



Transformational Precision Medicine for Autoimmune Diabetes

Stockholm NASDAQ First North Growth Market – DMYD B

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Targeting Autoimmune Diabetes



Leading clinical stage pipeline

- First-in-class **disease modifying therapies** Diamyd® and Remygen®
- **R&D partnership centered around pivotal Phase 3 trial with JDRF**



De-risked development program

- **Responder patients** identified for Diamyd®, significantly **increasing likelihood for success** in pivotal program
- **Excellent safety** profile, **simple procedure**, **precision medicine** approach and **Orphan designation** support successful commercialization and pricing strategy



Strong growth opportunity

- **Multibillion dollar market** and **label expansion** opportunities
- **Pivotal program** in Type 1 Diabetes (Diamyd®), **Prevention program** Type 1 Diabetes (Diamyd®), establishing **internal GMP biomanufacturing facility**



Experienced team

- Significant **operational experience** in **clinical development** within diabetes
- Access to **world leading** scientists and clinical experts

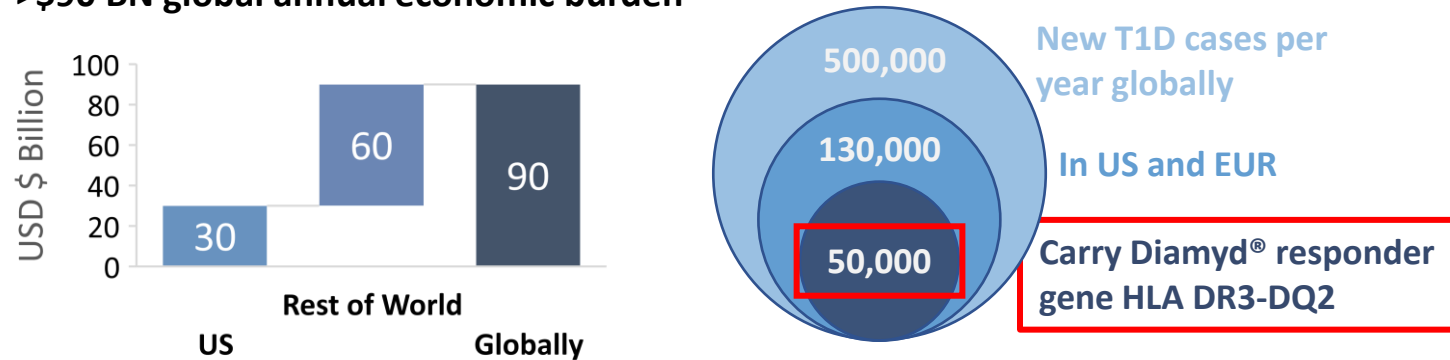
Autoimmune Diabetes: Unmet need & economic burden

Type 1 Diabetes (T1D)

~ 500,000 new cases every year

- More common in Western countries, especially Scandinavia
- Life-long dependence on insulin therapy and blood glucose monitoring

>\$90 BN global annual economic burden*



- Estimated US pricing \$65k – \$100k+
- Market for Type 1 Diabetes with HLA DR3-DQ2 in the US alone \$2BN+

Latent Autoimmune Diabetes in Adults (LADA)

>2 million new cases every year

- 10% of all Type 2 Diabetes patients may have autoimmune diabetes with GAD autoantibodies and faster progression to insulin dependence
- Common in Western countries, but also in India, China and Japan



High risk of serious complications, shorter life-expectancy, decreased quality of life and significant health economic costs











Disease modifying therapies for T1D are predicted to have a multibillion-dollar economic impact - in the US alone

ACCELERATING INTEREST FOR AUTOIMMUNE DIABETES FROM PHARMA & REGULATORS

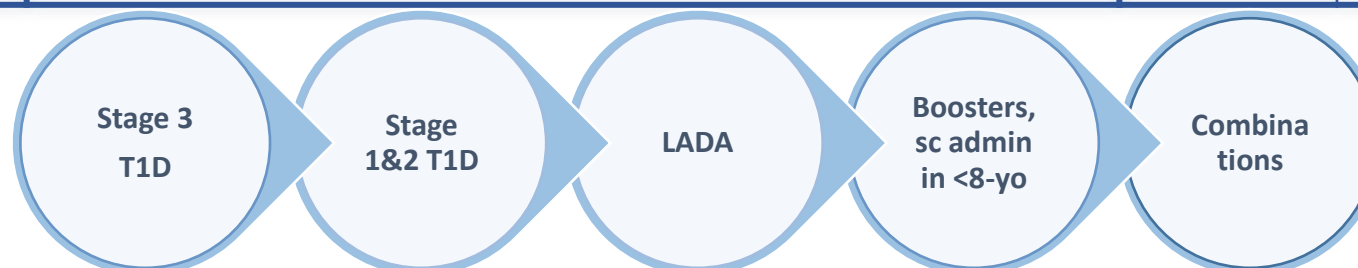
Recent deals and approvals of novel therapies for Type 1 Diabetes

March 2023	\$2.9 billion acquisition of Provention Bio by Sanofi . FDA-approved immunotherapy TZIELD to delay onset of T1D. Sanofi leading large-scale effort to build awareness and commercial landscape in Europe & USA
2019-2023	Vertex Pharmaceuticals acquired Semma Therapeutics in 2019 (\$950M) and ViaCyte in 2022 (\$320M); CRISPR Therapeutics \$100M upfront licensing deal in 2023
April 2023	Novo Nordisk partnership with Aspect Biosystems (\$75M upfront and milestones up to \$650M) to produce 3D printed cells
June 2023	FDA approved cell therapy Lantidra for treatment of difficult-to-control adult T1D
June 2023	Eli Lilly acquired cell therapy company Sigilon in 2023 (deal worth up to \$500M)

Clinical Pipeline

PROGRAM		DEVELOPMENT				STATUS	
Study / Indication	Asset	Preclinical	Phase 1	Phase 2	Phase 3	Global Rights	Milestones
DIAGNODE-3 Recent-onset Stage 3 T1D with HLA DR3-DQ2 & GADA	Diamyd®						Ongoing in EUR & US, interim analysis H2 2024, topline H2 2026
DiaPrecise Stage 1 & 2 T1D with HLA DR3-DQ2 & GADA	Diamyd®						Started Q4 2023
DIAGNODE-B T1D with HLA DR3-DQ2 & GADA; 4th or 5th "booster" dose	Diamyd®						Completed, topline results Q4 2023
GADinLADA LADA with HLA DR3-DQ2 & GADA	Diamyd®						Completed, topline presented at EASD 2022, published
Regenerate-1 T1D for more than 5 years	Remygen®						Completed, topline announced Q2 2023
Insulin-based antigen-specific therapy to treat and prevent T1D with HLA DR4-DQ8 and IAA							

Significant label expansion opportunities for Diamyd®



Diamyd®

Recombinant GAD65 Formulated in Alum (rhGAD65/alum)

Primary Indication (orphan designation)

New-onset (stage 3) Type 1 Diabetes with HLA type DR3-DQ2

Label Expansion

Type 1 Diabetes prevention (stage 1 & 2), LADA

Mechanism of Action

Induce immunological tolerance against GAD65

Clinical Effect and Benefit

Preserve the endogenous insulin production, reduce short- and long-term complications

Mode of Administration

Three intranodal injections one month apart

Development Status

Phase III – Stage 3 T1D

Phase I/II – Stage 1&2 T1D

Phase I/II - LADA

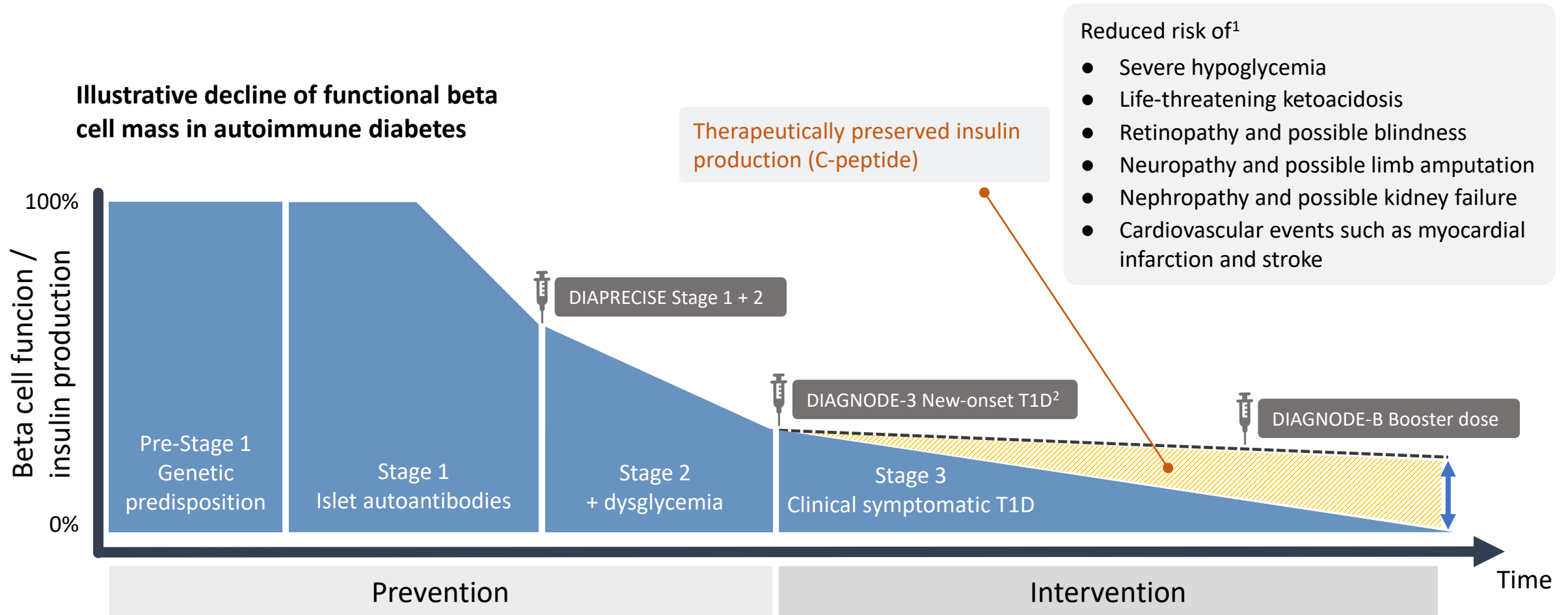
Licensing Status

Global rights available



Focus on preemptive medicine

Diamyd® is designed to prevent diabetes complications and improve glucose control by stopping the autoimmune destruction of beta cells

