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ABV100: Improved Health Outcomes in People with Insulin-Treated Diabetes

Corporate Presentation

January 2024

Investment Highlights

Product	**Combination Medication of Two FDA-Approved Products Insulin and Glucagon**	• ABV100: First product that will allow **effective use of insulin** by mitigating the risk of hypoglycemia • ABV100: First insulin product that will bring the **wider metabolic promise of glucagon** (leveraged notably now in the obesity combination peptide injectables)
Proof	**Successful Completion of Human Feasibility**	• Human feasibility study completed demonstrating protection against hypoglycemia without worsening hyperglycemia at **patented molar combination**
Potential	**Ability to Transform Outcomes in Insulin Using Patients**	• 4 million people in the US alone use rapid acting insulin and hypoglycemia is the greatest challenge to successful outcomes • Three product presentations: titratable mealtime injection, fixed-dose mealtime injection, and pump therapy can drive a **global market potential of ~$4.5 billion**
Plan	**Accelerated Development Plan with Highly De-Risked Product**	• Sourcing of APIs confirmed with a **leading insulin manufacturer** and with **Zealand Pharma** for commitment to supply the sole formulation-friendly commercial glucagon analog • $3.5M in non-dilutive funding secured as part of a seed raise of $13.9M

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Abvance Core Team

David Maggs, MD FRCP
Chief Executive Officer and Co-founder

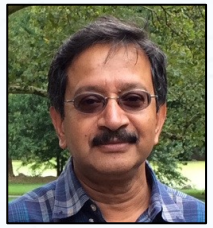
- Endocrinologist with over 30 years of multiple pharmacological platforms (small molecule and peptide), and device programs, targeting rare and common diseases.
- Fellow of the Royal College of Physicians (UK) and holds an adjunct faculty position at UT Health, San Antonio.
- Leadership positions: Warner Lambert, Pfizer, Amylin Pharmaceuticals, GI Dynamics, Fractyl Health and, recently, Becton Dickinson.

Alan Cherrington, PhD
Co-founder and Scientific Advisor

- Professor, Molecular Physiology and Biophysics at Vanderbilt.
- Holds the Jacquelyn A. Turner and Dr. Dorothy J. Turner Chair in Diabetes Research.
- World renowned research defined the effects of various hormonal and neuronal factors on liver glucose metabolism.
- Recognized worldwide as an authority in this area and is recipient of multiple awards including the Banting Medal of the ADA.
- Inventor and patent holder on ABV100.

Steve Daly
Chief Operating Officer

- Over 30 years of experience in commercialization and product development, including 18 years in diabetes and metabolism.
- BS in Business Administration from Northeastern University and MBA studies at the University of Florida.
- Held executive commercial leadership positions at companies in the metabolism field including Modular Medical, Adocia, Halozyme, and Amylin Pharmaceuticals.
- Recently consulted with Vertex for their T1D islet cell program (VX-264).



Soumitra Ghosh, PhD
Co-founder and Drug Development Advisor

- Co-founder of Abvance Therapeutics and Avexegen Therapeutics, biotech start-ups focused on diabetes and GI applications.
- His experience includes senior R&D leadership positions at Amylin Pharmaceuticals, Bristol Myers Squibb and MitoKor.

