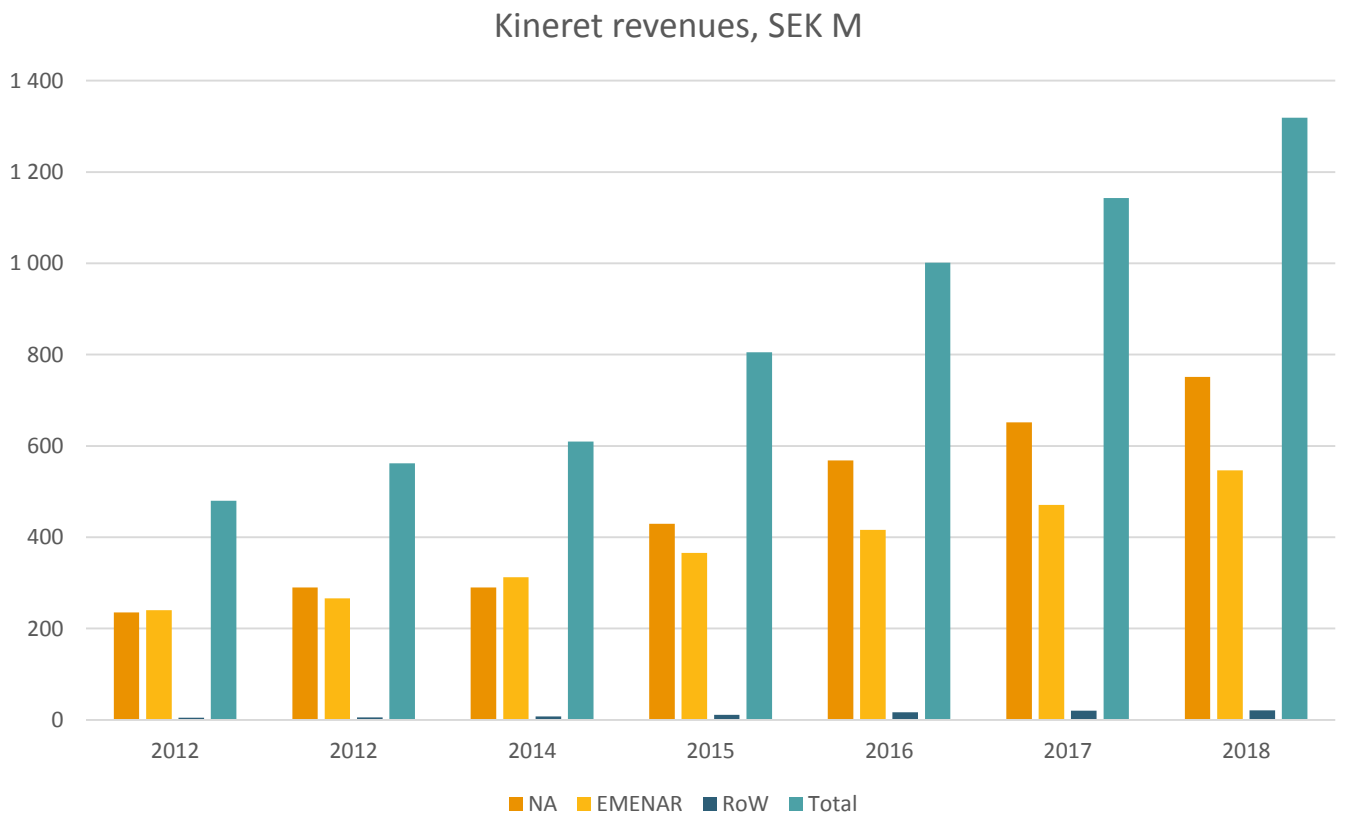


1. Significant economic opportunity
2. High unmet medical needs
3. Studies to unlock opportunities on the way or submitted

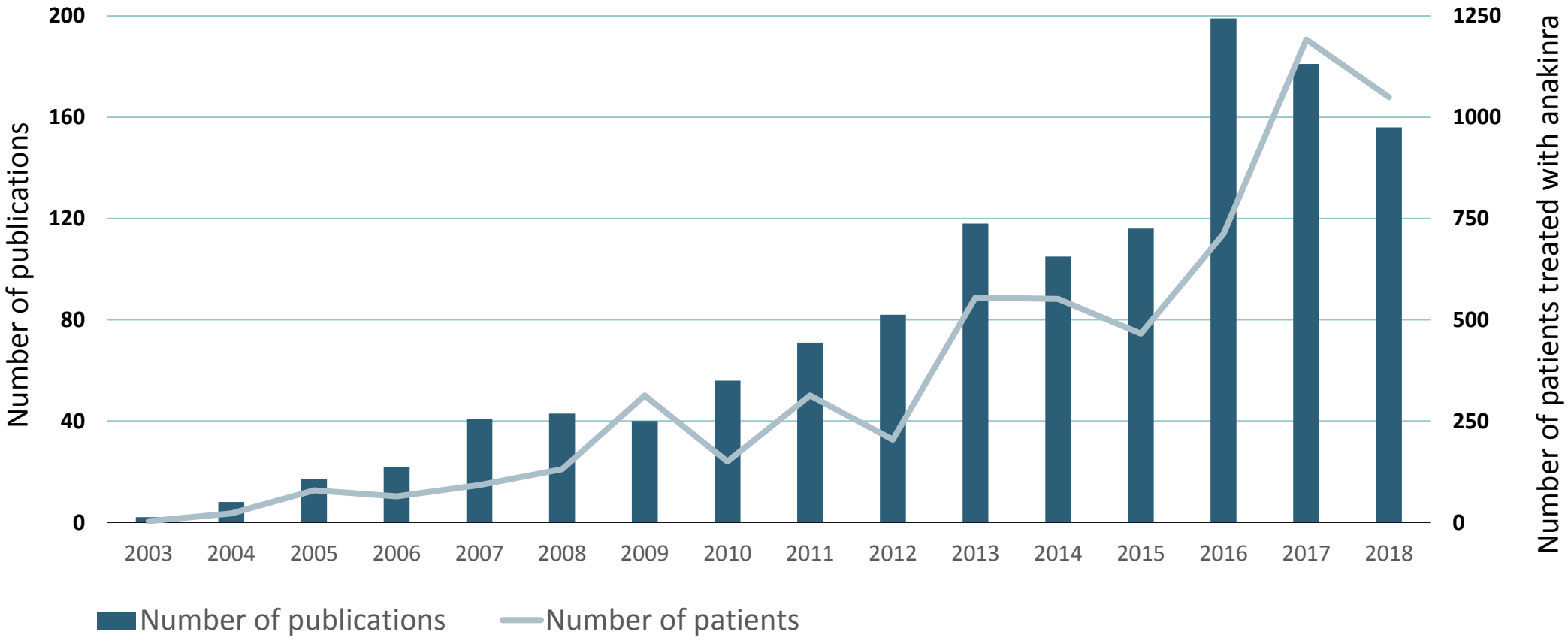
Kineret

Kineret – a great growth story

- Launched in US 2001 and EU 2002
  - EU: RA, CAPS and Still's disease
  - US: RA and NOMID
- Sobi acquired Kineret from Amgen in 2008, first full-year sales in 2009



Increased scientific interest in anakinra



RA trials and other RA publications not included

Approximate numbers (some redundancy in patient reports across publications)

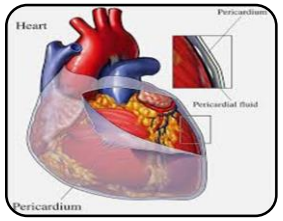
Many possible indications for Kineret beyond the current label

Kineret label so far ...

Currently approved

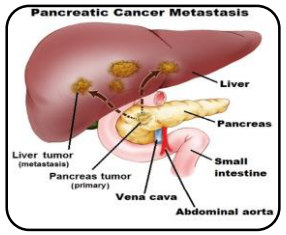
- Rheumatoid arthritis (RA)
- Neonatal-onset multisystem inflammatory disease (NOMID)
- Cryopyrin-associated periodic syndrome (CAPS)
- Still's disease (EMA approval)

Additional indications being considered



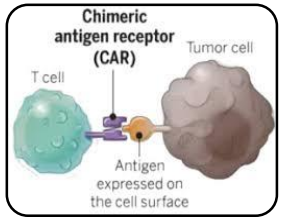
Idiopathic Recurrent Pericarditis (IRP)

- Syndrome in which the sack that surrounds the heart (pericardium) gets inflamed.
- Recurrence of pericarditis occurred in 9 (90%) of the 10 patients randomized to placebo and in 2 (18.2%) of the 11 patients randomized to anakinra



Pancreatic Ductal Adenocarcinoma (PDAC)

- Metastatic cancer associated with poor prognosis
- Anakinra 100 mg QAD in combination with FOLFIRINOX in patients with metastatic PDAC showed overall survival of 17.4 months



Chimeric antigen receptor T-cell therapy (CAR-T) cell therapy-associated toxicities

- Very active space including Novartis (Kymriah) and Gilead (Yescarta)
- IL-1 blockade, but not IL-6 blockade, protects mice from delayed lethal neurotoxicity

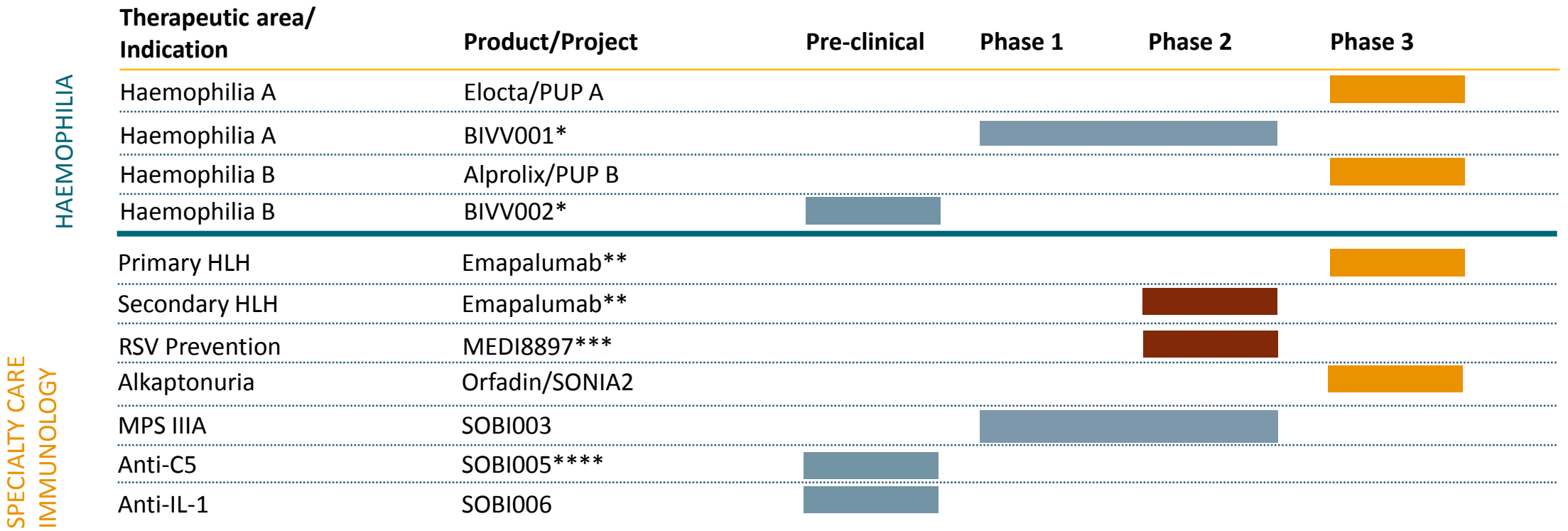
1 86% of all Kineret use in adults is off-label in an Italian study: Vitale et al., 2016. **2** IRP = Idiopathic recurrent pericarditis. **3** PDAC = pancreatic ductal adenocarcinoma, i.e. the most common form of pancreatic cancer.
4 CRC = colorectal carcinoma
SOURCE: Sobi, McKinsey


sobi
rare strength

R&D

Milan Zdravkovic
Head of R&D, Chief Medical Officer

A rare disease R&D pipeline with increasing value



* Sanofi development programmes, Sobi has elected to add programmes to the collaboration agreement but not yet opted-in
** Global licensing agreement with Novimmune
*** Participate in 50 per cent of the future earnings in the US
**** Divested; progress related milestones and royalties

