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## Hansa Biopharma today



Successful track record...
Strong momentum...
Promising future...

## A validated technology

#### VALIDATION ACROSS THREE AREAS

- Approval and Market Access in EU in kidney transplantations
- Proof of concept in autoimmune diseases
- Partnerships to explore gene therapy

## Idefirix® is our first approved drug in Europe\* EUROPE KIDNEY TRANSPLANTS

For highly sensitized patients in Europe

## Broad pipeline in transplantation and autoimmunity PROGRAMS IN CLINICAL DEVELOPMENT

US kidney transplants
Anti-GBM
Guillain-Barré syndrome (GBS)
Antibody mediated kidney transplant rejection (AMR)
Next gen program "HNSA-5487

## Established a high-performance organization

### NEW COMPETENCIES ADDED

160 employees March 2023

Highly qualified team with 20 years on average in life science Purpose driven culture

## With current cash position Hansa is financed into 2025

#### **FINANCIALS**

SEK ~1.3bn in Cash and short term investments (USD ~130m) End of March 2023

## Created shareholder value and diversified our ownership base

MARKET CAPITALISATION (USD): ~300m (May 2023)

Listed on Nasdaq Stockholm 20,000 shareholders

Foreign ownership make up ~47% through leading international life science specialist funds



\*\*Actual patient has given consent to provide images

\*Idefirix approved in EEA under conditional approval for kidney transplantation

## **Imlifidase**

#### A novel approach to eliminate pathogenic IgG

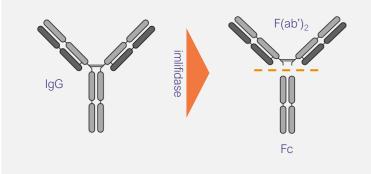
## Origins from a bacteria Streptococcus pyogenes

- Species of Gram-positive, spherical bacteria in the genus Streptococcus
- Usually known from causing a strep throat infection



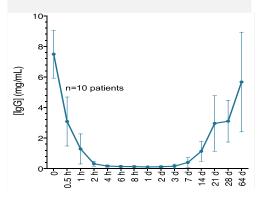
#### A unique IgG antibody-cleaving enzyme

- Interacts with Fc-part of IgG with extremely high specificity
- Cleaves IgG at the hinge region, generating one F(ab')2 fragment and one homo-dimeric Fc-fragment



#### **Inactivates IgG in 2-6 hours**

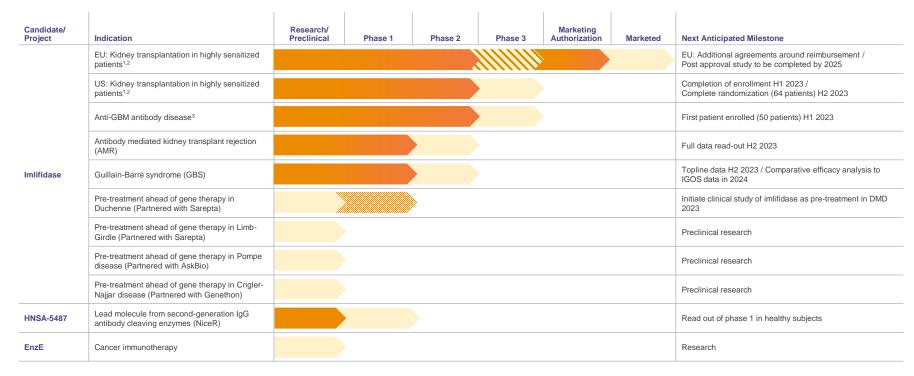
- Rapid onset of action that inactivates IgG below detectable level in 2-6 hours
- IgG antibody-free window for approximately one week





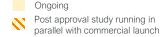


## Broad clinical pipeline in transplantation and auto-immune diseases



<sup>&</sup>lt;sup>1</sup> Results from the Phase 1 study have been published, Winstedt el al. (2015) PLOS ONE 10(7)





<sup>&</sup>lt;sup>2</sup> Lorant et al American Journal of Transplantation and 03+04 studies (Jordan et al New England Journal of Medicine)

<sup>&</sup>lt;sup>3</sup> Investigator-initiated study by Mårten Segelmark, Professor at the universities in Linköping and Lund