Ed Raskin
Counsel and Strategic Advisor

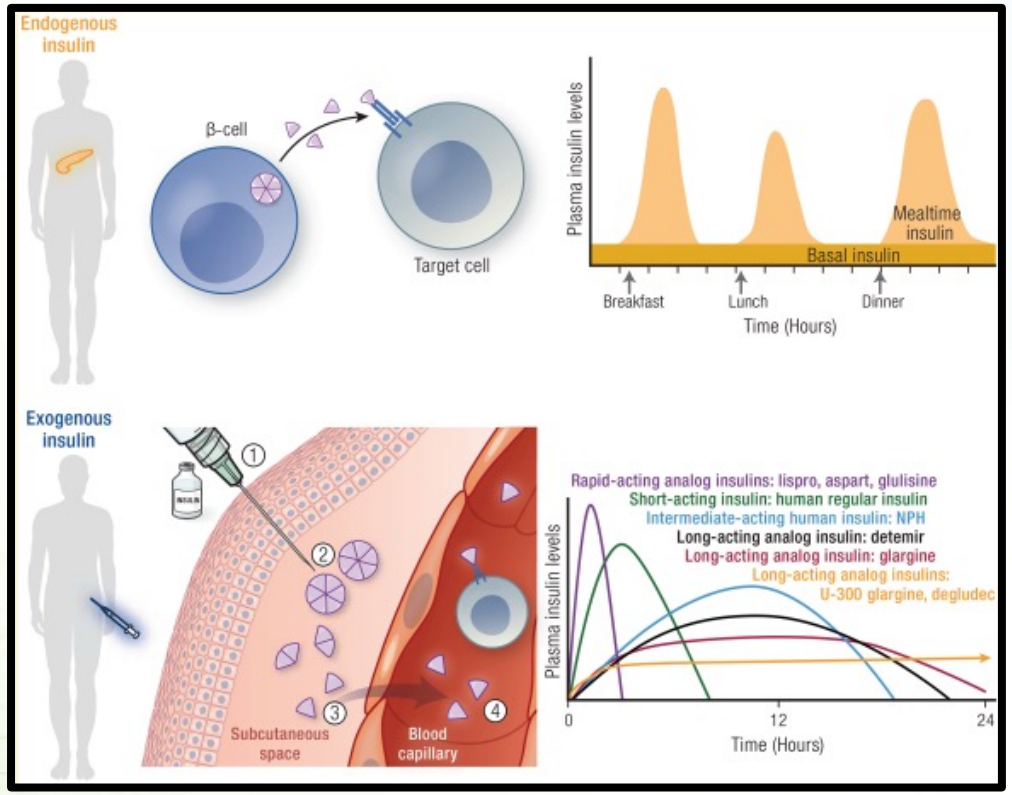
- A managing director and life science attorney with Life Sci Associates.
- Co-founder and member of executive team at Beta Bionics, the inventors of the "bionic pancreas" dual and single hormone system.
- Ed previously served as outside counsel to medical device and biotech clients.
- J.D. and Certificate in ESG and Sustainable Capitalism from UC Berkeley School of Law, B.A. in Political Science from UC Irvine, and a graduate of the Corporate Director program at Harvard Business School.
- Admitted to the bar in CA and MA.

Marie Schiller
Clinical Advisor

- Pharma/med device executive with extensive experience in product development.
- Currently interim CEO for a non-profit organization, The Diabetes Link, and a clinical and commercial advisor for private biopharma and device companies and investors.
- Most recently she was the CEO of Chronicles Health, an early-stage digital health company focused on novel monitoring and care solutions for people living with IBD.
- Prior positions include VP Product Development, Insulins and Connected Care at Eli Lilly and Managing Director and Co-Owner at Health Advances (sold to Paraxel in 2016).

Insulin is a Diabetes Treatment Cornerstone

The Challenges of Insulin Treatment



- **US diabetes prevalence ~38M** (11% of population) with **28M actively treated**
  - 60% orals without injectables (T2D)
  - 15% GLPs (T2D)
  - **25% insulin** (T1D plus T2D)
- **Intensification (tighter target glucose range) with insulin treatment** proven to improve outcomes in both Type 1 (DCCT) and Type 2 (UKPDS) diabetes patients
- **Continuous Glucose Monitoring (CGM) and Pump device technological advances** enable more effective insulin use

- Insulin remains a cumbersome and labor-intensive treatment modality
- Excessive intensification with insulin causes problematic hypoglycemia (multiple studies)
- Majority of Type 1 and insulin-treated Type 2 diabetes patients in sub-optimal glycemic control (A1C >7%)