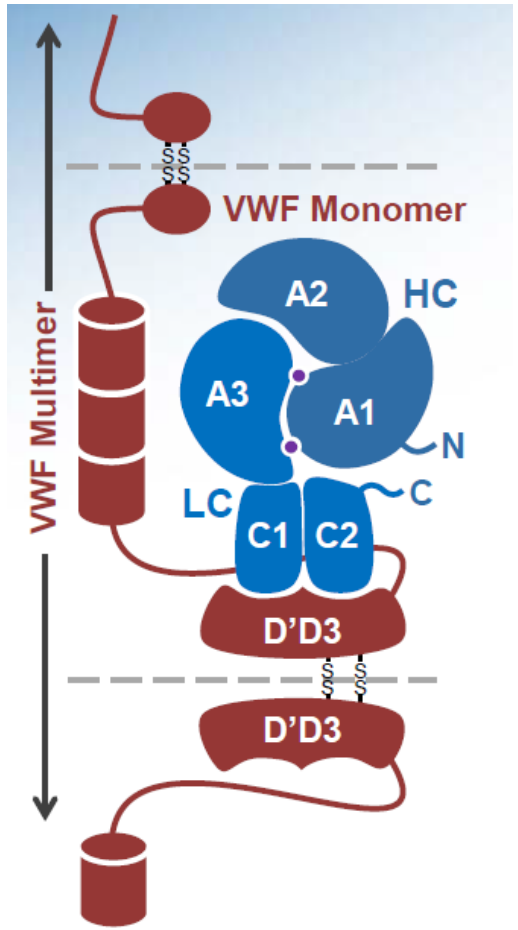
Haemophilia

BIVV001

BIVV001 is a Sanofi programme
Sobi has elected to add BIVV001 to the collaboration agreement with Sanofi but has not yet opted in.

The effect of VWF on FVIII half-life1-3

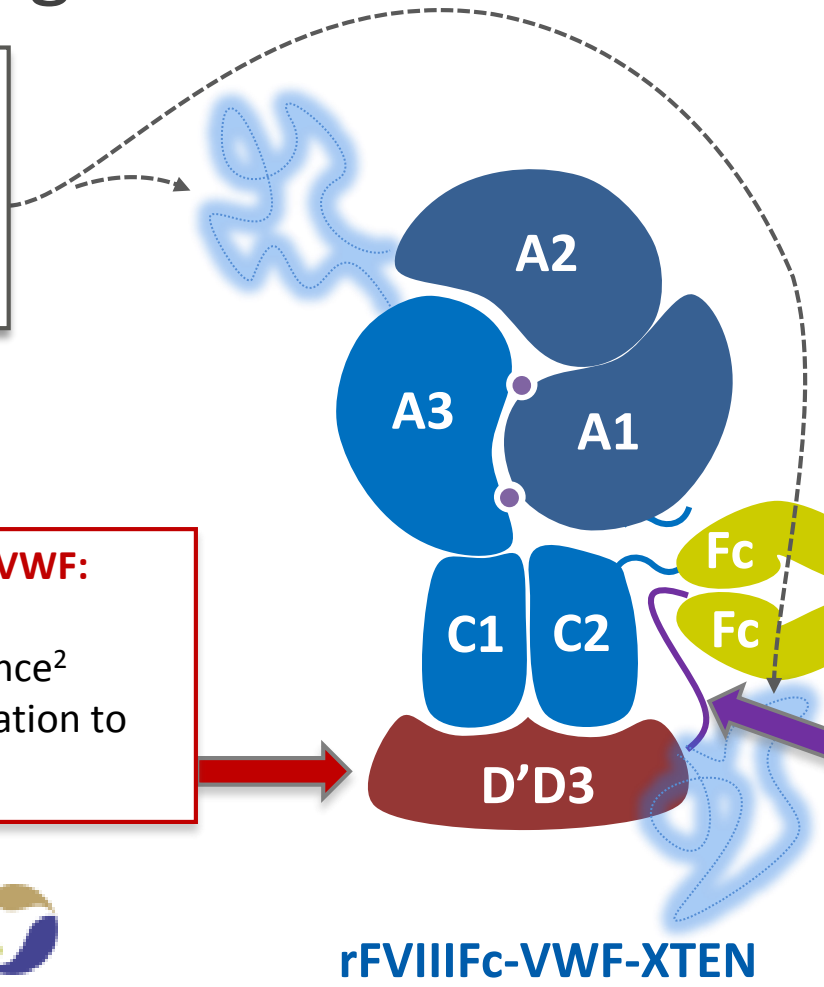
- In circulation, >95% of FVIII is bound to VWF, which stabilises and protects FVIII from degradation
- In particular the D'D3 region of VWF interacts with the C1/C2 region of FVIII
- But VWF also seems to be responsible for limiting the half-life extension of approved EHL FVIII molecules
- FVIII-VWF interaction couples FVIII to the VWF clearance pathway
- The circulating half-life of VWF thereby sets the limit for the FVIII half-life



1. Pipe SW et al. *Blood* 2016 **2.** Patarroyo-White et al. *ISTH* 2015 **3.** Mahlangu et al. *Haemophilia* 2018

BIVV001: Combining D'D3 and XTEN to rFVIII Fc fusion to break the VWF ceiling

XTEN insertions[1]:
- Hydrophilic sequences comprised of natural amino acids
- Provide protection, increase half-life



Based on rFVIIIFc Fc domain:
- Extends half-life through FcRn-mediated recycling pathway[3,4]

Covalent linkage to the D'D3 domain of VWF:
- Prevents binding to endogenous VWF, decoupling from VWF-mediated clearance[2]
- Confers partial protection from degradation to FVIII normally afforded by VWF[2]

Thrombin-cleavable linker:[2]
- Enables release of D'D3 upon FVIII activation

rFVIIIFc-VWF-XTEN

SANOFI GENZYME

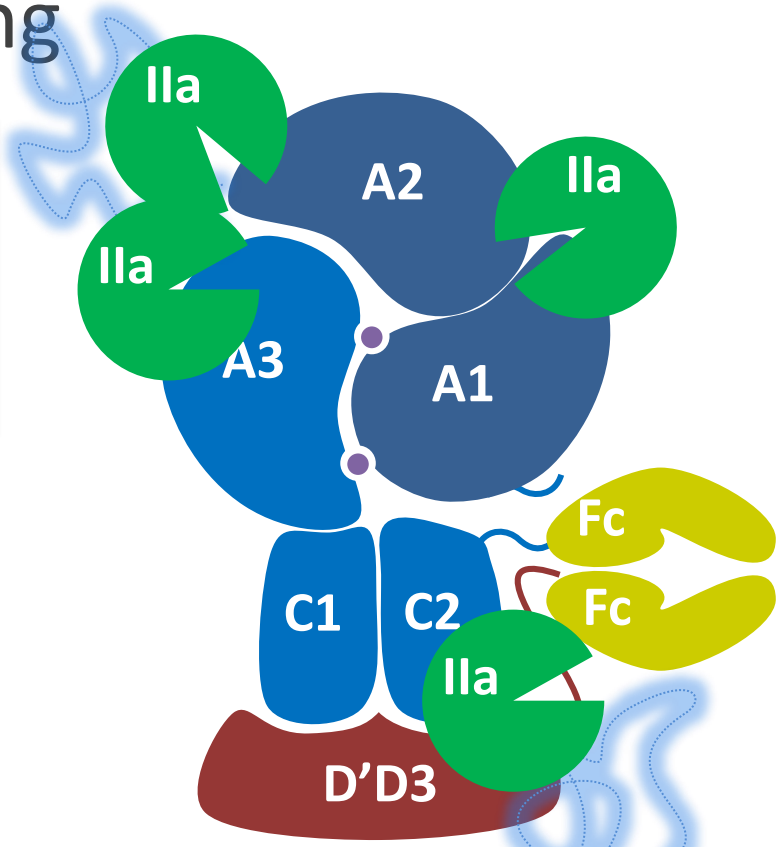
BIVV001 is an investigational product that has not been approved for use

1. Podust et al. J Control Release 2016 2. Adapted from Liu et al. WFH 2016 Oral Presentation 3. Roopenian & Akilesh. Nat Rev Immunol 2007
4. Shapiro. Expert Opin Biol Ther 2013 5. Patarroyo-White et al ISTH 2015

BIVV001: Combining D'D3 and XTEN to rFVIIIFc fusion to break the VWF ceiling

Upon thrombin activation:

- Removes B domain XTEN
- Disrupts D' D3 interaction
- Removes D' D3/XTEN
- **Results in same molecule as activated rFVIIIFc**