## Our unique antibody cleaving enzyme technology may have relevance across a range of indications

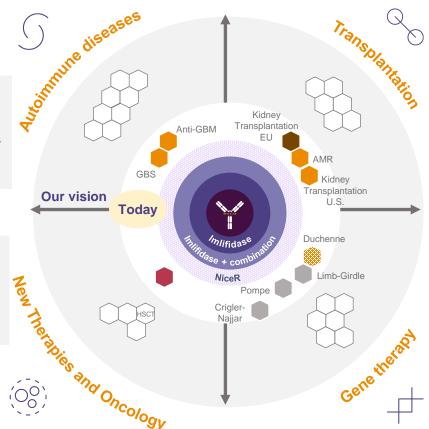
Targeting rare IgG mediated diseases

## Anti-GBM paves the way for development in other autoimmune diseases

- · Rapidly progressive glomerulonephritis
- · Neurological disorders
- · Skin and blood disorders

## IgG-cleaving enzymes to enable or even potentiate cancer therapy

- Allogenic stem cell (bone marrow) transplantation (HSCT)
- Enzyme-based antibody Enhancement (EnzE)



#### **Expanding our commercial franchises**

Regulatory approval (conditional)

Clinical development

Planned clinical trial

Partnership (preclinical development)

Preclinical development

Potential indications (currently not pursued)

## Shaping a new standard for desensitization will help enable new indications in transplantations

- Antibody mediated rejection (AMR) in kidney transplantation
- Other transplantation types

## Exploring opportunities in gene therapy

- Encouraging preclinical data published in Nature
- Validation through collaborations with Sarepta, AskBio and Genethon
- Wide indication landscape beyond



## Imlifidase in kidney transplantation





## Idefirix® (imlifidase) has received conditional approval in the European Union

given consent to provide images

Low transplants transplants ~70% of patients<sup>1,2</sup> 15-20% of patients<sup>1,2</sup> 10-15% of patients<sup>1,2</sup> Non or less sensitized Highly sensitized (cPRA < 20%) (cPRA > 80%)Highly sensitized Highly sensitized patients unlikely to patients that are be transplanted likely to be under available transplanted with a KAS, including compatible donor prioritization programs Idefirix® is indicated for **Potential** 

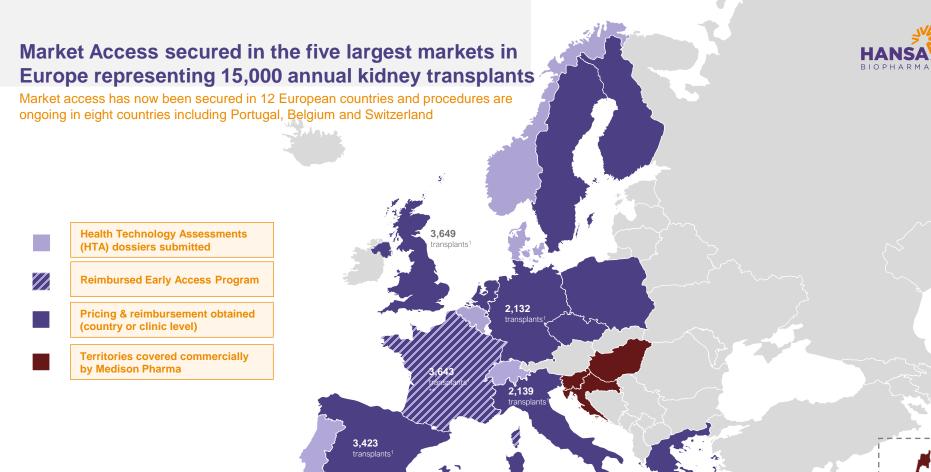
desensitization treatment of highly sensitized adult kidney transplant patients with positive crossmatch against an available deceased donor.

The use of Idefirix® should be reserved for patients unlikely to be transplanted under the available kidney allocation system including prioritization programs for highly sensitized patients









<sup>&</sup>lt;sup>1</sup>Annual kidney transplantations 2019 (pre-Corona)

<sup>\*</sup>Transplantation data is from Global Observatory on Donation and Transplantation, 2019

<sup>\*\*</sup>Pricing & reimbursement obtained in France on an early access basis

## First patient experiences with Idefirix in highly sensitized kidney patients post approval published



## 29-year-old woman transplanted with Idefirix at Erasmus Medical Center, Rotterdam

The woman has had kidney disease since childhood and has been dialysis dependent since 2016, after previously having had two transplantations where the organs were rejected.