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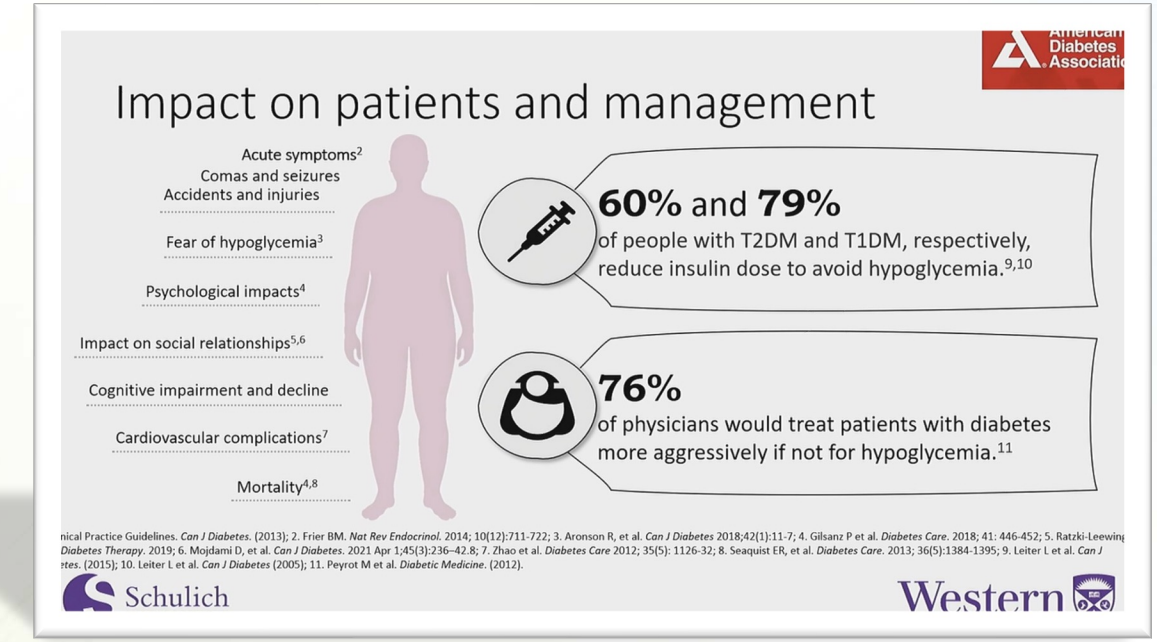
Hypoglycemia is the Greatest Challenge with Insulin Treatment

Hypoglycemia and Its Impact



- **Insulin action is unpredictable, too slow, and persists too long** to manage dynamic blood glucose changes and this leads to problematic hypoglycemia
- **Hypoglycemia occurs often**, warning and defense systems are defective, and it comes with significant direct cost and lost productivity
- **Severe hypoglycemia** can lead to cognitive impairment, seizure, coma and death
- **Fear of hypoglycemia** drives insulin-undertreatment, chronic hyperglycemia, and development and worsening of significant health complications

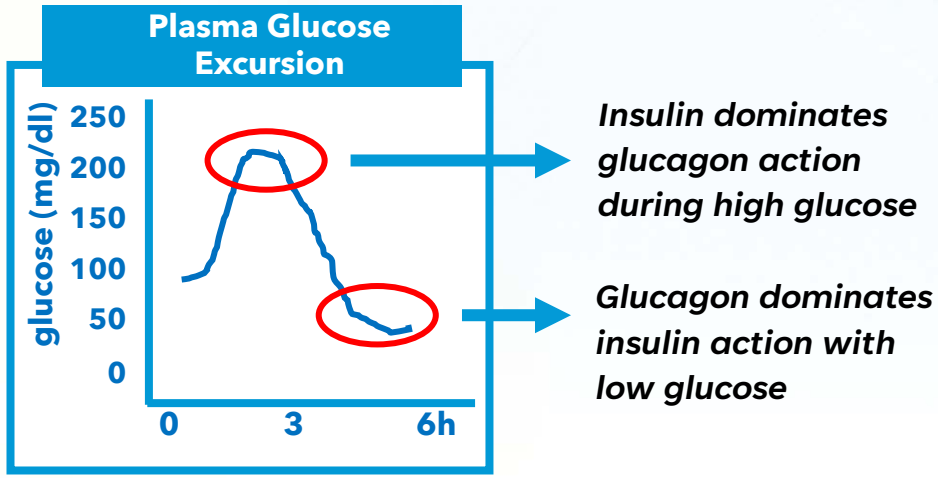
Despite pharmaceutical and technological advancements, insulin treatment remains sub-optimal