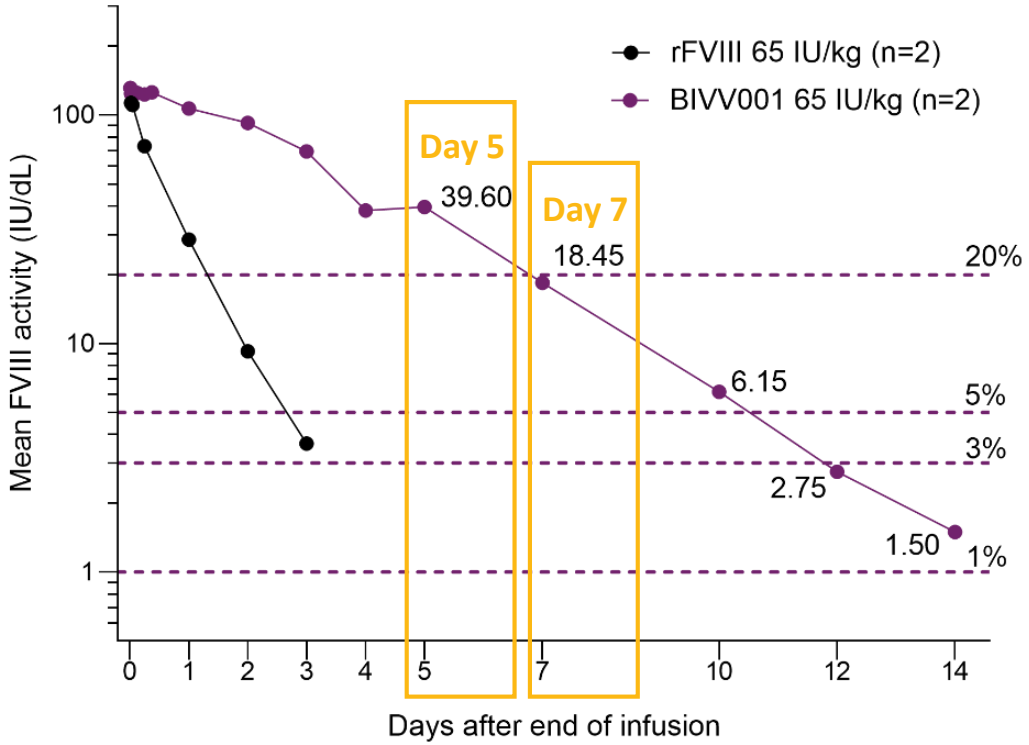
activated BIVV001 ≈ activated rFVIIIFc

BIVV001

BIVV001 is an investigational product that has not been approved for use

1. Patarroyo-White et al. ISTH 2015 OR413

BIVV001: Single 65 IU/kg dose extends FVIII half-life to 44h and shows 18% activity post-infusion (N=2)[1,a]

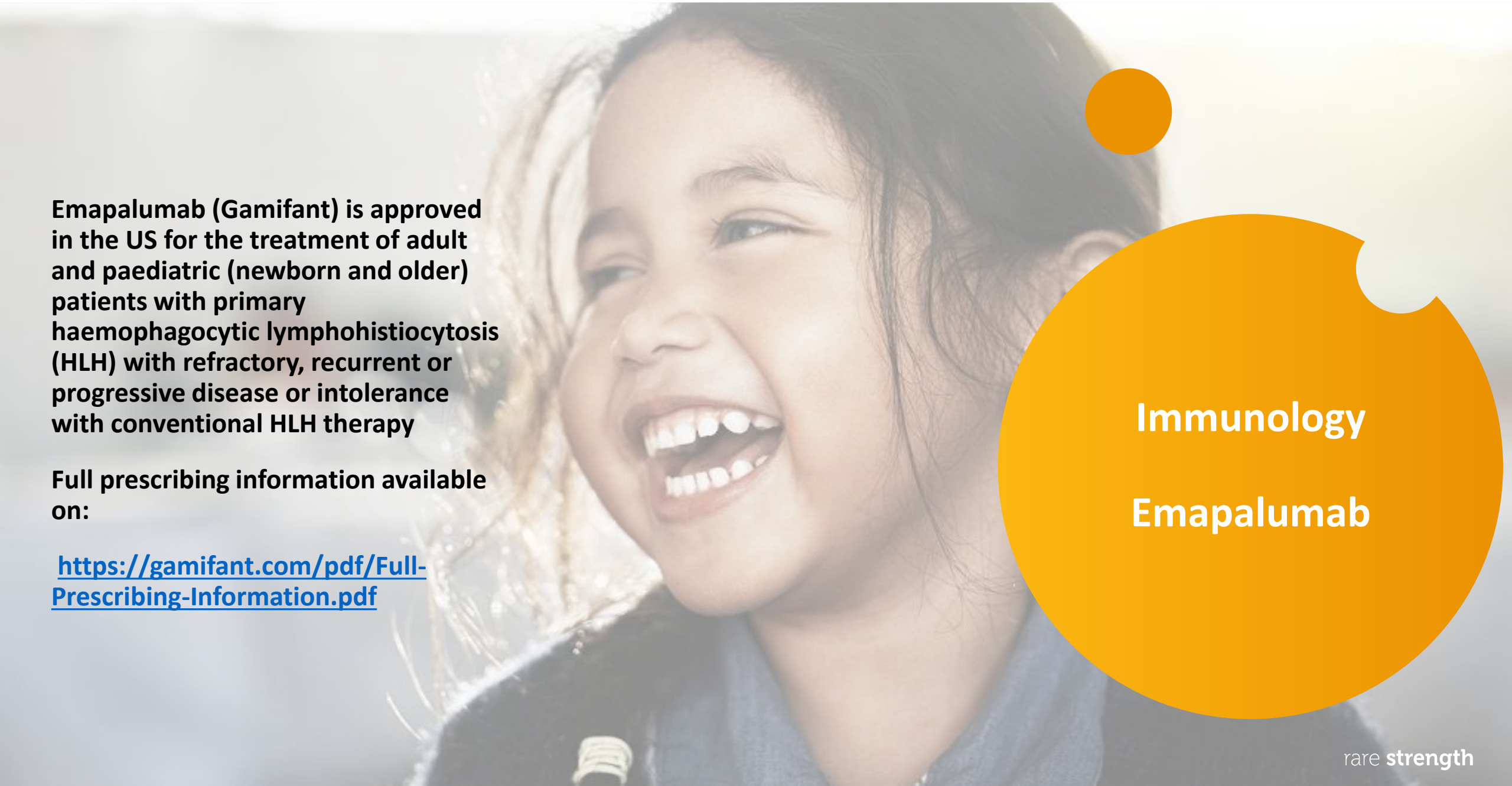


SANOFI GENZYME

The average FVIII activity post-infusion at 5 days was 40% and at 7 days was 18%

PK parameter	BIVV001 (n=2)[b]	rFVIII (n=2)[b]
$t_{1/2}$ (h)	**43.76** [42.05–45.55]	**16.98** [16.15–17.84]
C_{max} (IU/dL)	132.10 [117.2–148.9]	114.55 [93.4–140.5]
$AUC_{0–inf}$ (h x IU/dL)	**11894** [9442–14982]	**1958** [1527–2510]
MRT (h)	73.13 [71.77–74.51]	17.75 [16.63–18.95]
CL (mL/h/kg)	0.55 [0.43–0.69]	3.30 [2.57–4.23]
IR (IU/dL per IU/kg)	2.02 [1.80–2.27]	1.74 [1.42–2.14]

[a]As of Interim data cut 2 [b]Values are geometric means [range] FVIII activity determined by the one-stage clotting assay **1.** Konkle et al. *ASH* 2018



Emapalumab (Gamifant) is approved in the US for the treatment of adult and paediatric (newborn and older) patients with primary haemophagocytic lymphohistiocytosis (HLH) with refractory, recurrent or progressive disease or intolerance with conventional HLH therapy

Full prescribing information available on:

https://gamifant.com/pdf/Full-Prescribing-Information.pdf

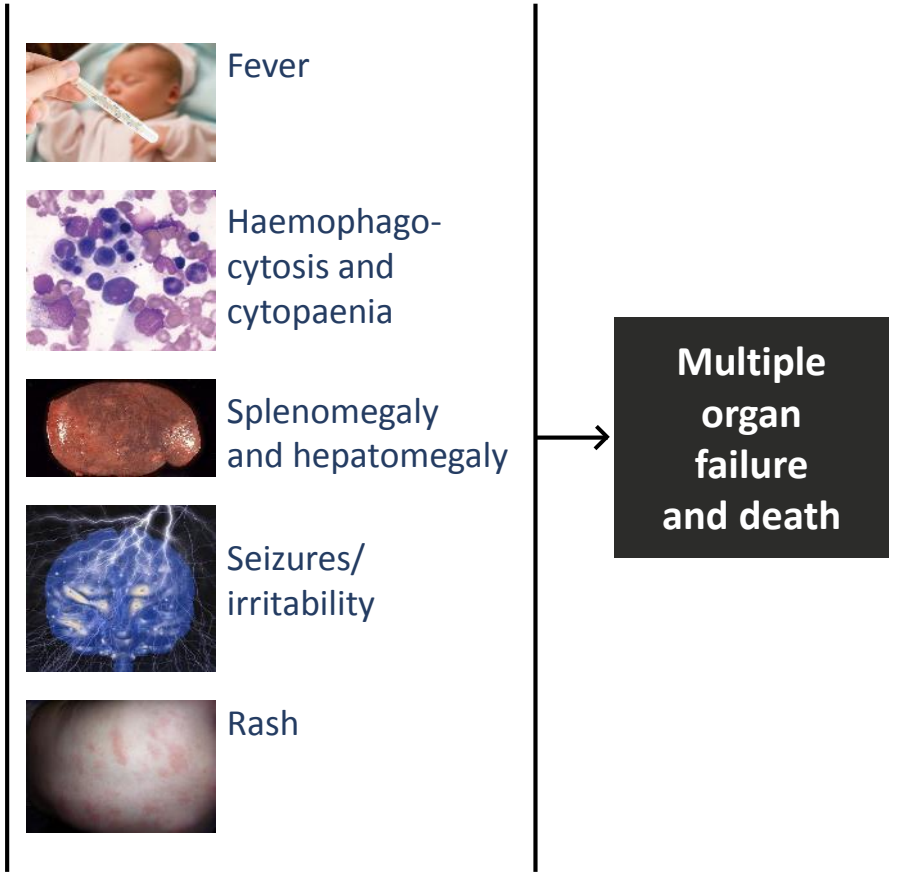
Immunology

Emapalumab

rare **strength**

Haemophagocytic lymphohistiocytosis (HLH)