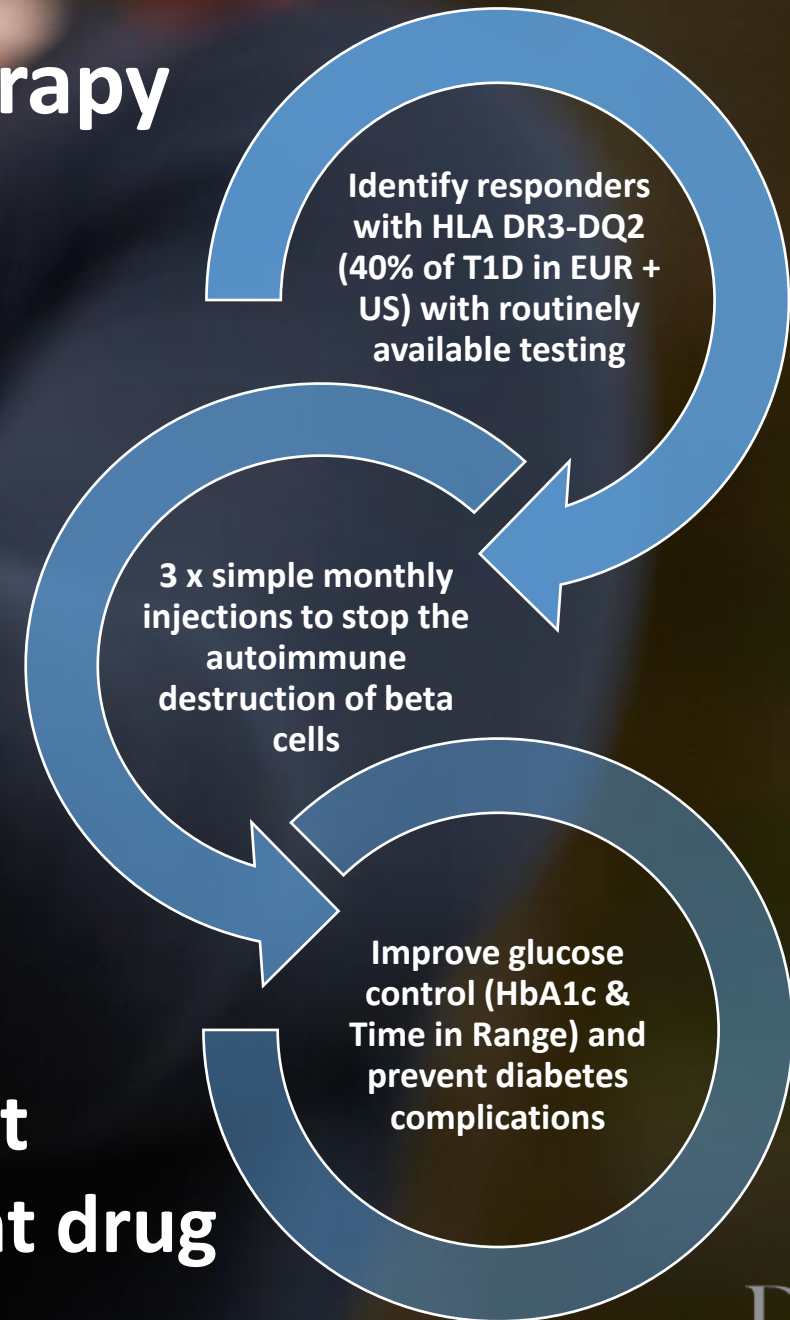


¹ Lam et al. J Clin Invest. 2021 Feb 1;131(3):e143683. Gubitosi-Klug et al. J Clin Invest. 2021;131(3):e143011. McGee et al. Diabet Med. 2014;31(10):1264–1268. doi: 10.1111/dme.12504. Steffes et al. Diabetes Care. 2003;26(3):832–836. Palmer et al. Diabetes. 2004;53(1):250–264.DCCT Investigators. Ann Intern Med. 1998;128(7):517–23.

² Within 6 months from clinical diagnosis of (Stage 3) clinical T1D

The antigen-specific immunotherapy Diamyd® (rhGAD65 in alum)

**Precision Medicine - Treating the right
patient at the right time with the right drug**



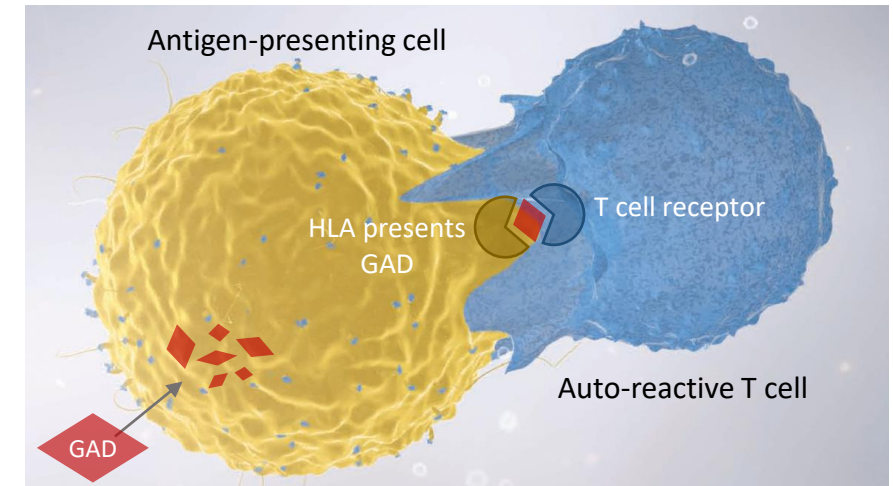
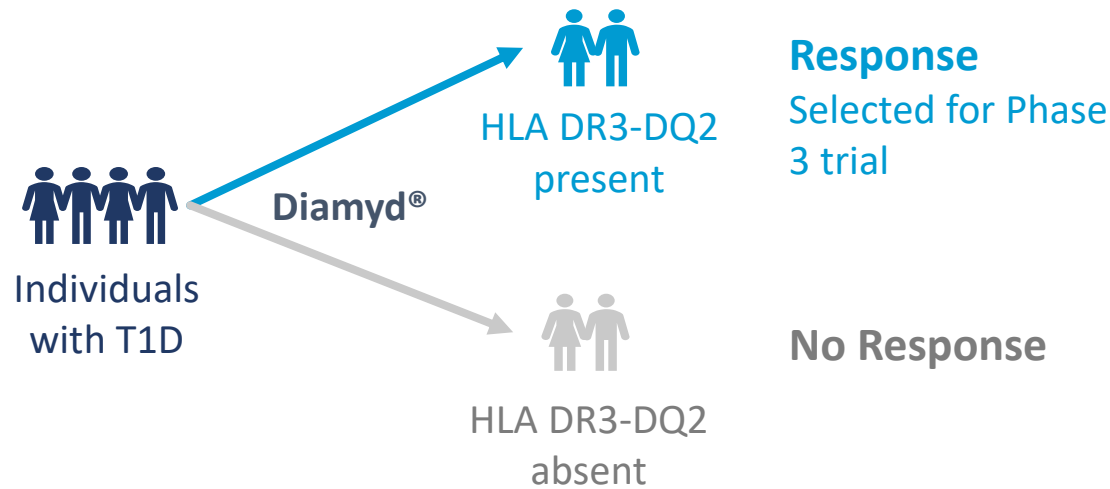
Diamyd® (rhGAD65 formulated in aluminium hydroxide)

In Pivotal Phase 3 Program (recent-onset) aligned with FDA and EMA



- Strong **safety** profile – evaluated in almost 1,000 persons aged 4-70 years
- Compelling efficacy for **preserving insulin producing capacity** and improving glucose control based on data from >600 patients
- **Simple** and short treatment - only 3 outpatient injections, one month apart
- **No hospitalization**, no known major adverse reactions, no immunosuppression, well tolerated
- **Precision medicine** - increased likelihood of clinical & commercial success
- **Responder patients** easily identified by HLA testing routinely available in US and EU

Diamyd® targets the GADA-first T1D endotype with HLA DR3-DQ2 positivity

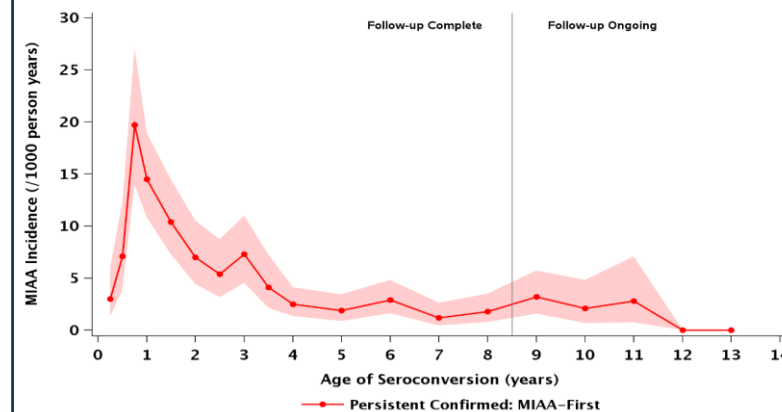
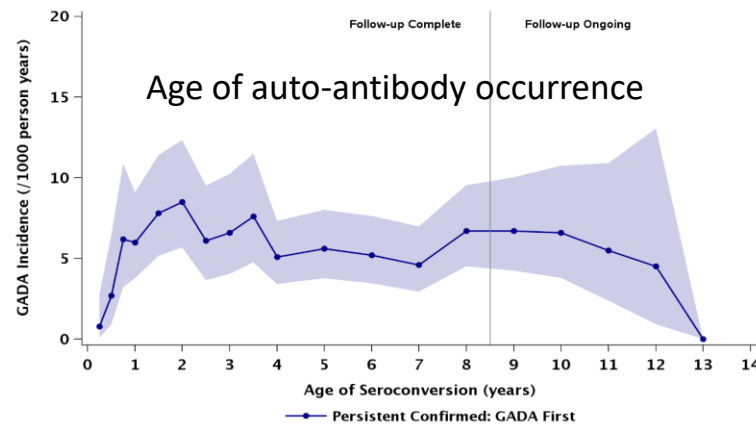


HLA is central to autoimmunity against GAD

Diamyd® responders

GADA-first disease

- HLA DR3-DQ2 (40%)
- Adenovirus F
- *BACH2*
- Likely responders to Diamyd®



IAA-first disease

- HLA DR4-DQ8 (60%)
- Enterovirus B
- *INS*, *PTPN22*, *UBASH3A*
- Likely responders to an insulin-based antigen-specific therapy

Acknowledged Precision Medicine approach

Highlights

- New medical consensus regarding genetically defined groups of T1D
- Strong case for a precision medicine approach targeting likely responders
- Diamyd Medical's approach is to focus on individuals with GAD antibodies and HLA DR3-DQ2 (40% of US + EUR T1D) based on
 - Identification of this responder population in previous clinical trials with Diamyd®
 - A biological rationale as HLA DR3-DQ2 is associated with primary autoimmunity against GAD65 (the active component of Diamyd®)

Diabetes Care Volume 43, January 2020

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Introducing the Endotype Concept to Address the Challenge of Disease Heterogeneity in Type 1 Diabetes