Abvance: Solving the Diabetes Beta and Alpha Cell Problem

Abvance Solution

Combination of insulin and glucagon in a coformulated solution at **a specific molar ratio** could bring the following:

- Recapitulation of insulin effects to control plasma glucose rise
- Glucagon protects against hypoglycemia
- Glucagon will also bring to bear additional metabolic benefits (e.g. body weight , fatty liver)



Under specific molar ratio conditions

ABV100 Product Potential

Innovate the insulin segment by creating a hypo-friendly short acting insulin

- Could reinvent all RAI use
- Mealtime pen use (T1D, T2D)
- Pump use (T1D)
- Convenient fixed dosing form (T2D)
- Broader metabolic benefit in overweight and obese subjects

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Human POC Study Design: IV Co-Administration of Insulin and Glucagon

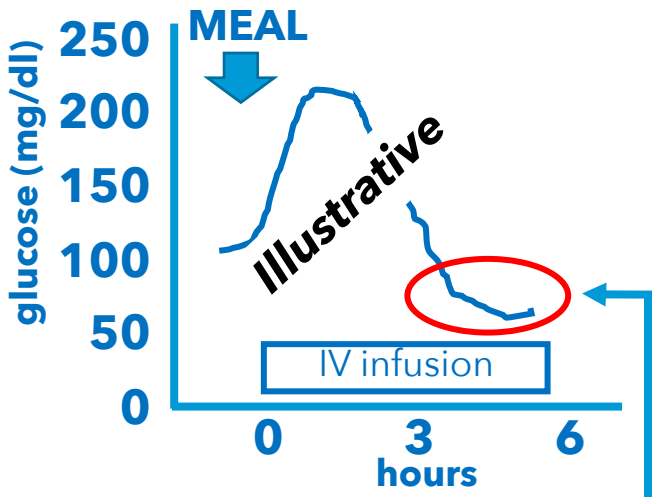
- Study conducted at single US site
- Bruce Bode PI (Atlanta GA)
- Studied Type 1 Diabetes patient cohort (n=15)

[1]*Novolin (human insulin)*
[2]*Novo Glucagen (human glucagon) – leveraged recent mechanistic study where Glucagen had been administered IV requiring special infusion set up*

Study Conditions

- Goal to examine concept through **acute IV co-administration of insulin and glucagon**
- **Two study visits** involving **6h IV infusion** of **insulin[1] and glucagon[2]** or **insulin alone**
- **IV infusion** of peptides offered more predictable PK/PD (over SC delivery)
- **Meal challenge** (100g CHO, Vanilla Boost) allowed a clinically relevant assessment of plasma glucose rise and fall (in contrast to the artifice of clamp-like study conditions)
- Subjects received the **same insulin dose and meal** at each visit
- At the insulin + glucagon study visit, **glucagon was co-infused at the pre-determined fixed molar ratio** with insulin

Plasma Glucose Excursion



- Insulin dose administered was designed to induce hypoglycemia in latter phase
- patients were rescued with IV glucose if plasma glucose dropped to **50 mg/dl**

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Human POC Study: Plasma Glucose Profile