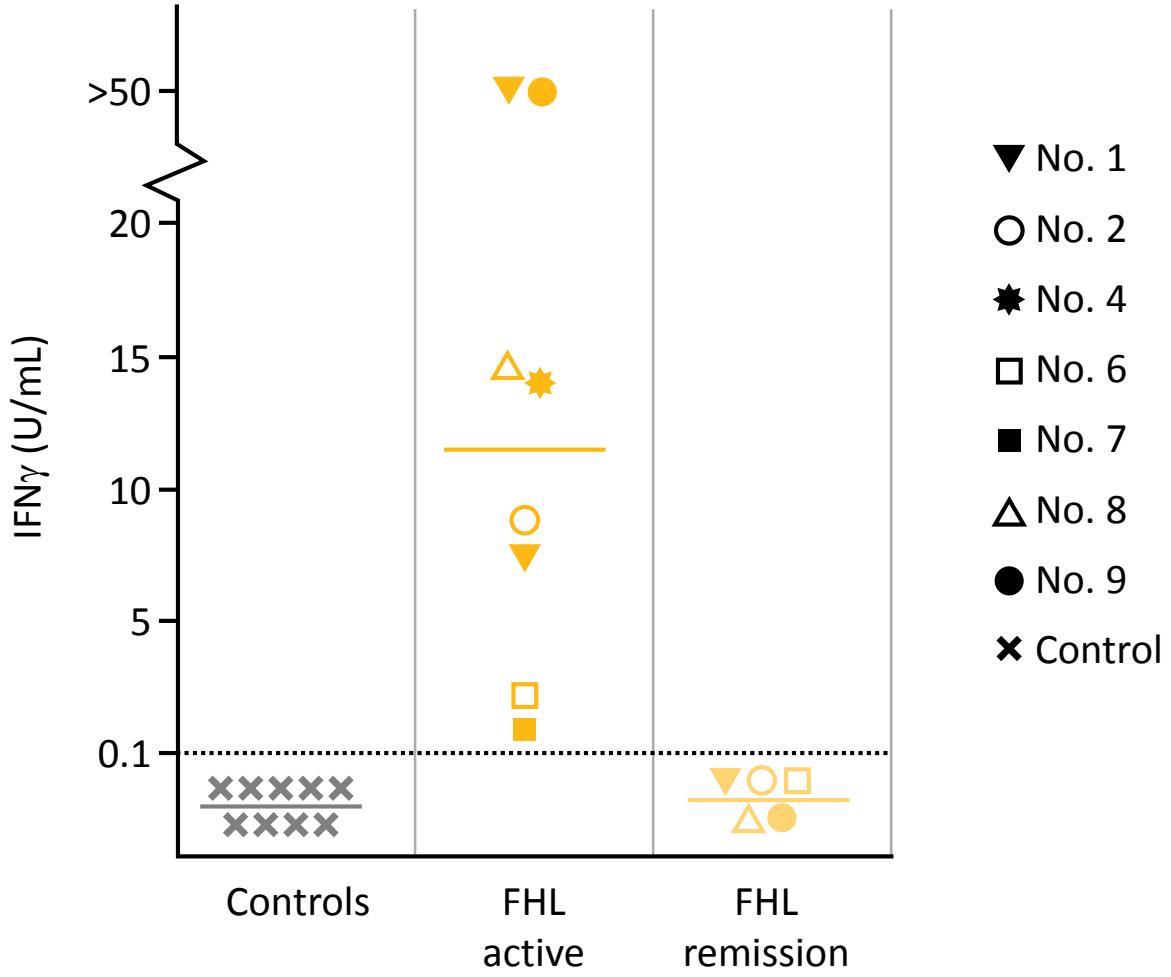
- HLH is a clinical syndrome of hyper-inflammation, driven by high interferon (IFN)-γ production, characterized by severe hyperferritinaemia, fever, severe cytopaenia, coagulation defects, organomegaly (spleen and liver), liver function impairment, and infections
- It occurs as a familial autosomal recessive disorder (i.e., primary HLH) or as an acquired, reactive condition (i.e., secondary HLH)
- Untreated HLH syndrome is lethal



1. Henter JI, et al. Pediatr Blood Cancer. 2007;48:124-131.
2. George MR. J Blood Med. 2014;5:69-86.
3. Janka GE. Annu Rev Med. 2012. 63:233–246.

IFNγ is elevated in primary HLH

Results from 9 patients with familial HLH
(age range: 2-63 months)



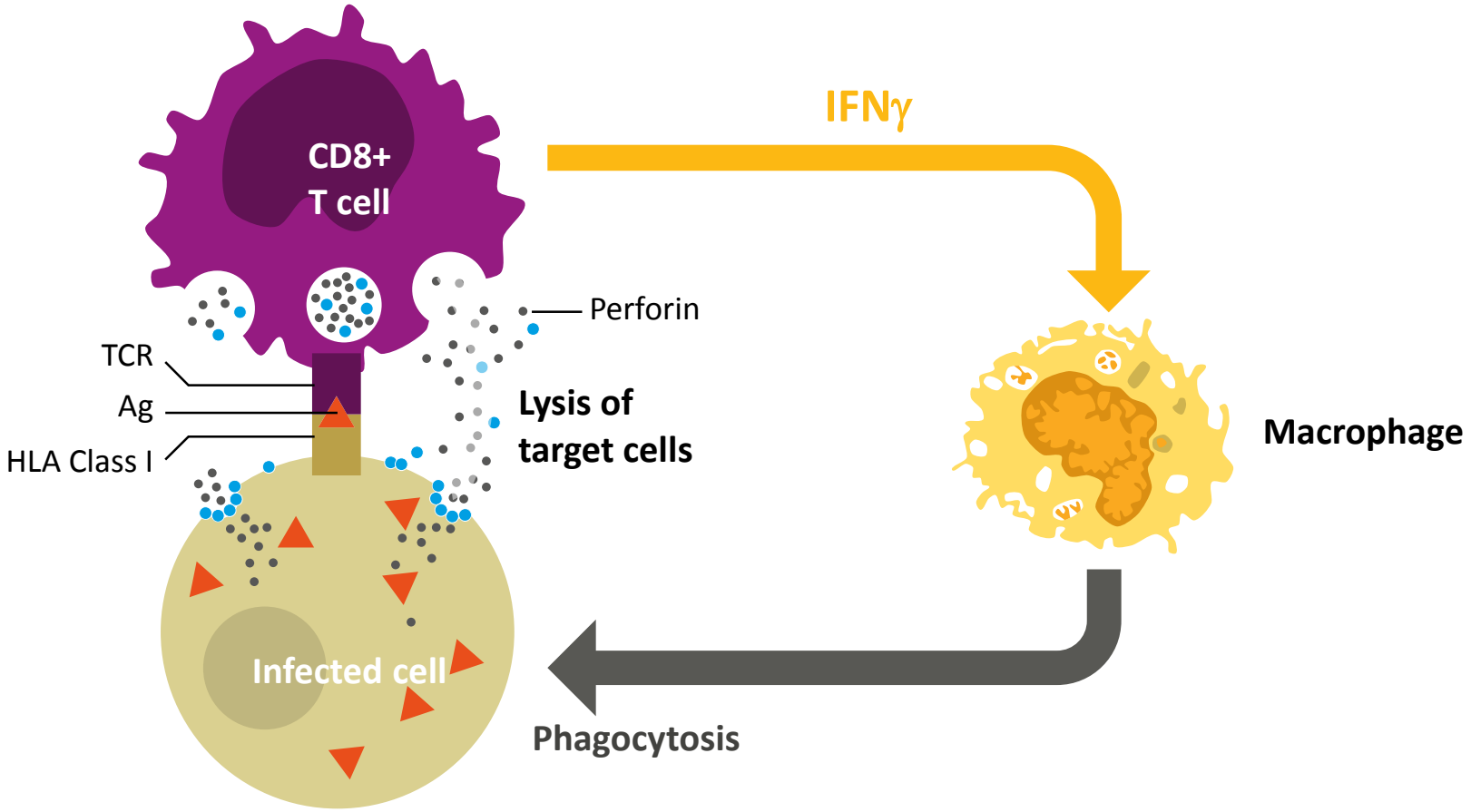
FHL, familial HLH

1. Henter et al. *Blood* 1991

Defect in killing by cytotoxic T cells leads to elevation of IFNγ and severe inflammation[1-2]

Normal cytotoxic function

During a normal immune response, infected cells present antigen to CD8+ T cells, inducing activation and cytotoxic response that aims to kill the infected cells by release of perforin and granzymes. Simultaneously, upon activation cytotoxic CD8+ T cells secrete IFNγ, activating macrophages.



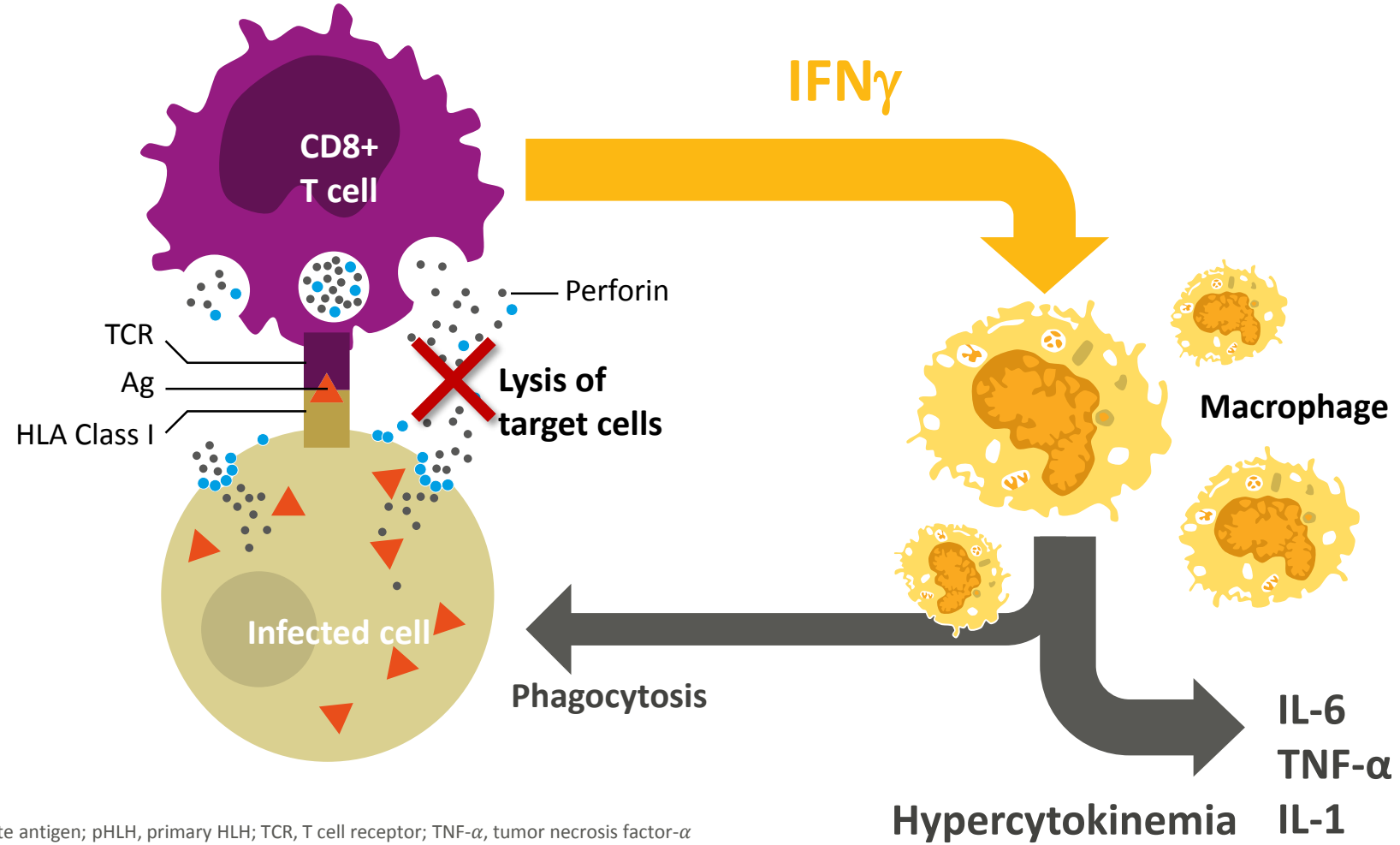
Images courtesy of Prof. F De Benedetti. Ag, antigen; HLA, human leukocyte antigen; pHLH, primary HLH; TCR, T cell receptor; TNF-α, tumor necrosis factor-α

1. Pachlopnik Schmid et al. *Pediatr Allergy Immunol* 2014 **2.** Jordan et al. *Blood* 2004

Defect in killing by cytotoxic T cells leads to elevation of IFNγ and severe inflammation[1-2]

Defective cytotoxic function

In pHLH, a defect in the cytotoxic activity of CD8+ T cells and NK cells results in a failure to lyse infected cells. This results in increase secretion of IFNγ, elevated activation of macrophages, and hyper-cytokinaemia that results in the signs and symptoms of HLH.