Diabetes Care 2020;43:5–12 | <https://doi.org/10.2337/dc19-0880>

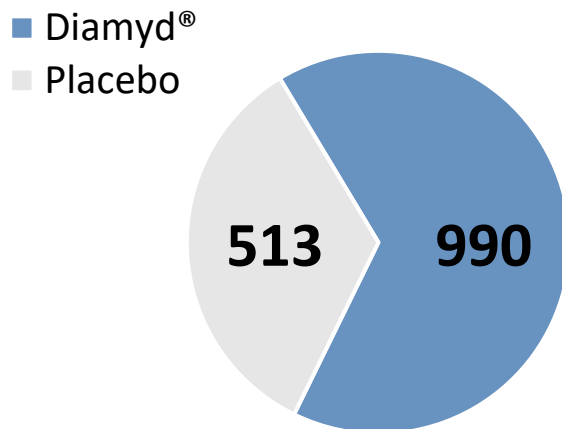
Manuela Battaglia,¹ Simi Ahmed,² Mark S. Anderson,³ Mark A. Atkinson,⁴ Dorothy Becker,⁵ Polly J. Bingley,⁶ Emanuele Bosi,^{1,7} Todd M. Brusko,⁴ Linda A. DiMeglio,⁸ Carmella Evans-Molina,⁹ Stephen E. Gitelman,¹⁰ Carla J. Greenbaum,¹¹ Peter A. Gottlieb,¹² Kevan C. Herold,¹³ Martin J. Hessner,¹⁴ Mikael Knip,¹⁵ Laura Jacobsen,¹⁶ Jeffrey P. Krischer,¹⁷ S. Alice Long,¹¹ Markus Lundgren,¹⁸ Eoin F. McKinney,¹⁹ Noel G. Morgan,^{20,21} Richard A. Oram,^{22,23,24} Tomi Pastinen,²⁵ Michael C. Peters,²⁶ Alessandra Petrelli,¹ Xiaoning Qian,²⁷ Maria J. Redondo,²⁸ Bart O. Roep,^{29,30} Desmond Schatz,¹⁶ David Skibinski,¹¹ and Mark Peakman^{31,32}

Battaglia et al, Introducing the endotype concept to address the challenge of disease heterogeneity in type 1 diabetes, Diabetes Care, 2020

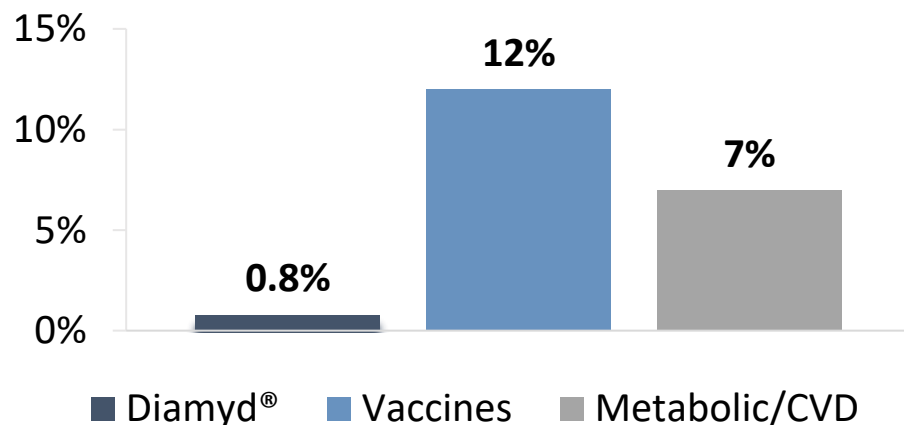
Very Good Safety and Tolerability Profile

No major safety signals in >990 patients exposed to Diamyd®. Drop-out rate <1% across 15 clinical trials.

Total patient exposure in 15 trials



Patient drop-out rate in clinical trials



Summary of clinical safety data

- Most common adverse events: transient tenderness at injection site, injection site edema, mild injection site pain and injection site reaction
- No difference in the rate of occurrence of adverse events between active Diamyd® and placebo treatment
- No major safety signals in 15 clinical trials
- <1% drop-out rate across trials
- Assessed in persons aged 4 – 70 years
- Assessed in persons with T1D, LADA and healthy persons at-risk of developing T1D

Meta-analysis of 3 pre-2014 Trials Identified Responder Patients

Meta-analysis of 3 randomized controlled clinical trials with subcutaneous Diamyd® conducted before 2014 with >500 individuals identified patients carrying HLA DR3-DQ2 gene as responders

44% reduction in C-peptide decline

from Baseline to Month 15 compared to placebo in patients carrying the HLA DR3-DQ2 gene who received 3 or 4 injections of Diamyd®

Diabetologia (2020) 63:2177–2181
<https://doi.org/10.1007/s00125-020-05227-z>

SHORT COMMUNICATION

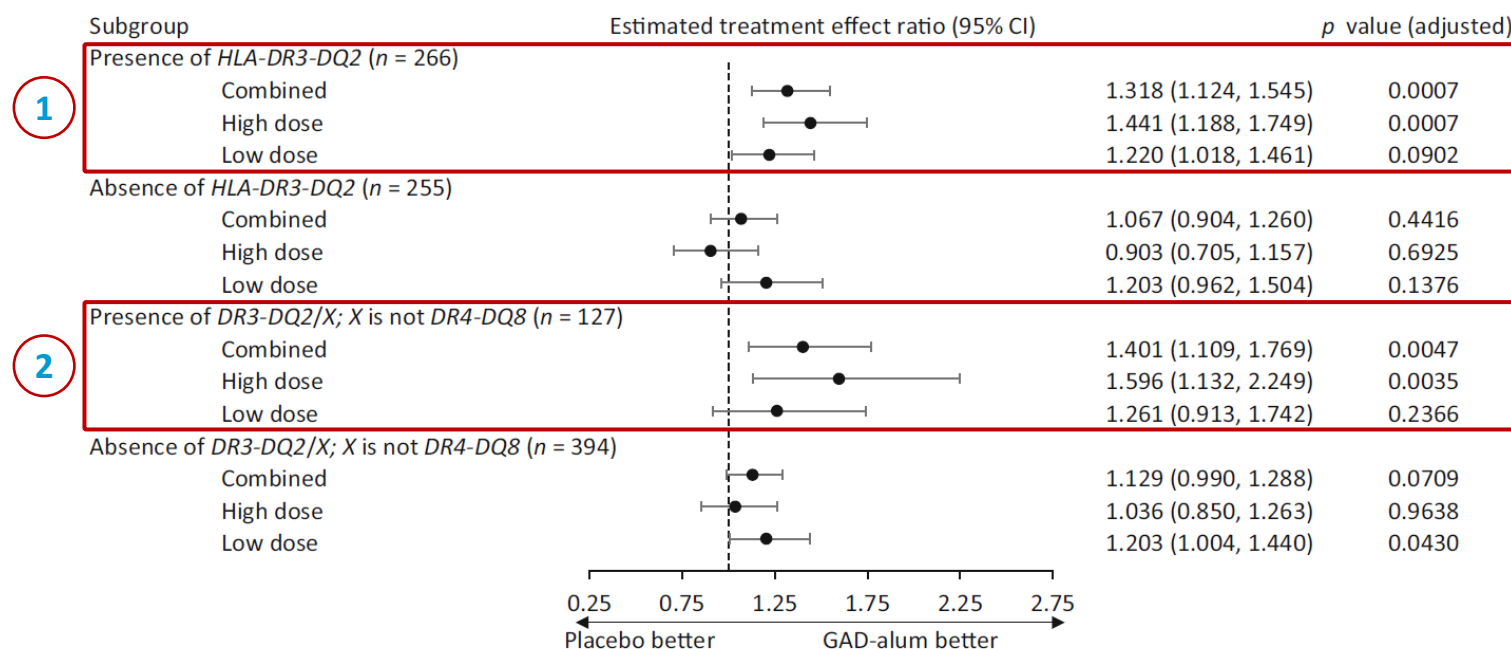
Efficacy of GAD-alum immunotherapy associated with HLA-DR3-DQ2 in recently diagnosed type 1 diabetes

Ulf Hannelius¹ • Craig A. Beam² • Johnny Ludvigsson^{3,4}

Received: 28 April 2020 / Accepted: 11 June 2020 / Published online: 5 August 2020
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Hannelius et al. Diabetologia 2020

Mixed meal tolerance test (MMTT) stimulated C-peptide



High dose = 3 or 4 injections; Low dose = 2 injections; Combined = 2, 3 or 4 injections

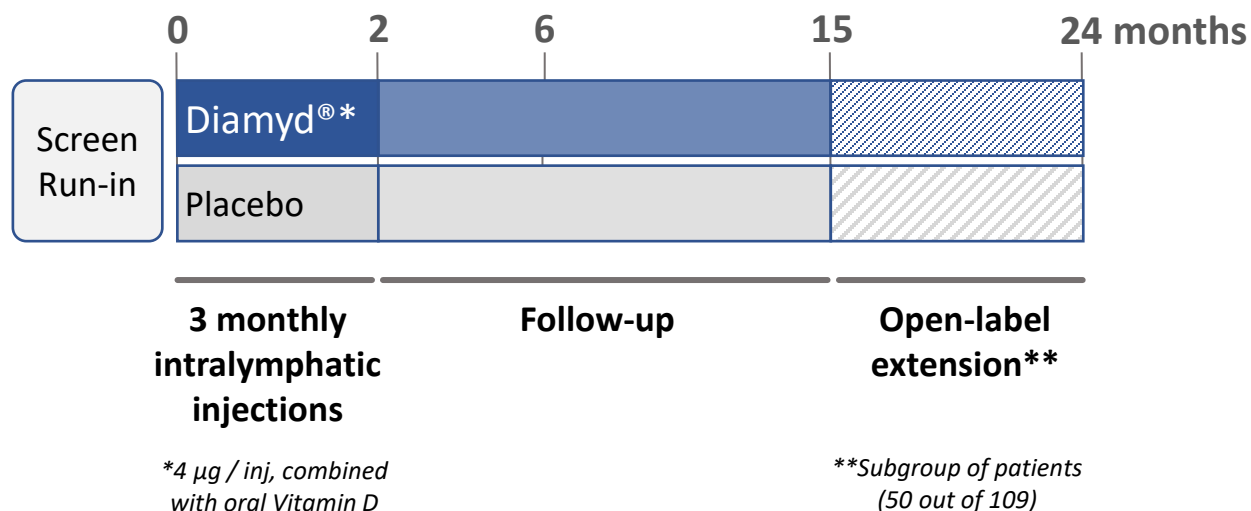
1 Significant treatment effect in subgroup of patients positive for HLA DR3-DQ2 gene (responder patients)

2 Even larger treatment effect in ca. 50% of responder patients with HLA DR3-DQ2 who lack the HLA DR4-DQ8 gene (super responder patients)

DIAGNODE-2 Phase 2b Trial Confirmed Responder Patients

European, multinational, randomized, placebo-controlled, 2-arm trial assessing 3 intralymphatic injections of Diamyd® given on top of standard of care

DIAGNODE-2 DIABETES TRIAL



Primary Endpoint

- Change from Baseline to Month 15 in Mixed Meal Tolerance Test (MMTT) stimulated C-peptide Area under the Curve

Key Secondary Endpoint

- Change in Hemoglobin A1c (HbA1c) between baseline and Month 15
- Change in insulin-dose-adjusted HbA1c (IDAA1c) between Baseline and Month 15
- Change in daily exogenous insulin consumption between Baseline and Month 15

Population

- Persons diagnosed with T1D less than 6 months ago aged 12-24 years and positive for GAD antibodies
- Residual beta cell function: fasting C-peptide ≥ 0.12 nmol/L
- Pre-specified subgroup added to topline readout before database lock: responder patients with HLA DR3-DQ2 genotype

DIAGNODE-2 Phase 2b Trial Confirmed Responder Patients

Diamyd® achieved statistically significant preservation of C-peptide secretion, numerical improvement in HbA1c compared to placebo at Month 15 in patients with HLA DR3-DQ2