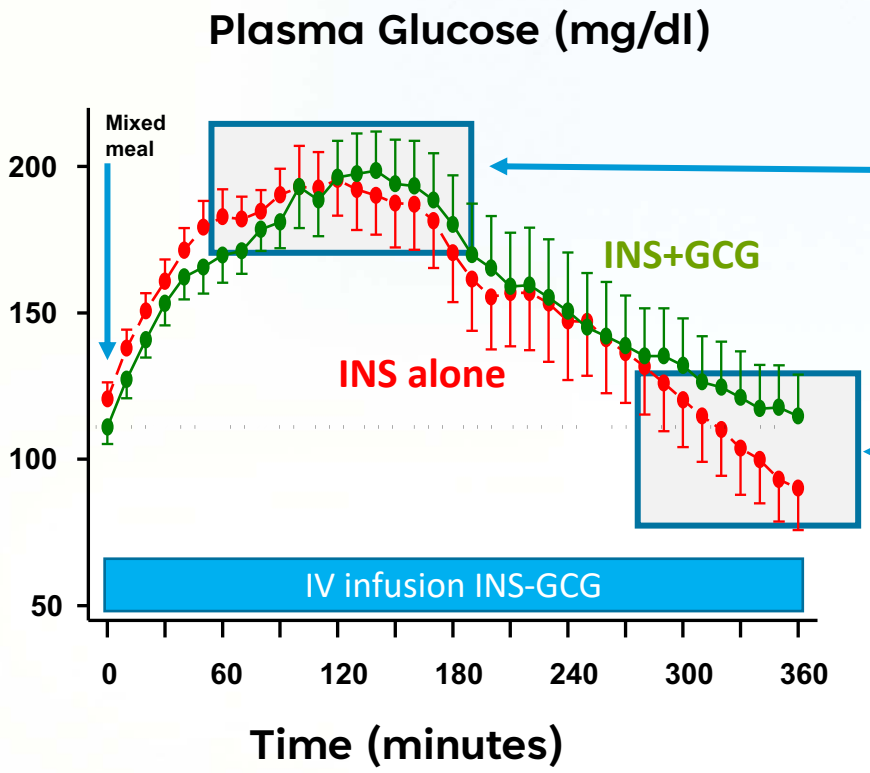
Intravenous Insulin:Glucagon combination administered at key molar ratio does not worsen hyperglycemia but prevents hypoglycemia

Inclusion criteria:

- Aged 18-64 years
- Treated with insulin ≥12mo prior
- Stable insulin R_x ≥ 3mo prior
- Stable glycemic control with A1c <9%
- C-Peptide ≤ 0.30 nmol/L
- BMI <30.0 kg/m^2

Studied subjects (n=15):

- 7 male, 8 female
- Age 34 ± 3 year
- A1C 6.8 ± 0.2%



No evidence of an excessive rise in plasma glucose in the presence of glucagon

Evidence of prevention of an excessive fall in plasma glucose in the presence of glucagon; actual delta is minimized here as **more IV glucose rescue was necessary in the INS-alone arm***

*Study was successful in design as **9/15 subjects experienced hypoglycemia** in the insulin-alone arm in the latter phase of the meal

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Human POC Study: Summary and Next Steps

- Successful conduct of a **Human POC study in T1D** subjects (n=15)
- At the molar ratio applied and the clinically relevant dosing administered, INS-GCG combination:
  - elicited hypoglycemia protection **without** worsening hyperglycemia when compared with insulin alone
  - was **well tolerated with no safety signals** of note
- Findings support advancing to coformulation of insulin and glucagon to allow the development of a rapid-acting **Insulin:Glucagon** combination targeted for the treatment of both T1D and T2D
- Candidate **Insulin and Glucagon** peptides identified and coformulation work and IND enablement is to start in earnest on way to First-in-Human clinical proof

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ABV100 has Broad Potential through Multiple Product Forms

ABV100 serving T1D and T2D needs

Product Form	Population	Comment
Mealtime injection pen and vial 	T1D	Addresses large segment of T1D population
Pump use vial 	T1D	Addresses expanding segment of T1D population Could involve truncated fast-track pathway
Mealtime injection whether conventional titratable or fixed dose  	T2D	Disease segment is sizeable and a major component of the commercial opportunity Indicated use could involve conventional adjunct to **basal insulin (MDI)** but also **adjunct to GLPs** Fixed dosing would be novel and offer device simplicity **Wider GCG effect benefits become important**