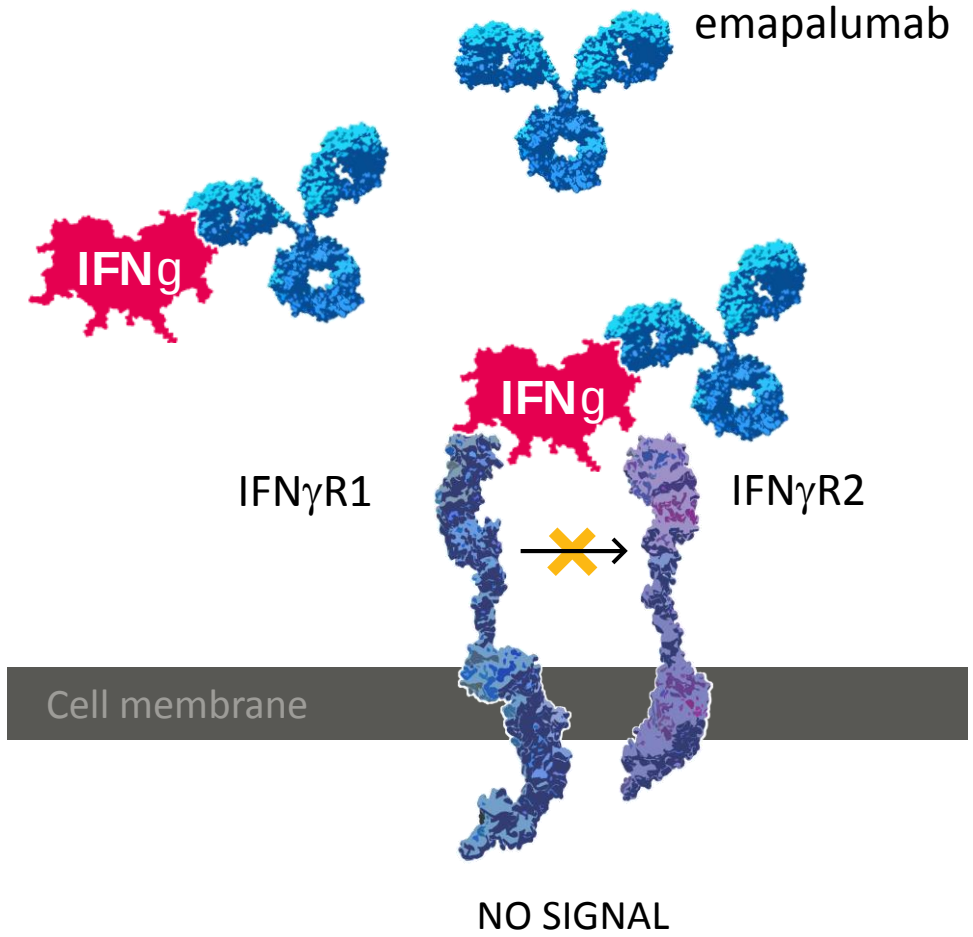


Images courtesy of Prof. F De Benedetti; Ag, antigen; HLA, human leukocyte antigen; pHLH, primary HLH; TCR, T cell receptor; TNF-α, tumor necrosis factor-α

1. Pachlopnik Schmid et al. *Pediatr Allergy Immunol* 2014 **2.** Jordan et al. *Blood* 2004

Emapalumab: anti-IFNγ antibody

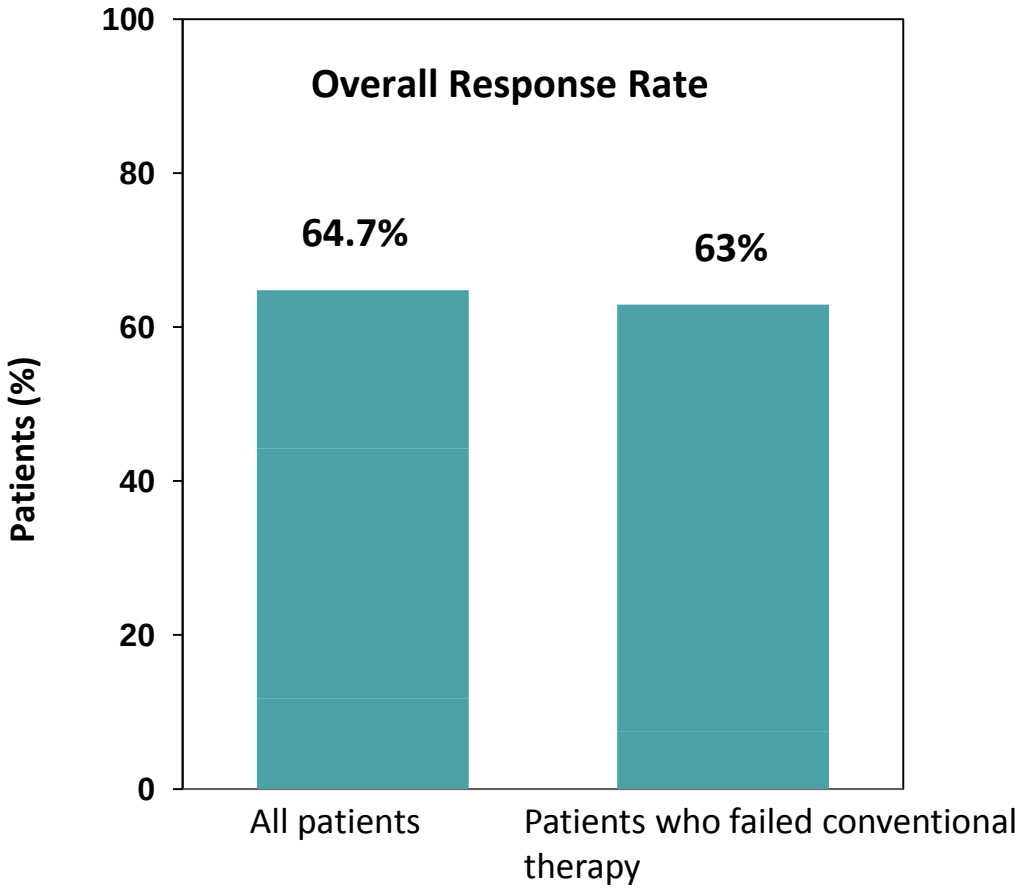
- Emapalumab is a high affinity, fully human IgG1 anti-IFNγ monoclonal antibody (mAb) that binds to soluble and receptor-bound forms of IFNγ
- When IFNγ binds to its receptors, it results in dimerisation and activation of signalling that results in the transcription of genes that encode inflammatory molecules
- Emapalumab binds to IFNγ preventing binding to its receptors and the expression of inflammatory cytokines



IgG, immunoglobulin G

1. Hatterer et al. *Cytokine* 2012 **2.** FDA Press Release 20 Nov 2018; **3.** Zaidi, Merlino. *Clin Cancer Res* 2011

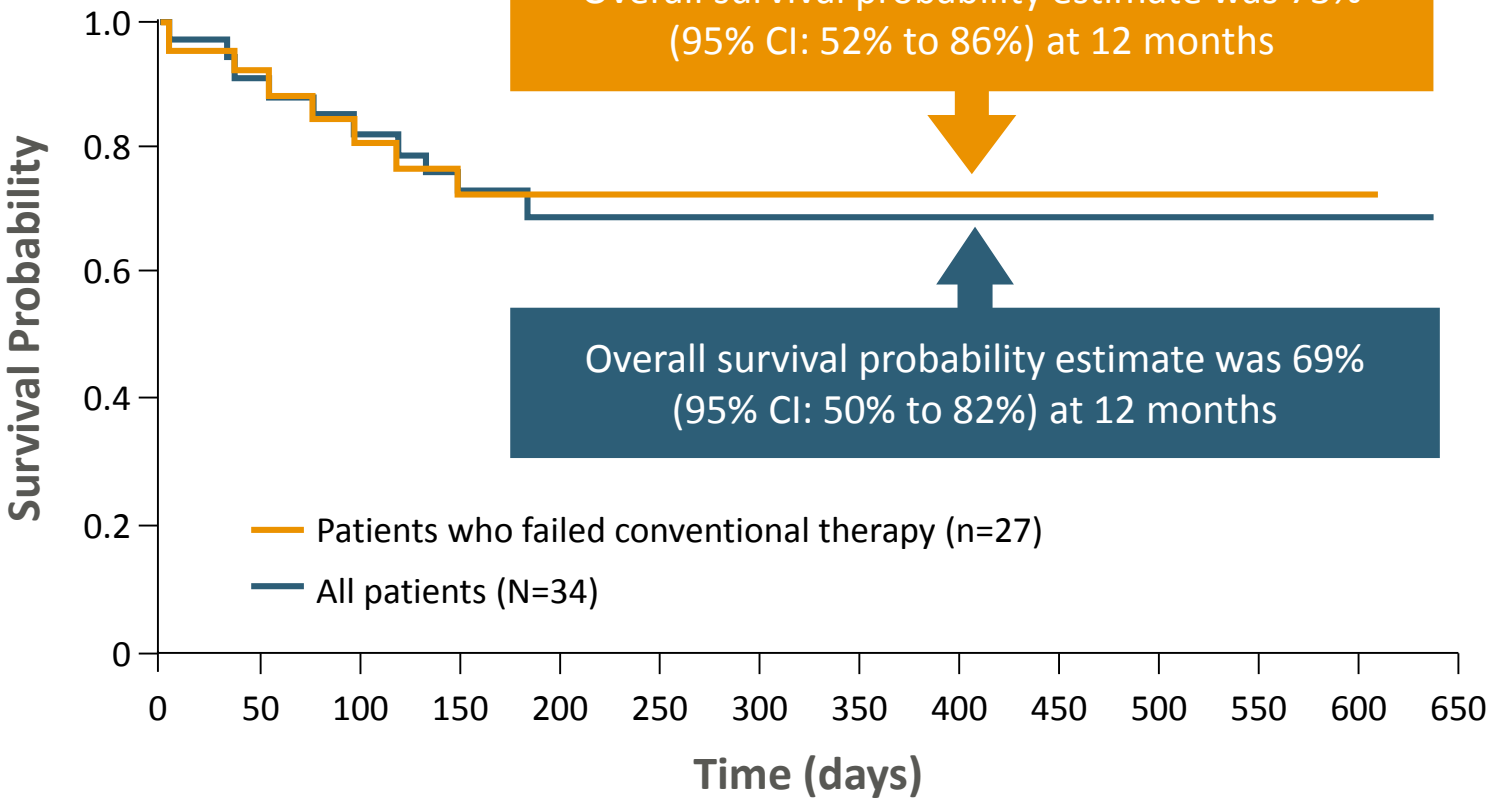
Emapalumab clinical data in primary HLH: In patients failing conventional therapy, 63% responded to emapalumab