**56% reduction in
C-peptide decline**

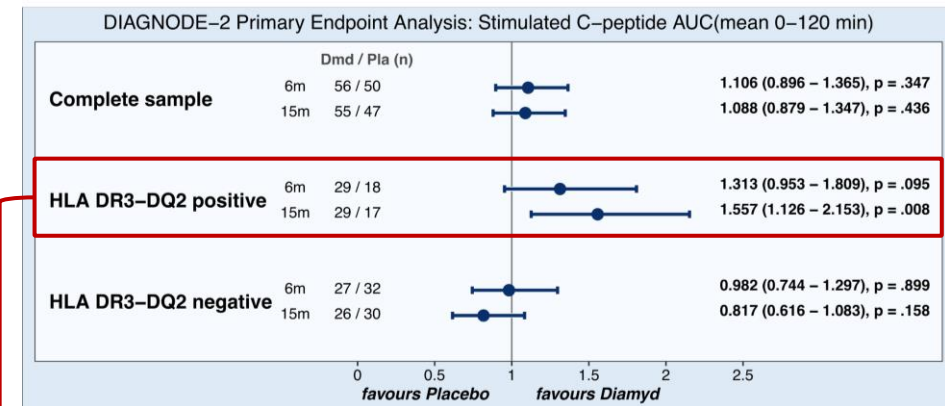
**from Baseline to Month 15 compared
to placebo treatment in patients
carrying the HLA DR3-DQ2 gene**



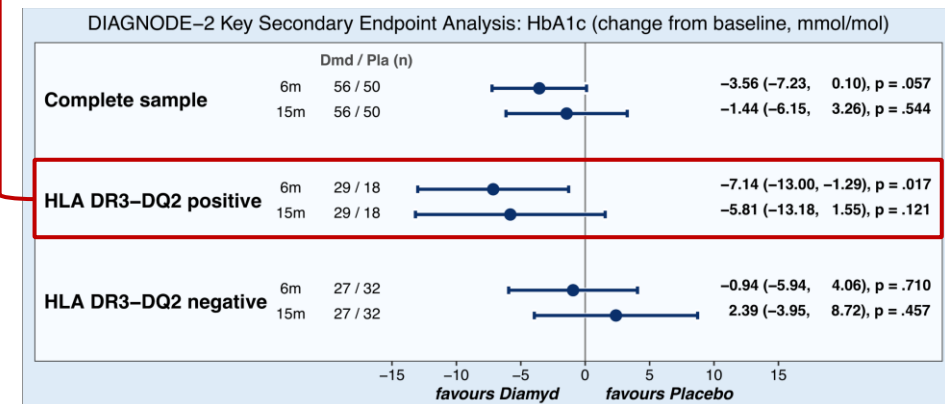
Ludvigsson et al. Diabetes Care 2021

**Pre-specified subgroup
of patients positive for
HLA DR3-DQ2 gene**

Mixed meal tolerance test (MMTT) stimulated C-peptide



Glycated haemoglobin (HbA1c)



DIAGNODE-2 Phase 2b trial Confirmed Responder Patients

In exploratory analyses, Diamyd® achieved statistically significant benefit on Continuous Glucose Monitoring (CGM) outcomes in patients carrying the HLA DR3-DQ2 responder gene

**Better Time in Range,
glycaemic variability, time
in severe hyperglycaemia**



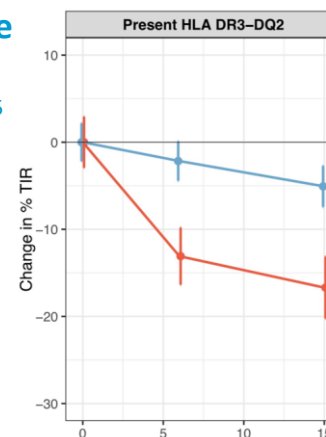
Nowak et al. JCEM 2022



Independent Commentary by Lunati & Fiorina, JCEM 2022

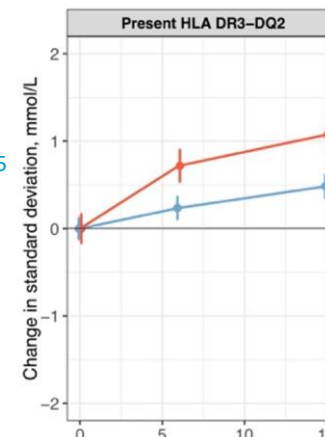
Time in Range

% change from
Baseline to Month 15



Glycaemic variability

Change in standard deviation from
Baseline to Month 15

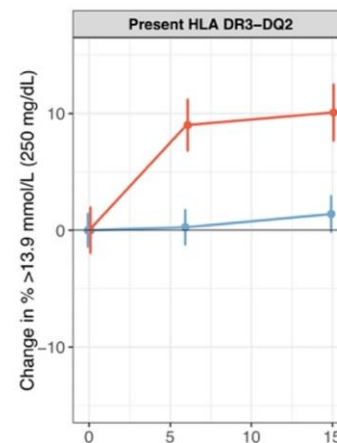


Treatment

- Diamyd
- Placebo

Time in severe hyperglycaemia

>250 mg/dL (>13.9 mmol/L)
% change from Baseline to
Month 15

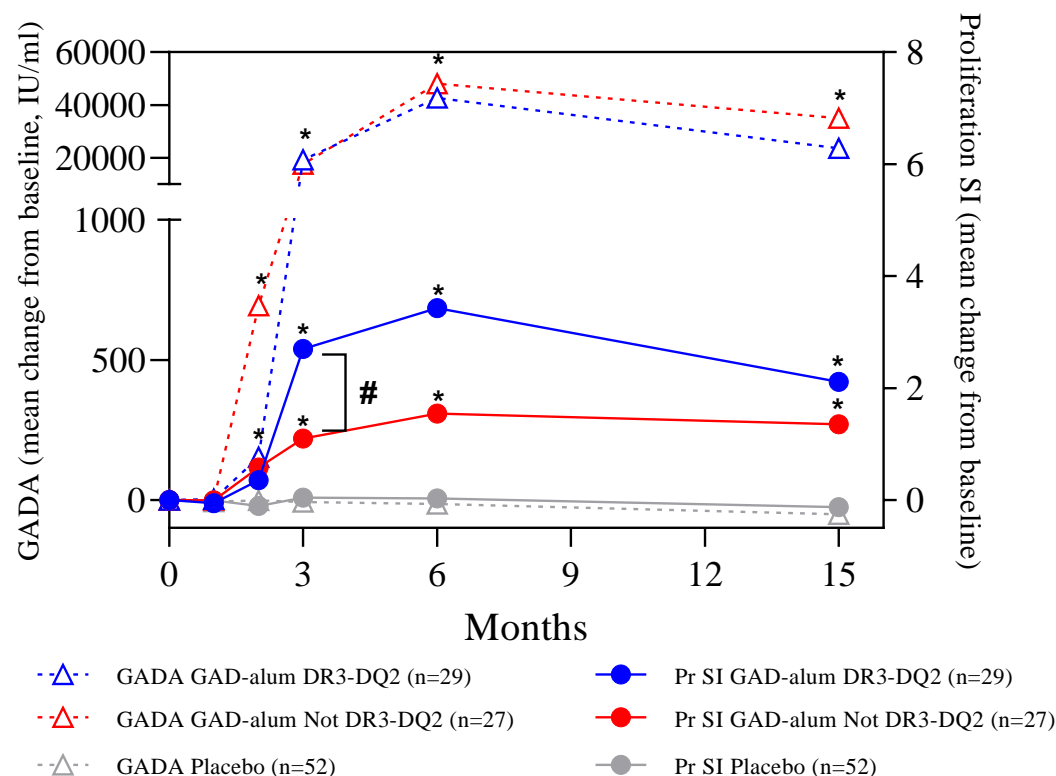


Treatment

- Diamyd
- Placebo

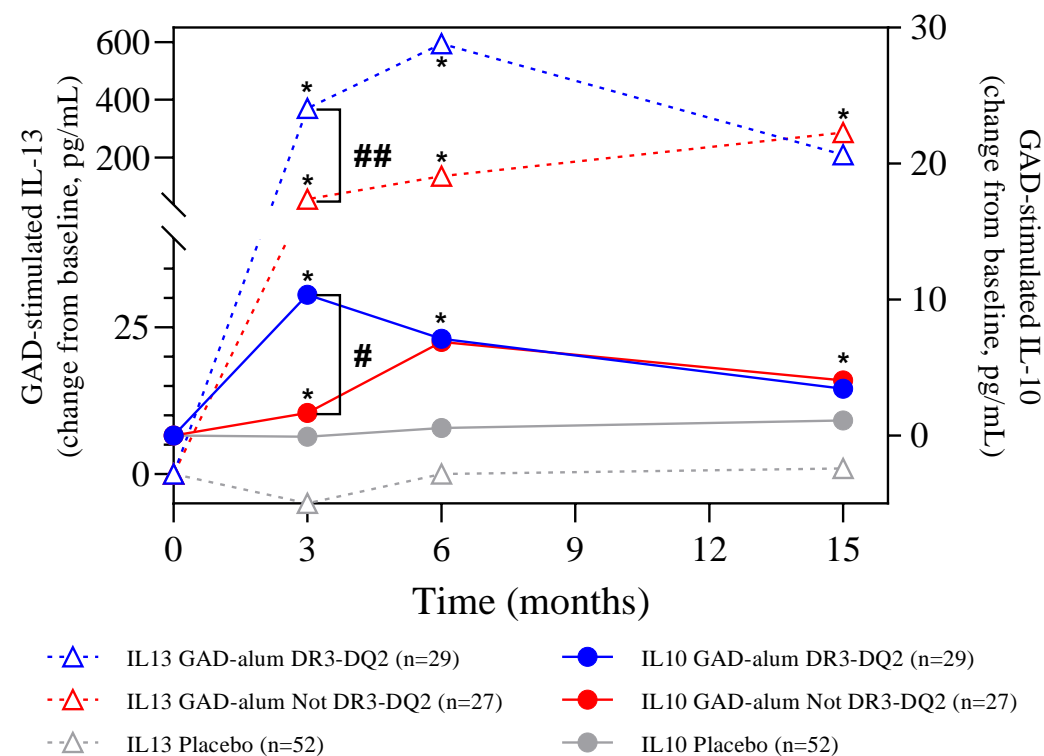
DIAGNODE-2 Phase 2b trial biomarker data support HLA-specific response

GADA, proliferation and cytokine secretion



* p<0.001 for difference to Placebo

p=0.0210 for difference between DR3-DQ2 and Not DR3-DQ2 groups



* p<0.0001 for difference to Placebo

p=0.0095 for difference between DR3-DQ2 and Not DR3-DQ2 groups

p=0.0080 for difference between DR3-DQ2 and Not DR3-DQ2 groups

Median change from baseline of anti-GAD65 antibodies (GADA) and Proliferation of PMBC (Stimulation Index, SI) (A), and GAD-stimulated secretion by PMBC of IL-10 and IL-13 levels (B) for GAD-alum treated subjects with and without the DR3-DQ2 haplotype Placebo treatment subjects.