Due to high levels of antibodies, it was virtually impossible for her to find a match through Euro transplant but in March 2022, the 29-year-old was transplanted using Idefirix and is since doing well.

"She gained new perspective on a good life through transplantation" says nephrologist Annelies de Weerd 54-year-old man successfully transplanted at Vall d'Hebron, Barcelona after being on dialysis since 1984

The first patient transplanted in the post-approval study was a 54-year-old man who had been on dialysis since 1984. After two failed transplantation attempts in the 90s, the patient's immune system became sensitized, with very high antibody levels.

In May 2022, the patient received imlifidase treatment followed by a kidney transplant. After three months, he continues to be followed up on and does not require dialysis.

"This drug may open the door to transplantation for a group of highly sensitized individuals with virtually no option for a compatible transplant." says Dr. Francesco Moreso

Link article in Amazing Erasmus from July 7, 2022

Link article from Vall d'Hebron news forum August 25, 2022

# Clinical development programs





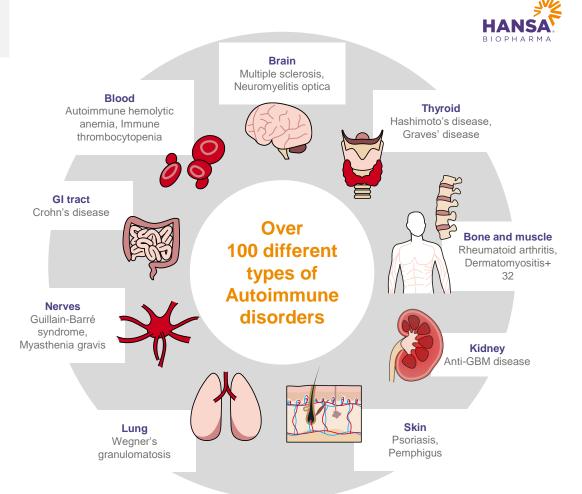
## **Autoimmune attacks**

A result of when the body's immune system by mistake damages its own tissue

Autoimmune disease remains a big challenge and requires immediate treatment

#### What is an autoimmune disease?

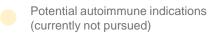
- Immune-mediated destruction of autologous cells and/or tissues
- Interplay between predisposing genes and triggering environmental factors (e.g. bacteria or virus), leading to loss of self-tolerance
- 3-5%¹ of populations affected; more common in women (75%)²



## Hansa's antibody cleaving enzyme technology

may have relevance in several autoimmune diseases where IgG plays an important role in the pathogenesis







\*Total disease populations in EU & US, based on prevalence and population data

## Rapidly progressive glomerulonephritis



~1 000 patients\*1

Lupus nephritis ~35 000\*2

ANCAassociated vasculitis ~325 000\*3

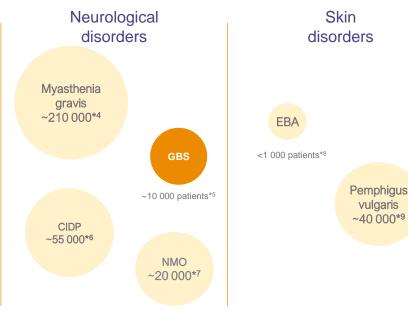
CIDP: Chronic inflammatory demyelinating polyradiculoneuropathy NMO: Neuromyelitis optica

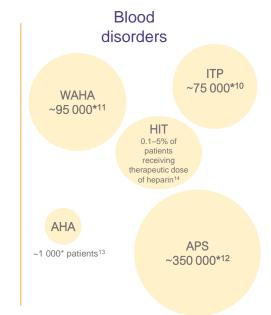
**EBA:** Epidermolysis bullosa acquisita **ITP**: Immune thrombocytopenia

WAHA: Warm antibody hemolytic anemia

APS: Antiphospholipid syndrome
AHA: acquired hemophilia A

HIT: Heparin-induced thrombocytopenia





<sup>1</sup>DeVrieze, B.W. and Hurley, J.A. *Goodpasture Syndrome*. StatPearls Publishing, Jan 2021. https://www.ncbi.nlm.nih.gov/books/NBK459291/ [accessed 2021-03-29]

<sup>2</sup>Patel, M et al. *The Prevalence and Incidence of Biopsy-Proven Lupus Nephritis in the UK*. Arthritis & Rheumatism, 2006.