- The primary efficacy endpoint of study NI-0501-04 was the Overall Response Rate (ORR) at end of treatment
- Overall response was evaluated using an algorithm based on objective clinical and laboratory parameters
- Primary efficacy endpoint of the study was met: ORR was significantly higher than the pre-specified null hypothesis of 40%

Locatelli et al ASH 2018

Overall survival – secondary endpoint



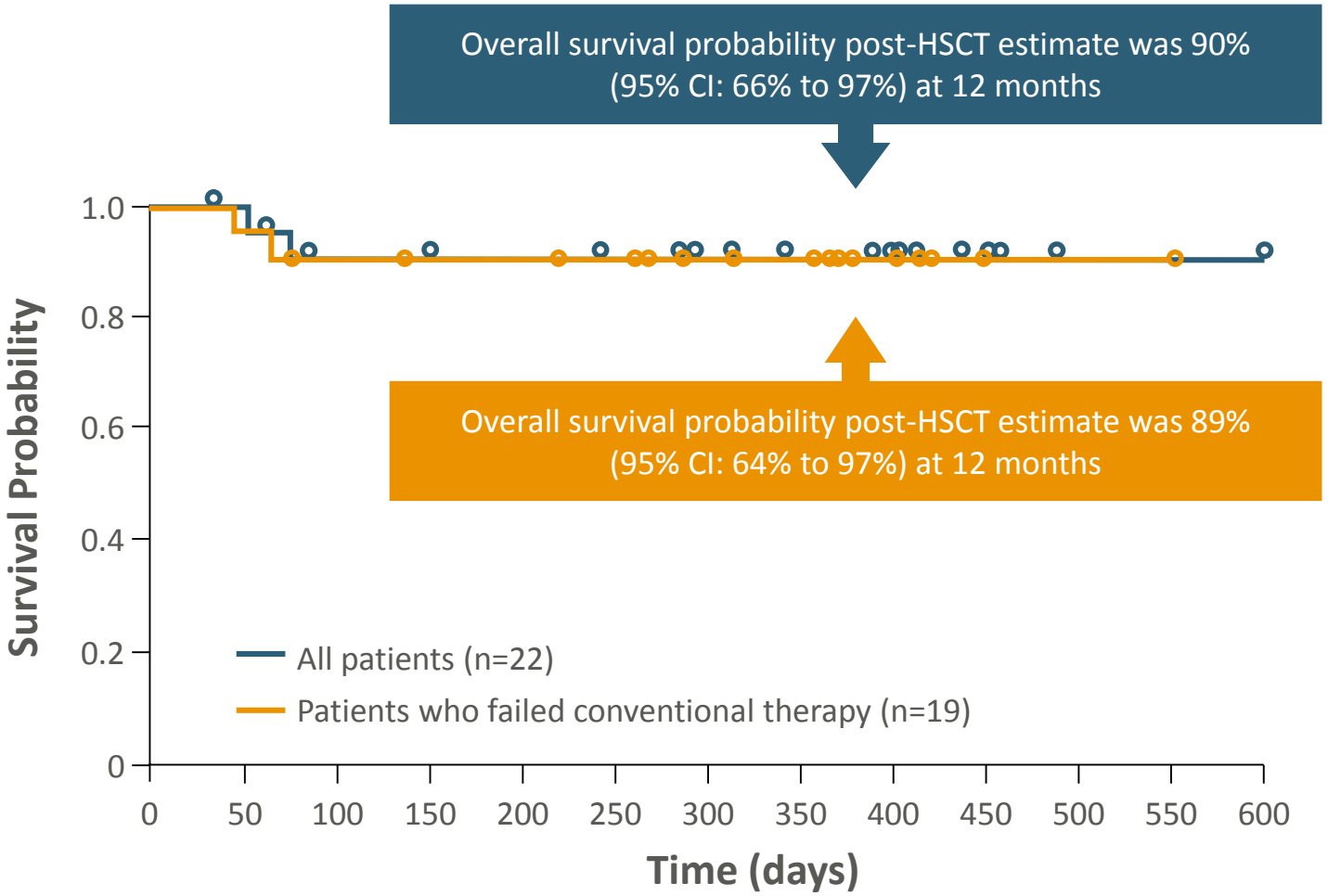
Among patients who failed conventional therapy, 20/27 patients were alive at last observation*

Among all treated patients, 24/34 patients were alive at last observation*

* Last observation was defined as up to 1 year after HSCT or after last emapalumab infusion

1. Jordan et al. TCT 2019

Survival post-HSCT — secondary endpoint

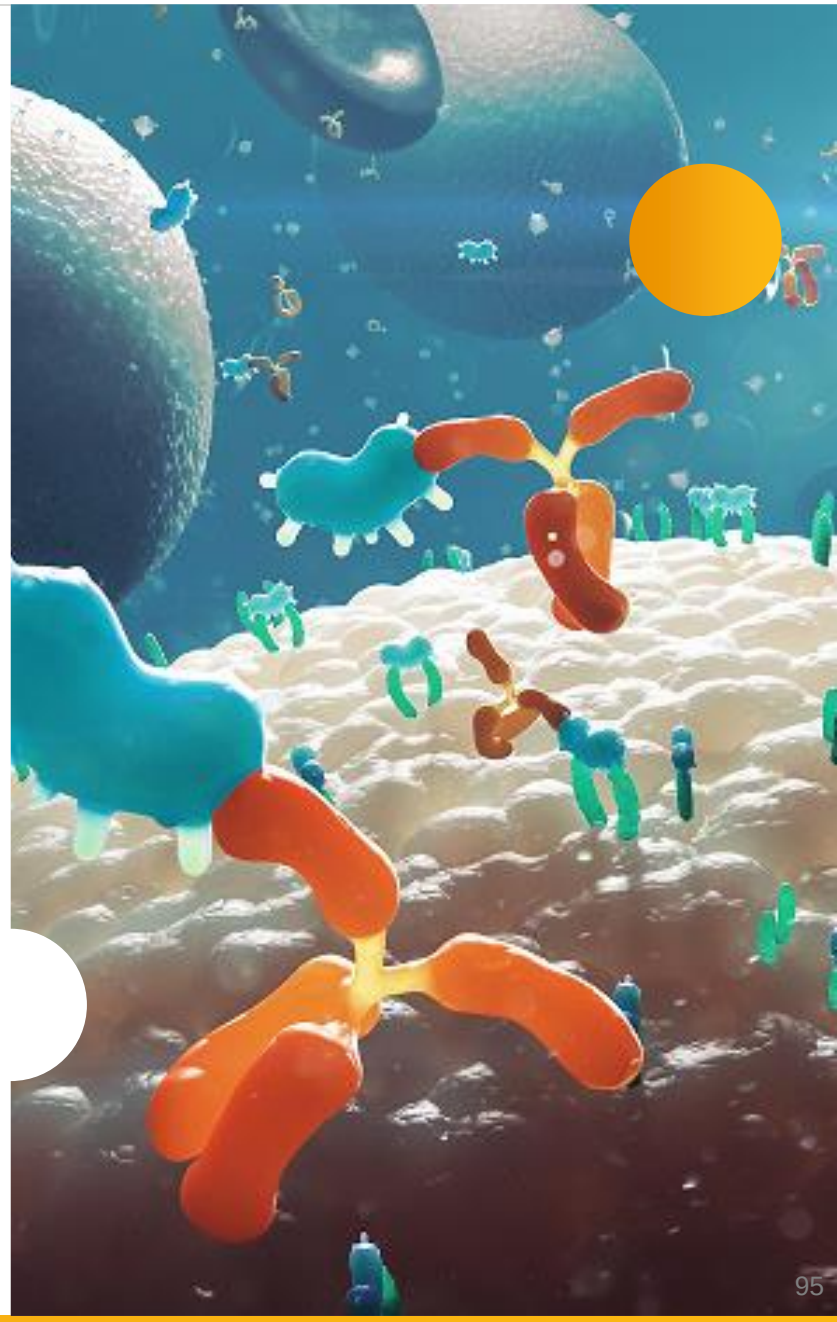


2 patients died after HSCT due to septic shock and respiratory failure (one experienced primary graft failure)

1. Jordan et al. TCT 2019

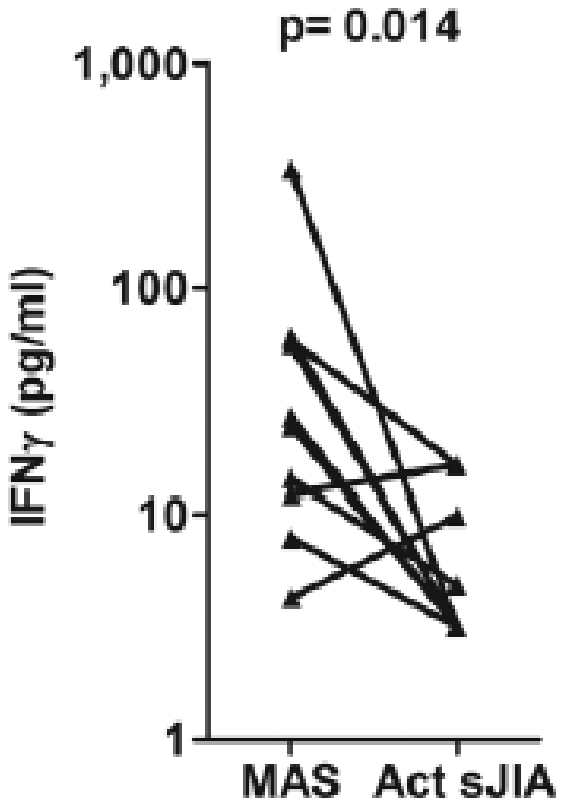
2019 R&D investments in emapalumab

- In 2019 we will make investments into clinical activities:
- secondary HLH in children with autoimmune Systemic Juvenile Idiopathic Arthritis (sJIA) Developing Macrophage Activation Syndrome
- adult patients with malignancy and non-malignancy induced secondary HLH (in planning)
- preemptive treatment of graft failure in children undergoing hematopoietic stem cell transplantation (in planning)



Clinical study in secondary HLH in children with autoimmune Systemic Juvenile Idiopathic Arthritis (sJIA) developing Macrophage Activation Syndrome is supported by pre-clinical and clinical data

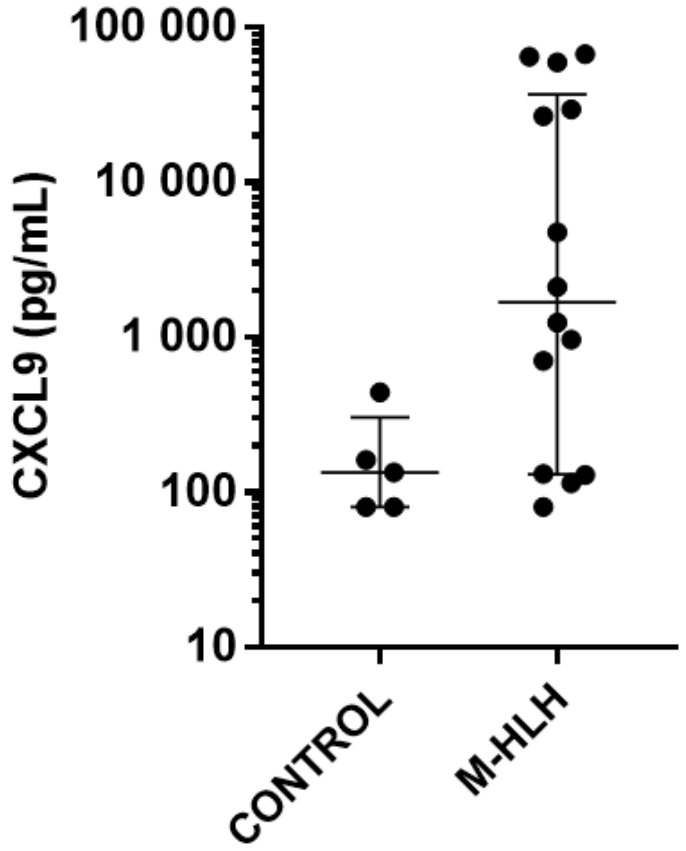
- Phase 2 study in patients < 18 years with sJIA patients with MAS having shown inadequate response to high-dose glucocorticoid treatment to evaluate safety, tolerability, pharmacokinetics and efficacy
- Sample size: 10 patients
- Total treatment duration is 4 weeks
- Starting dose of emapalumab 6 mg/kg



Prencipe G, et al. J Allergy Clin Immunol. 2018;141:1439-1449; ClinicalTrials.gov Identifier: NCT03311854
Bracaglia C,et al. Ann Rheum Dis; 2017;76:166–172.