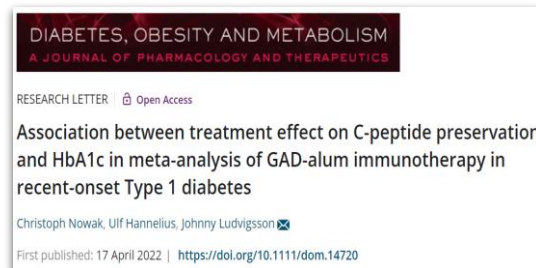
P values, Wilcoxon test, are indicated.

Correlated Diamyd® Treatment Effects on C-peptide and HbA1c

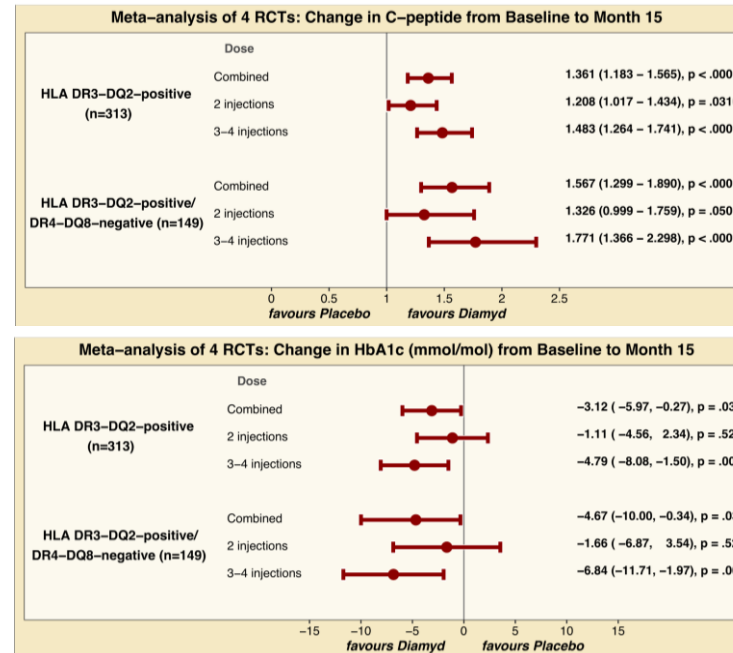
Updated meta-analysis including the Phase 2b trial strengthens conclusion about patients carrying the HLA DR3-DQ2 gene being Diamyd® treatment responders and shows correlated treatment effects on C-peptide and HbA1c – the two co-primary endpoints of the Phase 3 trial

48% reduction in C-peptide decline, 4.8 mmol/mol (0.5% DCCT units) lower HbA1c

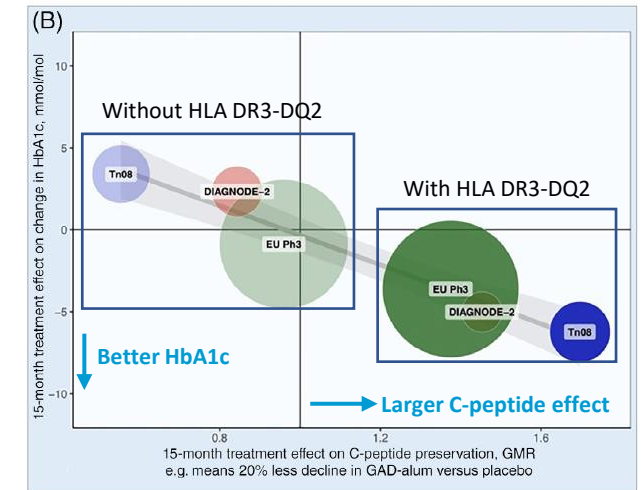
from Baseline to Month 15 compared to placebo in patients carrying the HLA DR3-DQ2 gene who received 3 or 4 injections of Diamyd®



Nowak et al. Diabetes Obesity and Metabolism 2022



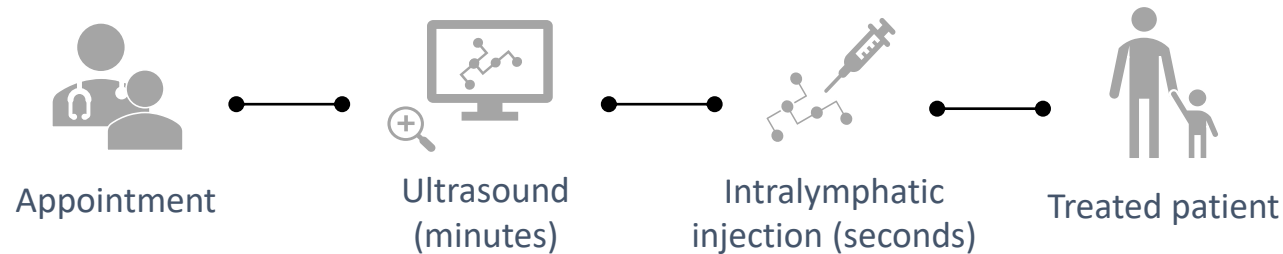
3 or 4 doses of Diamyd® vs placebo



The figure shows individual trial samples of patients with recent-onset T1D divided into present/absent HLA DR3-DQ2 who received 3 or 4 injections of Diamyd® or placebo. It shows a correlation between larger treatment benefit on C-peptide (x-axis; further to the right means larger benefit of Diamyd® over placebo) and lower HbA1c (y-axis, further negative means lower HbA1c and larger benefit of Diamyd® over placebo). All effects refer to change from Baseline to Month 15.

Ultrasound-guided intralymphatic injection

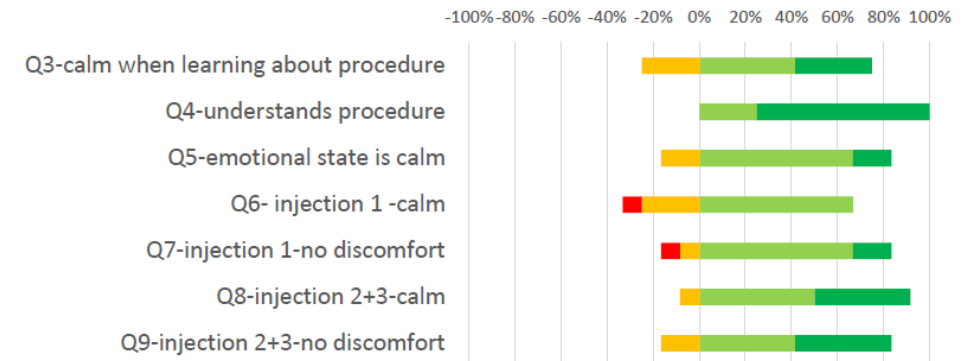
Quick, low-key outpatient procedure with discomfort comparable to venepuncture



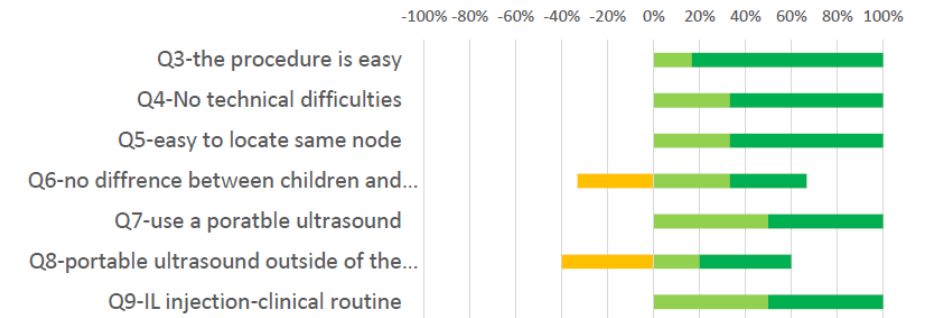
- Procedure performed by a **radiologist** or **trained professional**
- **Strong interest from endocrinologists to learn the procedure:** traditionally “underpaid” specialty in US; eager to add ultrasound training to procedural skillset; potential for certification and collaboration with US endocrinology societies
- **Three ultrasound guided injections** in a groin lymph node, one month apart
- **Safe** procedure, assessed in 12-28-year-old (DiaPrecise prevention trial will enrol Stage 1/2 children down to 8 years of age)
- Pain level equal to taking a blood sample

HCP feedback in DIAGNODE-2

Summary - nurse questionnaire



Summary - radiologist questionnaire

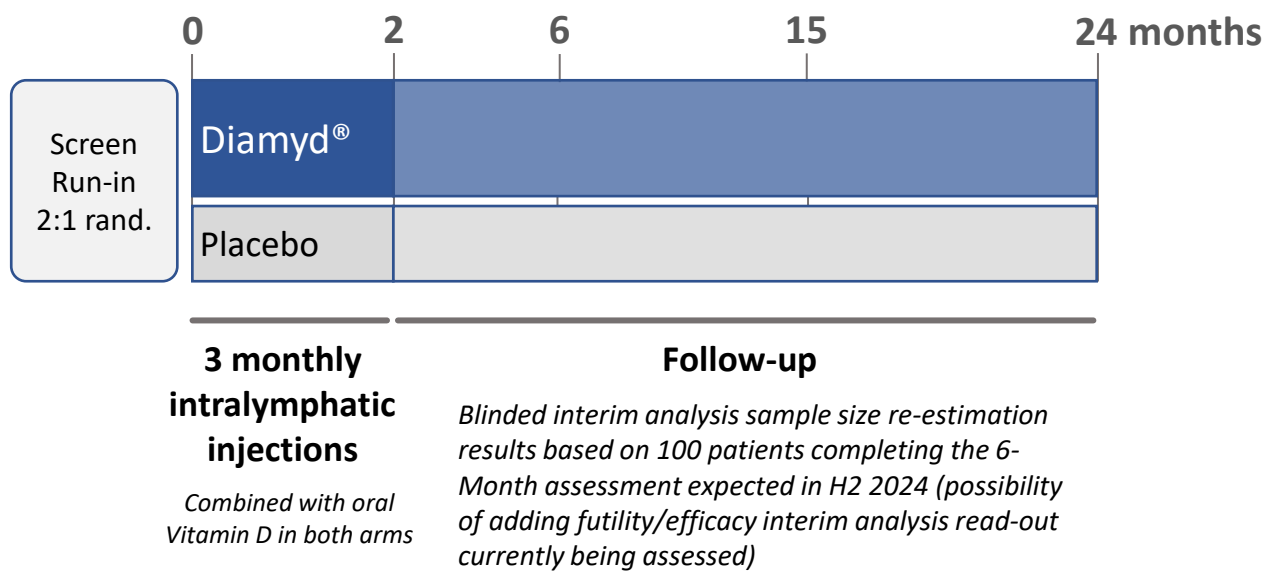


■ Somewhat agree ■ Strongly agree
■ Somewhat disagree ■ Strongly disagree

DIAGNODE-3 Pivotal Precision Medicine Phase 3 trial

Multinational (EU + US), randomized, placebo-controlled, 2-arm trial assessing 3 intralymphatic injections of Diamyd® given on top of standard of care. Designed based on Phase 2b trial in alignment with FDA and EMA. Enrolling only likely responder patients carrying the HLA DR3-DQ2 gene.