<sup>3</sup>Berti A, Cornec D, Crowson CS, Specks U, Matteson EL. *The Epidemiology of ANCA Associated Vasculitis in the U.S.: A 20 Year Population Based Study*. Arthritis Rheumatol. 2017;69.

\*Myasthenia Gravis. National Organization for Rare Disorders, https://rarediseases.org/rare-diseases/myasthenia-gravis/ [accessed 2021-03-29]

"Guillain-Barré syndrome. Orpha.net, <a href="https://www.orpha.net/consor/cgi-bin/OC">https://www.orpha.net/consor/cgi-bin/OC</a> Exp.php?Lng=GB&Expert=2103 [accessed 2021-03-29] "Ormorio Inflammatory Demyelinating Polyneuropathy: Considerations for Diagnosis, Management, and Population Health. The American Journal of Managed Care, <a href="https://www.ajmc.com/view/chronic-infammatory-demyelinating-polyneuropathy-considerations-for-diagnosis-management-and-population-health faccessed 2021-03-29]</a>

Marrie, R.A. The Incidence and Prevalence of Neuromyelitis Optica. International Journal of MS Care, 2013 Fall: 113-118

<sup>8</sup>Mehren, C.R. and Gniadecki, R. *Epidermolysis bullosa acquisita: current diagnosis and therapy*. Dermatol Reports, 2011-10-05

"Mertenteil, S. et al. Prevalence Estimates for Pemphigus in the United States. JAMA Dermatol, May 2019: 627-629.
"Offination Thrombocytopenia. National Organization for Rare Disorders, <a href="https://trarediseases.org/rare-diseases/immune-thrombocytopenia//Taccesses/2021-03-291">https://trarediseases.org/rare-diseases/immune-thrombocytopenia//Taccesses/2021-03-291</a>

11 Warm Autoimmune Hemolytic Anemia. National Organization for Rare Disorders, <a href="https://rarediseases.org/rare-diseases/warm-autoimmune-hemolytic-anemia/">https://rarediseases.org/rare-diseases/warm-autoimmune-hemolytic-anemia/</a> [accessed 2021-03-29]

<sup>12</sup>Litvinova, E. et al. *Prevalence and Significance of Non-conventional Antiphospholipid Antibodies in Patients With Clinical APS Criteria*. Frontiers in Immunology. 2018-12-14.

13NORD, Acquired Hemophilia [accessed 2022-10-17], available at <a href="https://rarediseases.org/rare-diseases/acquired-hemophilia/">https://rarediseases.org/rare-diseases/acquired-hemophilia/</a>

<sup>14</sup>Hogan M, Berger JS. Heparin-induced thrombocytopenia (HIT): Review of incidence, diagnosis, and management. Vascular Medicine. 2020:25(2):160-173. doi:10.1177/1358863X19898253

## Anti-GBM, a rare acute autoimmune disease

#### **Incidences**

1.6

in a million affected annually<sup>1,2</sup>

# Inflammation in the glomeruli Early symptoms are unspecific... ...but can lead to rapid destruction of the kidney and/or the lung.

## Today's Standard of Care

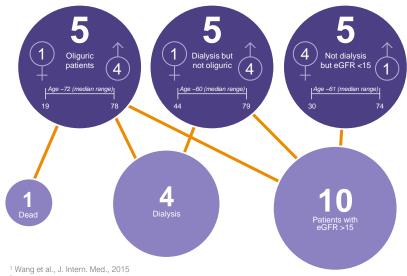
- · Plasma Exchange
- Cyclophosphamide (CYC)
- Glucocorticoids

#### Data published in JASN



## Results from Phase 2 study of imlifidase in anti-GBM disease published in Journal of American Society of Nephrology (JASN)<sup>3</sup>

 10 out of 15 patients were dialysis independent after six months vs. the historical cohort<sup>4</sup>, where only 18% had functioning kidney