Adult patients with sHLH have a IFN-g signature
Clinical study to be initiated in 2019

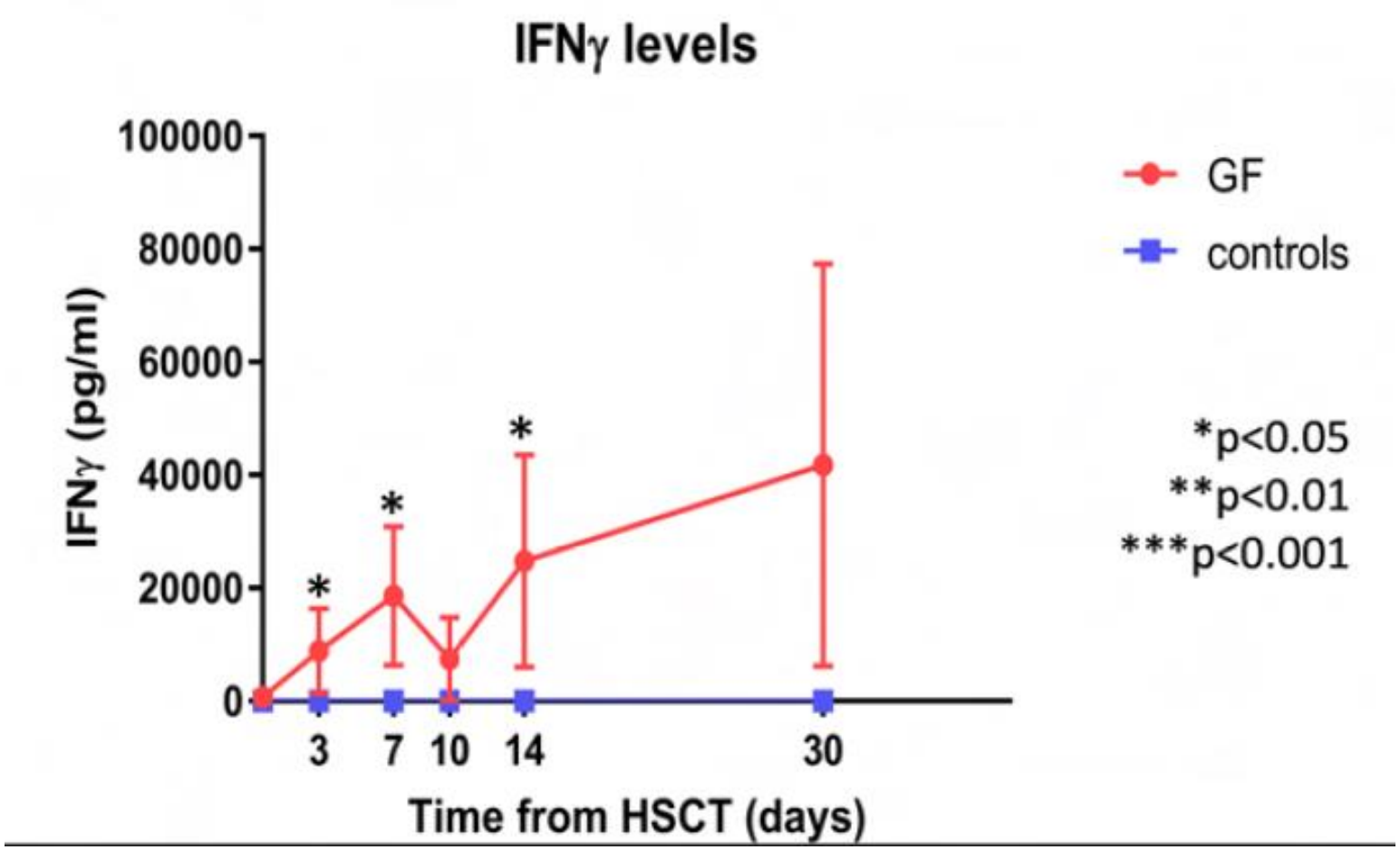
- A phase 2/3 study to evaluate the efficacy, safety, and pharmacokinetics of emapalumab in adult patients with secondary haemophagocytic lymphohistiocytosis
- Initial sample size (adaptive design): 10 patients in each of 2 strata (malignancy and non-malignancy associated HLH)
- Treatment duration will be variable depending on response
- Primary endpoint is at Week 4
- Drug regimen: emapalumab administered IV at an initial dose of 6 mg/kg



"Control" are pts diagnosed with malignancy only

dData on file

Increased serum levels of IFNγ seen in children experiencing graft failure
– Possibility for early diagnosis and intervention with targeted neutralisation of IFNγ



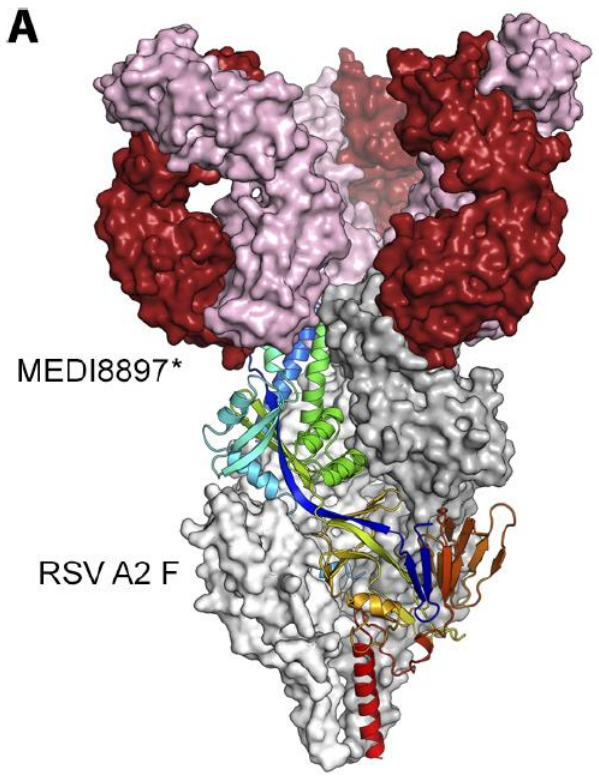
N=15/15

Merli P et al. *doi:10.3324/haematol.2019.216101*

Immunology

MEDI8897

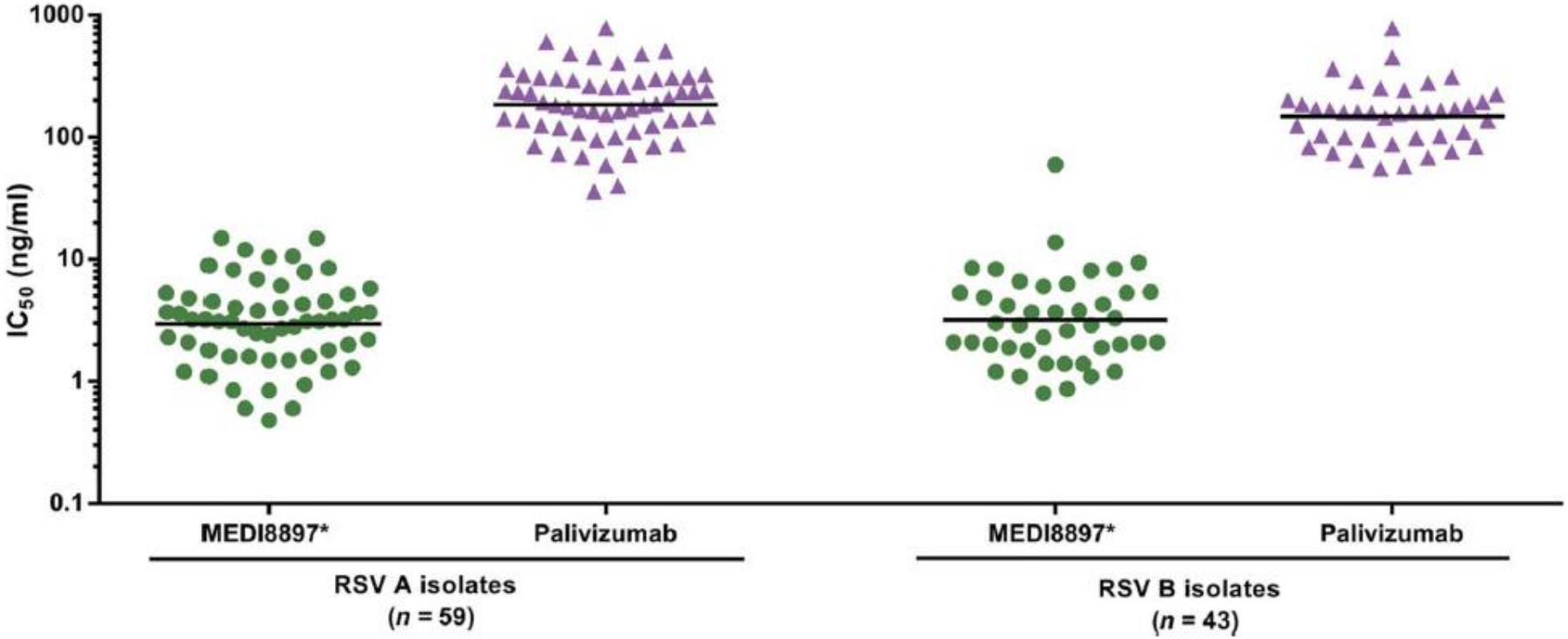
MEDI8897: extended half-life anti-RSV F monoclonal antibody