Diagnode-3 study



Co-Primary Endpoints

- Stimulated C-peptide area under the curve, change from Baseline to Month 24 in Mixed Meal Tolerance Test (MMTT)
- HbA1c, change from Baseline to Month 24

Secondary Endpoints

- Time in glycemic target range 3.9-10 mmol/L (70-180 mg/dL) assessed by CGM, change from Baseline to Month 24
- Proportion of patients with insulin dose-adjusted HbA1c (IDAA1c) ≤ 9 (partial remission) at Month 24
- Number of episodes per patient of severe hypoglycemia between Baseline and Month 24
- Number of episodes per patient of diabetic ketoacidosis (DKA) between Baseline and Month 24

Population

- Persons diagnosed with T1D less than 6 months ago aged 12-28 years who are positive for GAD antibodies and positive for HLA DR3-DQ2
- Residual beta cell function: fasting C-peptide ≥ 0.12 nmol/L

DIAGNODE-3 Pivotal Precision Medicine Phase 3 trial

Ongoing at just over 50 clinical sites in Europe



Germany



Czech Rep



Estonia



Spain



Hungary



Netherlands



Sweden



Poland

Ongoing in US, sites initiated, 10-12 US sites planned



Diamyd Medical partners with JDRF to advance the DIAGNODE-3 Phase 3 trial in Type 1 Diabetes



April 04, 2023 – Diamyd Medical and JDRF, the leading global type 1 diabetes research and advocacy organization, have entered into a four-year research and development collaboration including a non-dilutive \$5 million award to Diamyd Medical to support its ongoing Phase 3 trial with the precision medicine antigen-specific immunotherapy Diamyd®. The grant will be funded under JDRF's Industry Discovery & Development Partnerships program that focuses on commercialization of therapeutics and devices for the treatment, cure, and prevention of type 1 diabetes and its complications.

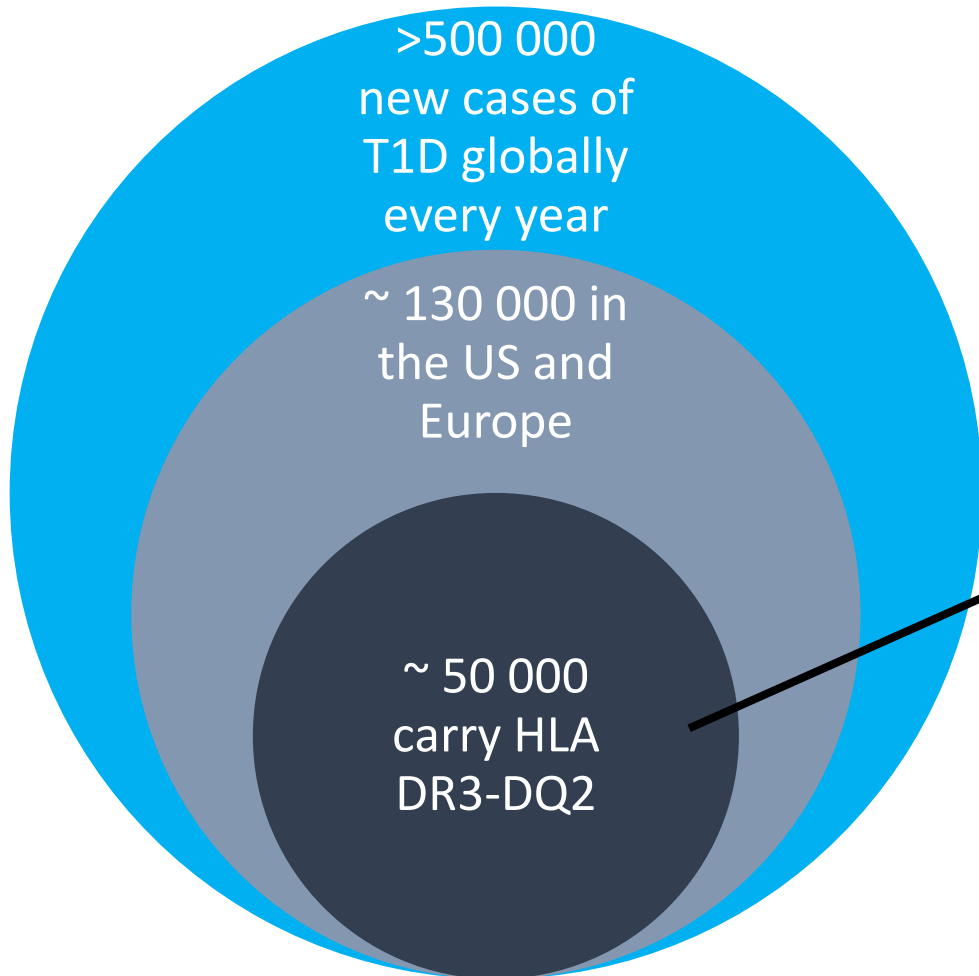
Joint press release, 4 April 2023

www.diagnode-3.com



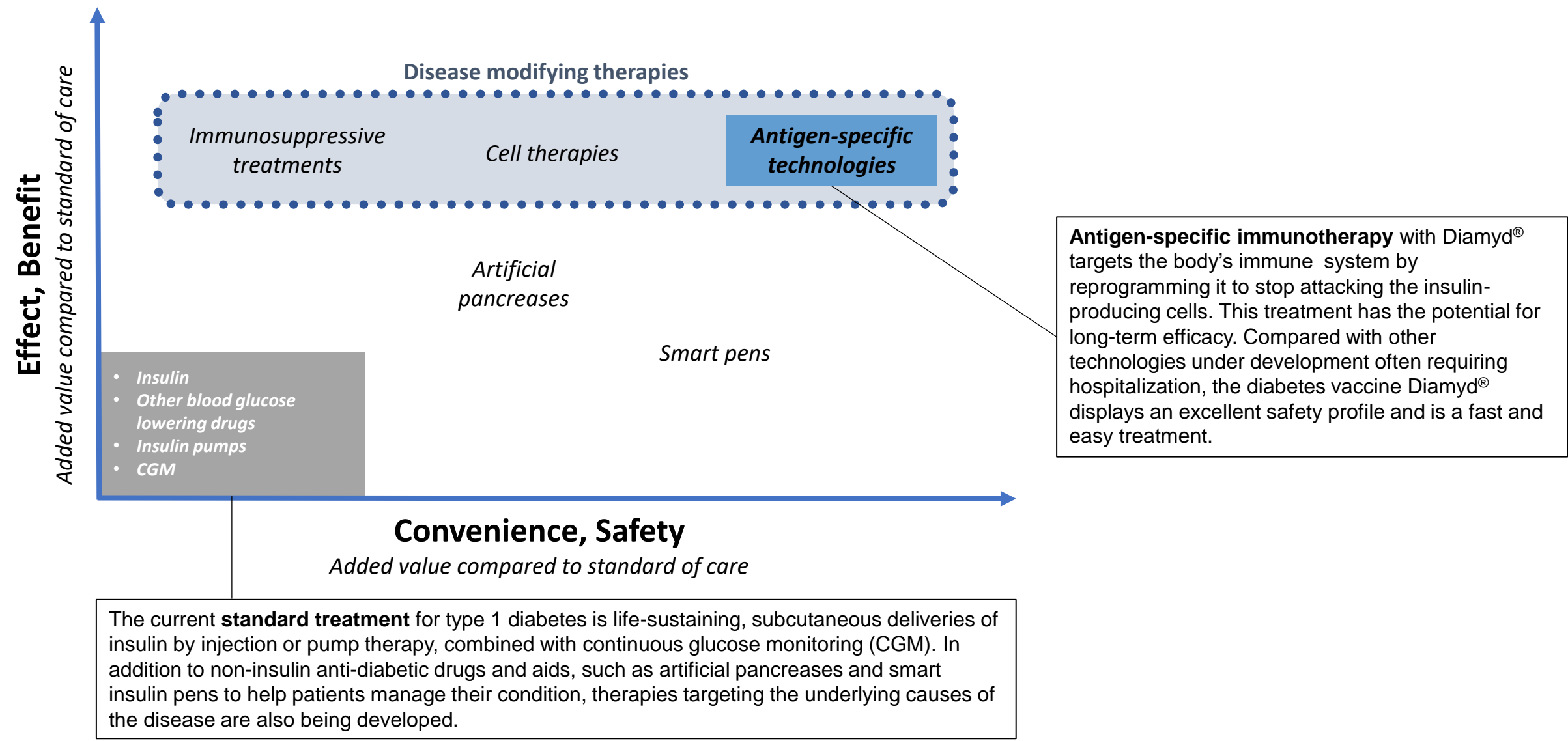
Multibillion total addressable market for Diamyd®

Lead indication (Phase 3): treatment of clinical Type 1 Diabetes



- Estimated pricing in US in line with existing drugs for other autoimmune disease, based on initial pricing analysis (\$60,000 - \$100,000 USD per baseline treatment)
- Market for Stage 3 T1D with HLA DR3-DQ2 in US alone > \$2Bn

POSITION DIAMYD® TO MAXIMIZE EFFICACY, SAFETY, CONVENIENCE

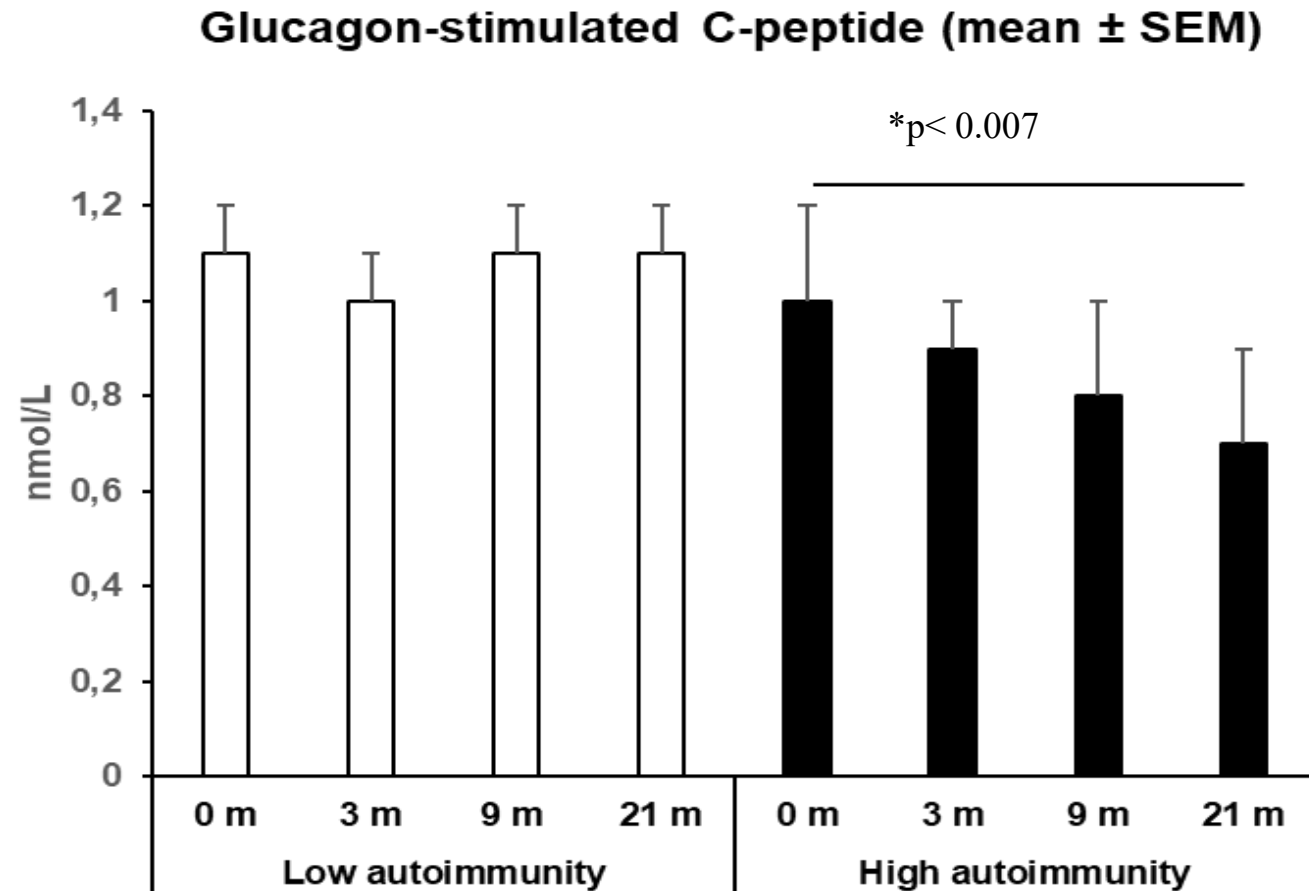


Latent Autoimmune Diabetes in Adults (LADA)*

*Also called Slowly progressing Autoimmune Diabetes (SAID) or Slowly progressing insulin-dependent diabetes mellitus (SPIDDM)