- <sup>2</sup> Desai et al., Front. Endocrinol., 2019
- 3 Uhlin et al. JASN (2022)
- <sup>4</sup> McAdoo et al.: Patients double-seropositive for ANCA and anti-GBM antibodies have varied renal survival, frequency of relapse, and outcomes compared to single-seropositive patients. Kidney Int 92: 693–702. 2017

## Guillain-Barré Syndrome (GBS) is an aggressive acute autoimmune attack on the peripheral nervous system

Phase 2 study to evaluate safety and effectiveness of imlifidase in patients diagnosed with GBS

#### **Incidences**

1-2

in 100,000 annually or ~10,000 in 7MM

#### Indication

Rapidly and progressively weakens extremities (e.g., paralyzing arms, legs)

Triggered frequently by viral infections (such as Influenza, Zika virus, EBV, CMV and COVID-19)

Diagnosis and management complicated due to heterogenicity

#### **Today's Standard of Care**

- Intravenous immune globulin (IVIG) or
- Plasma Exchange (PLEX)

#### High unmet need

1/3 of hospitalized GBS patients require mechanical ventilation

Remaining long lasting symptoms in ca 40% of patients incl. fatigue, pain, psychological distress and muscle weakness

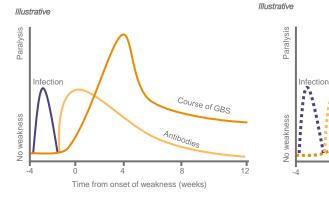
Mortality 3-7%

FDA granted Orphan Drug Designation to imlifidase for the treatment of GBS



#### Potential with imlifidase

Time from onset of weakness (weeks)



#### STUDY DESIGN

- Study is an open-label, single arm, multi-center trial evaluating safety, tolerability and efficacy of imlifidase, in combination with standard of care, IVIg, to treat GBS
- Data will be compared with a control group from the International Guillain-Barré Syndrome Outcome Study (IGOS)

#### **SUBJECTS**

30 patients targeted at ten clinics



- Completion of enrollment (H1'23) announced March 31, 2023
- Topline data H2'23
- Comparative efficacy analysis to IGOS data in 2024



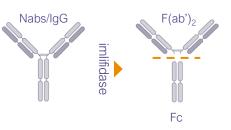
## Neutralizing antibodies (Nabs) are immunological barriers in gene therapy; imlifidase may potentially eliminate Nabs

Between approximately 5% and 70%<sup>1,2</sup> of patients considered for gene therapy treatment carry neutralizing anti-AAV antibodies forming a barrier for treatment eligibility

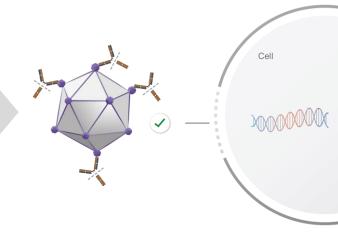
Cell

1 Antibodies prevent effective transfer of healthy gene sequence and can be a safety concern

Imlifidase is a unique IgG antibodycleaving enzyme that cleaves IgG at the hinge region with extremely high specificity



The idea is to eliminate the neutralizing antibodies as a pre-treatment to enable gene therapy

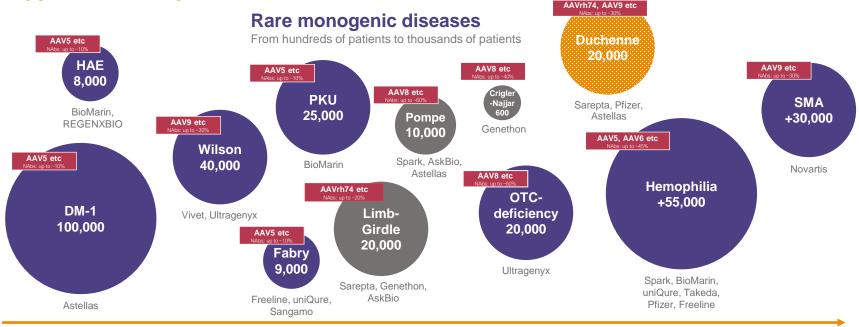




## Systemic gene therapy is an emerging opportunity

with a focus on the potential to correct issues causing genes in rare monogenic diseases

- Preclinical programs with Sarepta, AskBio and Genethon
- Planned clinical studies with Sarepta
- Potential gene therapy indications (currently not pursued)



Late Preclinical Clinical Market

Size of indication (US & EU)