- Human antibody against RSV with greater potency than palivizumab in in-vitro and pre-clinical models
- Engineered to have an extended half-life thereby potentially enabling a single dose to cover an RSV season
- Received Fast Track Designation from the US FDA in 2015 and US FDA Breakthrough Therapy Designation in 2019
- Primary efficacy results for the phase 2b showed that the study met its primary endpoint, defined as a statistically significant reduction in the incidence of medically attended lower respiratory tract infection (LRTI) caused by reverse transcriptase polymerase chain reaction-confirmed RSV for 150 days after dosing
- The current development plan includes initiation of a phase 3 trial in healthy full-term and late pre-term infants

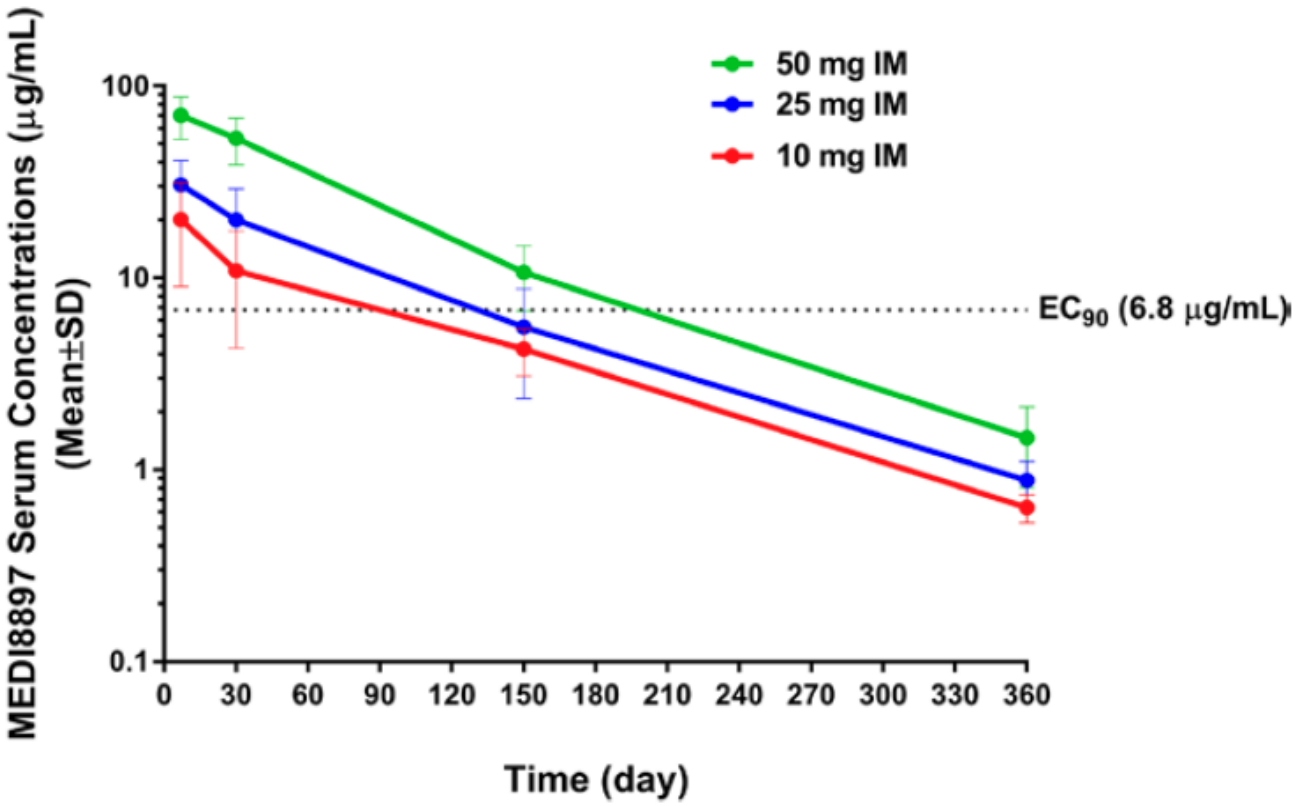
Zhu et al., Sci. Transl. Med. 9 (2017)
Domachowske et al Pediatr Infect Dis J 2018;37:886-892
AstraZeneca Q3. November 2018. https://www.astrazeneca.com/content/dam/az/PDF/2018/Q3/Year-To-Date_and_Q3_2018_Results_announcement.pdf
MEDI8897 is being developed in partnership between AstraZeneca and Sanofi Pasteur

MEDI8897 is 50-fold more active against RSV isolates in comparison to palivizumab (*in vitro*)



Zhu et al., Sci. Transl. Med. 9, eaaj1928 (2017)

Data from healthy preterm infants supports single RSV-season dosing with MEDI8897



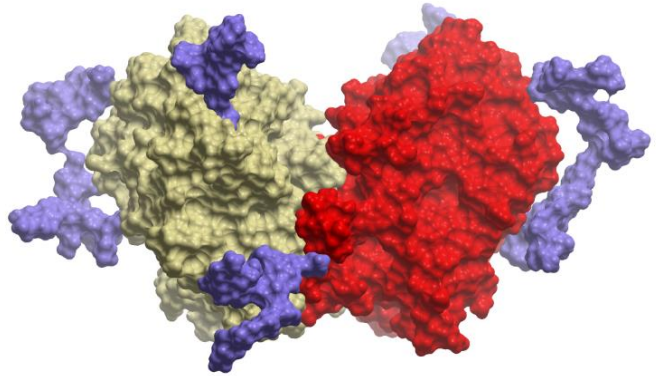
*t*1/2 of MEDI8897 in infants was estimated to be 63–73 days. Palivizumab its 19–27 days
Pediatr Infect Dis J 2018;37:886–892; *Antimicrob Agents Chemother*. 2012;56:4927–4936

Specialty Care

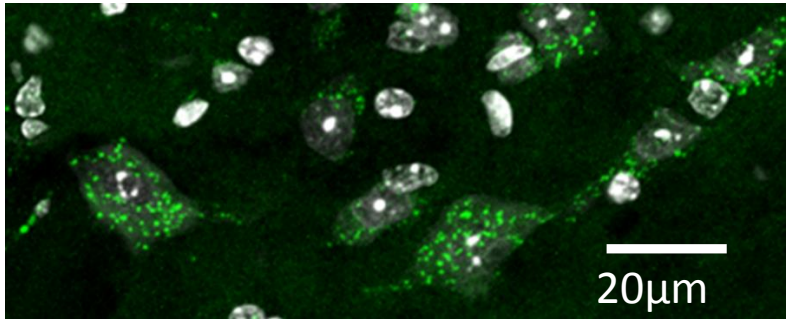
SOBI003

SOBI003 for mucopolysaccaridosis IIIA (MPS IIIA)

- A rare systemic disease with a significant CNS component due to incomplete breakdown and lysosomal storage of heparan sulfate (HS)
- High morbidity and mortality
- Caused by mutations in gene for sulfamidase enzyme
- No treatment available for MPS IIIA
- SOBI003: a recombinant sulfamidase using proprietary Modifa™ technology with potential to meet unmet needs in MPS IIIA
- SOBI003 is effective in preclinical models of MPS IIIA
- Orphan Drug Designation in EU and US and Fast Track Designation in the US
- First in human study is ongoing – 2nd cohort initiated



SOBI003 - chemically modified recombinant human sulfamidase



Distinct intracellular SOBI003 fluorescence (green) indicates uptake into lysosomes in nerve cells in the CNS.

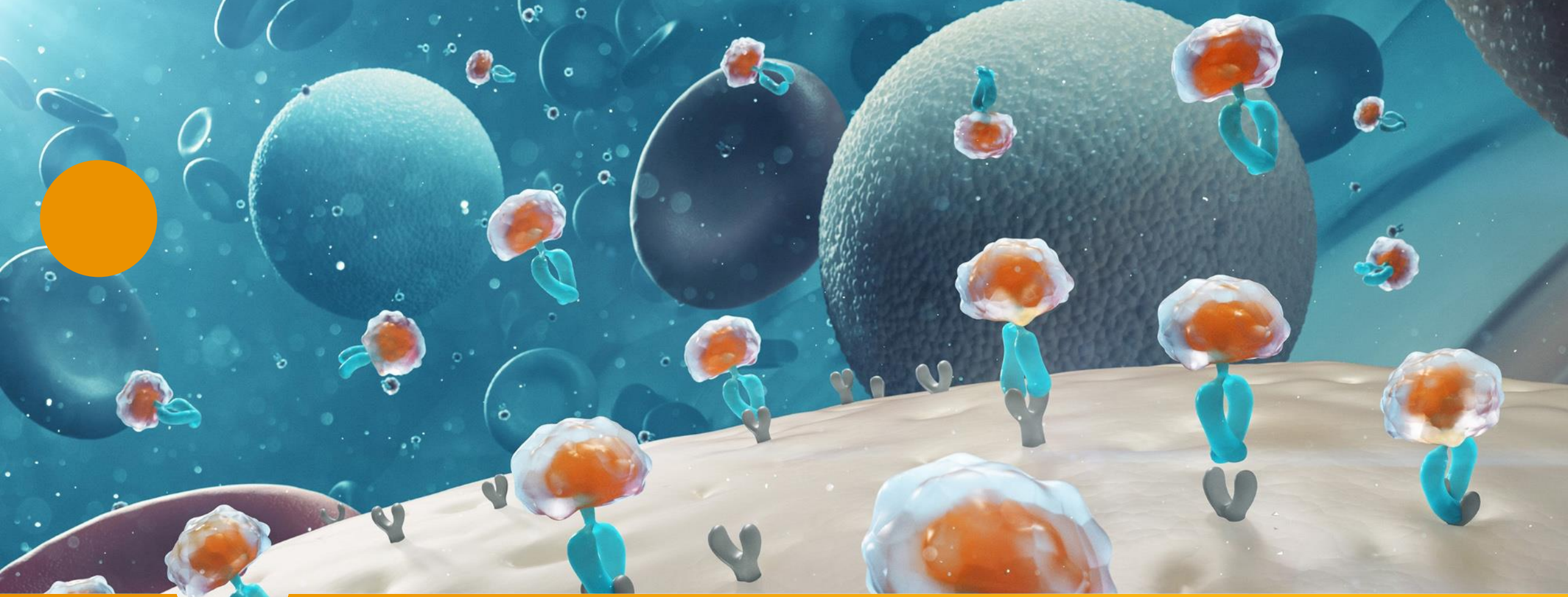

sobi
rare strength

Concluding remarks

Guido Oelkers
CEO

Key messages

- We are stronger than ever and have over the past two years made significant achievements
  – The business is on a whole new trajectory
- I see ample opportunity to take Sobi to the next level
  - Fundamentally attractive market
  - Best-in-class products on the market, well positioned for growth
  - Our rare disease R&D pipeline is increasing in value
  - We remain committed to M&A and there are many opportunities out there
- We remain committed to our strategic direction around four focus areas:
  - Drive Haemophilia penetration
  - Develop Specialty Care and Immunology
  - Grow US business and strengthen position in EMENAR
  - Strengthen R&D pipeline
- 2019 guidance remains unchanged; SEK 12.5-13.0 bn revenues, SEK 5.0-5.3 bn EBITA
- Sobi – Rare Strength



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