Background

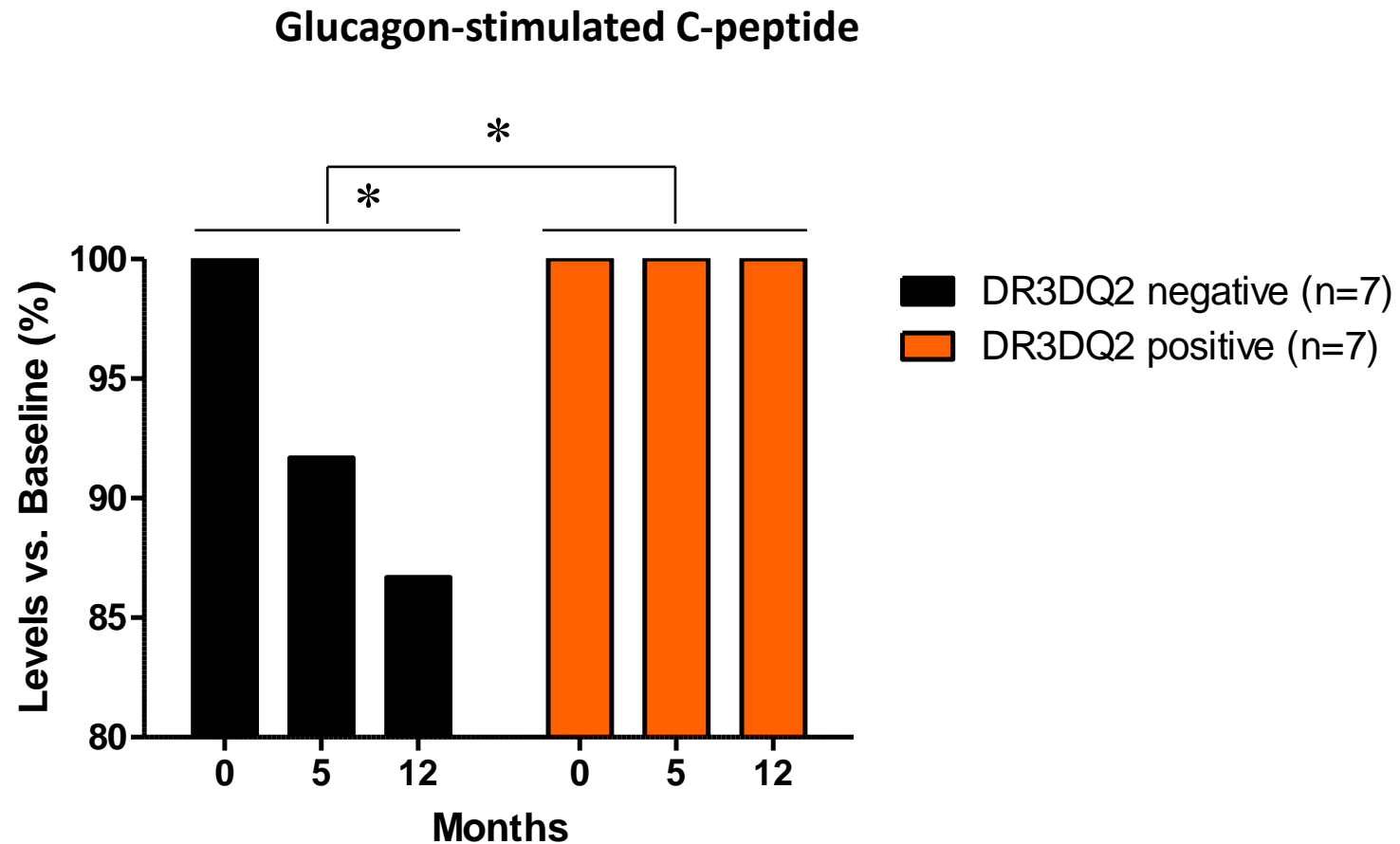
In highly autoimmune LADA individuals: treatment that directly targets autoimmunity is needed



Hals IK, Fiskvik Fleiner H, Reimers N, Astor MC, Filipsson K, Ma Z, Grill V, Björklund A. Investigating optimal β -cell-preserving treatment in latent autoimmune diabetes in adults: Results from a 21-month randomized trial. Diabetes Obes Metab. 2019 Oct

Glucagon-stimulated C-peptide levels unchanged at 12 months vs Baseline (0 months) in the HLA-DR3DQ2 positive subgroup

Phase 2 trial with Diamyd in up to 70 year-old LADA patients



* $p < 0.03$ for median 13.3% reduction at 12 months vs. Baseline (0 months) in the DR3DQ2 negative subgroup (n=7).

* $p < 0.04$ for difference between HLA subgroups in change at 12 months vs. Baseline (0 months).

Conclusions

- Treatment with intralymphatic GAD is well tolerated in LADA individuals – no safety concerns
- GAD-induced immune responses appear compatible with those in studies with type 1 diabetes
- Results on C-peptide suggest an HLA-dependent beneficial effect akin to type 1 diabetes

Also see

- Latent Autoimmune Diabetes in Adults: Background, Safety and Feasibility of an Ongoing Pilot Study With Intra-Lymphatic Injections of GAD-Alum and Oral Vitamin D, Björklund et al, Front Endocrinol, 2022
- A 1-year pilot study of intralymphatic injections of GAD-alum in individuals with latent autoimmune diabetes in adults (LADA) with signs of high immunity: No safety concerns and resemblance to juvenile type 1 diabetes, Hals et al, Diabetes, Obes Metab. 2023
- [Press release: Updated results from clinical trial with Diamyd® presented today at diabetes conference](#)

Type 1 Diabetes prevention (Stage 1 & 2)



Press Release, November 7, 2023

Diamyd Medical partners with DiaUnion to recruit participants for Type 1 diabetes prevention trial

Diamyd Medical has entered into a collaboration agreement with DiaUnion, a center of excellence in type 1 diabetes, to identify participants for the DiaPrecise trial, an open-label trial evaluating the safety, feasibility and immune response of intralymphatic injections of Diamyd® in children at risk of developing type 1 diabetes who also carry the HLA DR3-DQ2 genotype. The DiaPrecise trial has been initiated and is ongoing at the Department of Clinical Sciences at Lund University, Malmö, with Markus Lundgren M.D., PhD, as the Principal Investigator.

DIAMYD MEDICAL COORDINATES THE ASSET MILIEU

A T1D Forum to drive precision medicine, prevention and screening

**Contact with T1D
research community**

**Partnerships in
developing AI algorithms**

**Aim for a European-level
contact network**

**Integration of data from
different cohort studies**

**Discuss best practices for
screening programs**



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ASSET

ABOUT ASSET

The innovation milieu ASSET (AI for Sustainable Prevention of Autoimmunity in the Society – www.asset.healthcare) will develop and evaluate new algorithms based on AI to be able to assess the individual risk of developing Type 1 Diabetes (T1D), and the likelihood of responding to different treatments. Data from cohort studies such as TEDDY (The Environmental Determinants of Diabetes in the Young), from Diamyd Medical's clinical trials with Diamyd® and from sources such as the National Diabetes Registry will constitute the initial training dataset for the algorithm. T1D will form the pilot project for the program, but the goal is extend the functionality to other indications including other autoimmune diseases that are strongly linked to T1D such as celiac disease (gluten intolerance) and autoimmune thyroiditis (inflammatory disease of the thyroid gland). The prediction algorithm will be evaluated in clinical prevention trials where individuals at high risk for type 1 diabetes will be treated preventively with the diabetes vaccine Diamyd®. In parallel, ASSET will study organizational, economic, and legal prerequisites and consequences of applying the approach as a tool for precision health in the Swedish health care system. The project has a duration of five years and is financed via the Swedish innovation agency VINNOVA.



LUNDS UNIVERSITET



Leading Health Care

VINNOVA

Manufacturing and Market Exclusivity of Diamyd®



Diamyd Medical is building a biomanufacturing plant for GMP commercial scale production of rhGAD65



Commercial-scale production of rhGAD65 planned to be ready for BLA/MAA and market entry

- 20,000 square feet facility in Umeå, Northern Sweden, comprising clean rooms, laboratory facilities and office space
- Manufacturing facility property fully acquired in 2022
- Full control over the manufacturing of recombinant GAD65
 - Independence from CDMOs, third parties
 - In control of costs and resource allocation
 - Potential beyond GAD manufacturing



Full Control and Predictability of the Manufacturing Process

Diamyd Medical's Umeå facility uses the Baculovirus Expression Vector System (BEVS) in the complex manufacturing process of recombinant human GAD65 protein

Upstream
process



Baculovirus
expression system
& insect cells



Downstream
process



Clarification
Capture
Polish
Nanofiltration



Drug Product
formulation



DIAMYD® IP & MARKET EXCLUSIVITY



Core Intellectual Property

- **Substance of matter** in the US until **2032**
- **Intralymphatic administration** of Diamyd® in Europe, Japan, China, Australia, Russia and Canada, additional countries pending, expiry **2035**.
- Intralymphatic administration of additional betacell antigens (proinsulin, preproinsulin etc) approved in Australia, Israel, additional countries pending.
- **Precision medicine patent** based on HLA subgroups approved in Europe and Eurasia, expiry **2035**, additional countries pending.



Regulatory exclusivity

- US BLA approval provides **12 years exclusivity**
- US orphan designation provides **7 years exclusivity** from approval
- European approval provides **10 years of exclusivity**
- Accelerated approval pathways are being evaluated

Modified Release GABA

Primary Indication

Type 1 diabetes

Label expansion

LADA, Insulin-deficient type 2 diabetes

Mechanism of Action

Activate GABA-receptors in the pancreas

Clinical Effect

- *Regenerate endogenous insulin production, reduce short- and long-term complications*
- *Prevention of hypoglycemia*

Mode of Administration

Oral

Development status

Phase Ib/IIa

Licensing Status

Global rights available

Remygen®



CLINICAL RESULTS WITH ATTRACTIVE PATH TO MARKET FOR REMYGEN®

- Phase Ib/Ila first in man trial
 - ReGenerate-1 at the University of Uppsala where Remygen® (proprietary formulation of GABA) alone and in combination with low-dose alprazolam (GABA receptor modulator to enhance effect, see next slide) evaluated in long-standing type 1 diabetes patients
 - Clinical effects (Phase Ib dose-escalation) shown on **preventing hypoglycemia by correcting the counter regulatory hormone response and increasing time-in-range** in long-term type 1 diabetes (published), potential trend for acute effect of Remygen shown in Phase Ila (further data analyses ongoing).
 - Long-term safety of all doses of GABA as well as combination with low-dose Alprazolam
- Clinical effects of GABA (non-proprietary formulation) shown on **decreasing glucagon secretion** in recent-onset type 1 diabetes and immunological effects shown on altering Th1 response
- Preclinical effects on insulin secretion, glucagon secretion and beta cell regeneration
- Endogenous substance with very good safety profile

Article

GABA and Combined GABA with GAD65-Alum Treatment Alters Th1 Cytokine Responses of PBMCs from Children with Recent-Onset Type 1 Diabetes

Katie E. Heath ^{1,†}, Joseph M. Feduska ^{1,†}, Jared P. Taylor ¹, Julie A. Houpp ², Davide Botta ¹, Frances E. Lund ¹, Gail J. Mick ³, Gerald McGwin, Jr. ⁴, Kenneth L. McCormick ³ and Hubert M. Tse ^{5,*}

Open access

Original research

**BMJ Open
Diabetes
Research
& Care**

GABA induces a hormonal counter-regulatory response in subjects with long-standing type 1 diabetes

Daniel Espes ^{1,2}, Hanna Liljebäck ^{3,4}, Henrik Hill ⁵, Andris Elksnis ³, José Caballero-Corbalán ⁴, Per-Ola Carlsson ^{3,4}

nature communications



Article

<https://doi.org/10.1038/s41467-022-35544-3>

A randomized trial of oral gamma aminobutyric acid (GABA) or the combination of GABA with glutamic acid decarboxylase (GAD) on pancreatic islet endocrine function in children with newly diagnosed type 1 diabetes

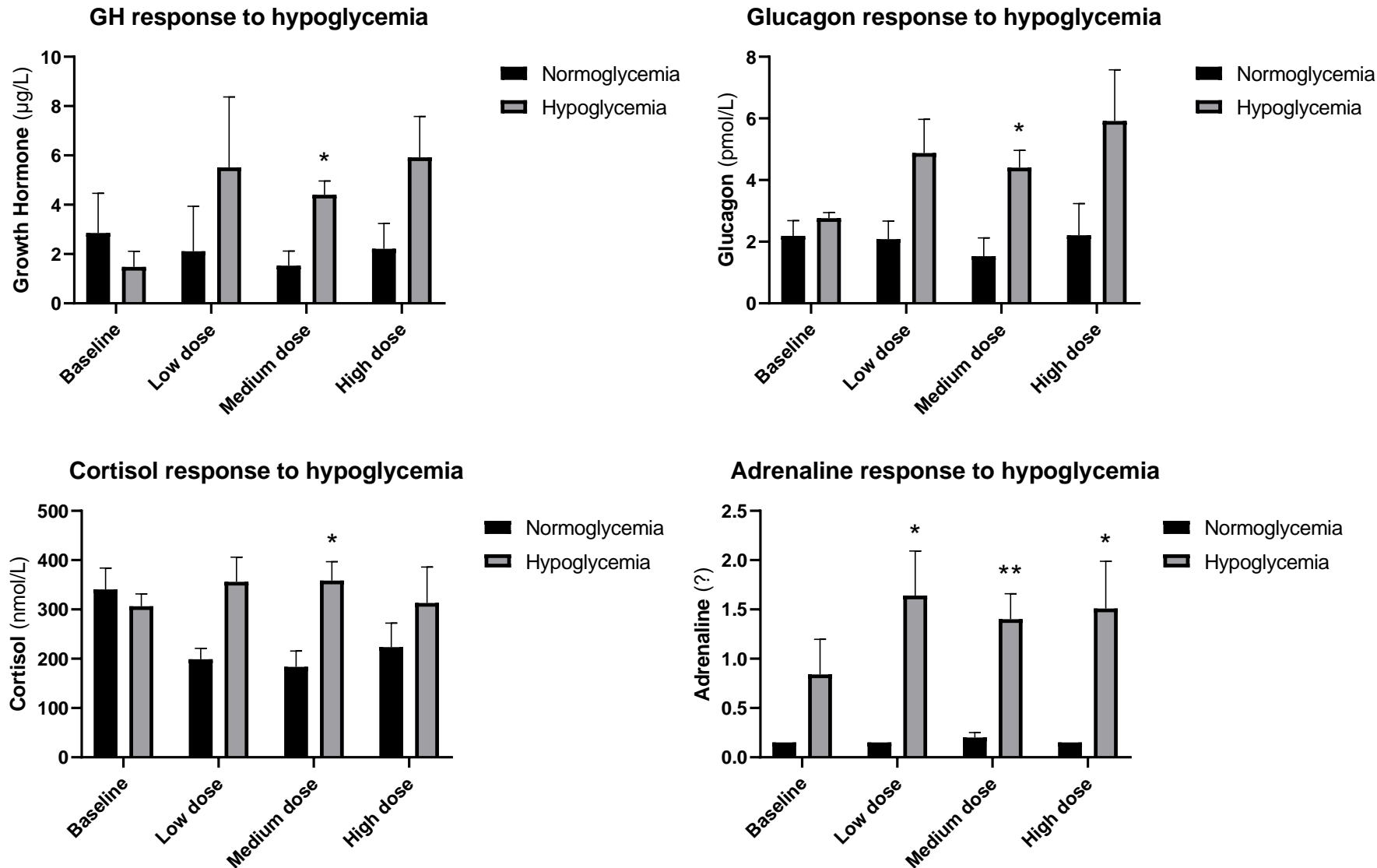
Received: 27 October 2021

Accepted: 6 December 2022

Published online: 24 December 2022

Alexandra Martin^{1,4}, Gail J. Mick ^{1,4}, Heather M. Choat ¹, Alison A. Lunsford ¹, Hubert M. Tse ², Gerald G. McGwin Jr. ³ & Kenneth L. McCormick ¹

GABA TREATMENT IMPROVES THE HORMONAL RESPONSE TO HYPOGLYCEMIA



Comparisons between noro- and hypoglycemia for the respective group using a multiple T-test with p-values corrected for multiple testing using the Holm-Sidak method.
 * denotes $p < 0.05$, ** $p < 0.01$
 Values are given as mean \pm SEM

REMYGEN[®] MARKET EXCLUSIVITY AND MANUFACTURING



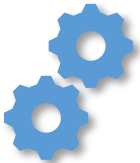
Core Intellectual Property

- **Exclusive license from UCLA** on treating diabetes and other inflammatory diseases with GABA
- **Formulation patent** application (Remygen[®]). Application in national phase.
- **Exclusive license from UCLA** on GABA in combination with GABA receptor modulators to enhance the regenerative and immunomodulatory effect. Application in national phase.



Regulatory exclusivity

- 505(b)(2) regulatory pathway in the US provides potentially faster time to market at reduced cost



Manufacturing

- GMP drug substance (GABA) and drug product (Remygen[®]) manufacturing in place

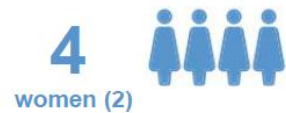


Organization

Employees



Management



Board



PhD:s | as a proportion of employees



Management



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President & Chief Executive Officer



Martina Widman, MSc
Chief Operating Officer



Anna Styrud, BSc
Chief Financial Officer



Anton Lindqvist, MSc
Chief Scientific Officer



Dr. Maja Johansson, PhD
Chief Operating Officer –
Manufacturing Site



Eva Karlström, MSc
Chief Regulatory Affairs Officer



Dr. Christoph Nowak, MD, PhD
Chief Medical and Business Officer



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University of London



Professor Dr. Åke Lernmark, MD, PhD

Lund University



Professor Dr. Daniel Kaufman, PhD

UCLA School of Medicine

TOP WORLDWIDE EXPERTS

Covering the areas of clinical practice and scientific excellence in Type 1 Diabetes and



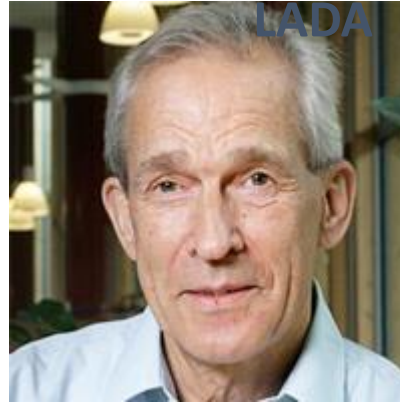
Prof. Johnny Ludvigsson

Professor of Pediatrics. First in the world to use immune intervention in children and teenagers with newly diagnosed T1D, and in collaboration with others 64kD was found. An alum-formulation of GAD was developed (Diamyd®), used as a treatment in an effort to deviate the immune system and create tolerance.



Prof. David Leslie

Professor of Diabetes and Autoimmunity. Professor Leslie has been Director of the British Diabetic Twin Study since 1982, the world's largest twin study of its type and Principal Investigator of the European Action LADA consortium. By studying twins, Professor Leslie has been able to show the possibilities for predicting and preventing autoimmune diabetes.



Prof. Åke Lernmark

Professor in Experimental Diabetes Research, Professor Lernmark has focused his research on diabetes and at an early stage identified the antigen that later proved to be GAD. He and his colleagues were the first to clone GAD65 from human islets using biochemical methods and was thus the first to define autoantibodies against GAD65 in patients with type 1 diabetes.



Prof. Daniel Kaufman

Professor Kaufman's research is focused on studies in the field of autoimmunity, particularly type 1 diabetes (T1D) and understanding the disease mechanisms in order to develop novel therapeutics in mouse models that could potentially be translated to clinical use. Using preclinical models, Dr. Kaufman's lab helped to develop some of the GAD and GABA-based diagnostics and therapeutics for T1D that are in clinical use or are being tested in clinical trials.



Prof. Mark A. Atkinson

Professor of Diabetes Research, Department of Pathology, Immunology and Laboratory Medicine, University of Florida, USA. American Diabetes Association Eminent Scholar for Diabetes Research. Director, UF Diabetes Institute, University of Florida. Independent of the Company and its principal owners.

Diamyd Medical Board member.

DIAMYD MEDICAL

- Swedish clinical phase pharmaceutical company, founded 1994
- NASDAQ First North Growth Market, ticker DMYD B

FINANCES

- Market Cap Nov 15, 2023 ~ MSEK 610
- Cash Aug 31, 2023: MSEK 127.5 + MSEK ~73 from rights issue Nov 2023

INDICATIONS

- Diabetes
- Autoimmunity

PRODUCT CANDIDATES

- Diamyd® (Phase III)
- Remygen® (Phase Ib/IIa)

INVESTMENTS

- NextCell Pharma (Stockholm, Sweden)
- MainlyAI (Stockholm, Sweden)



Diamyd Medical

www.diamyd.com



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