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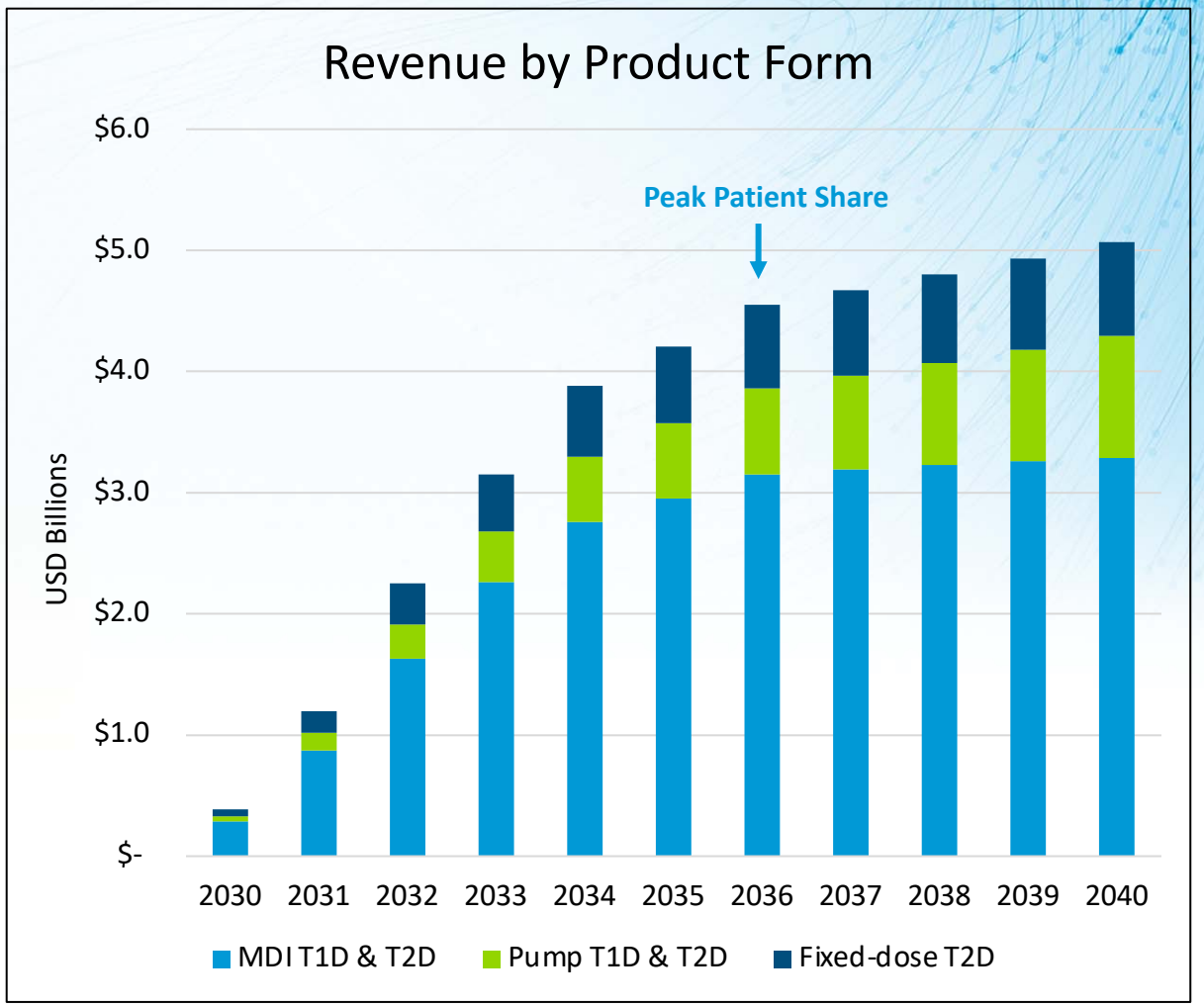
Base Partnered Scenario

ABV100 Reaches $4.5B in Revenue at Year 7

3 Product Forms		Revenue at Peak Market Share
T1D & T2D Multiple Daily Injections		~$3B
Fixed Dose in T2D (T2D using basal insulin or GLP-1s)		~$700M
T1D & T2D Pumps		~$700M



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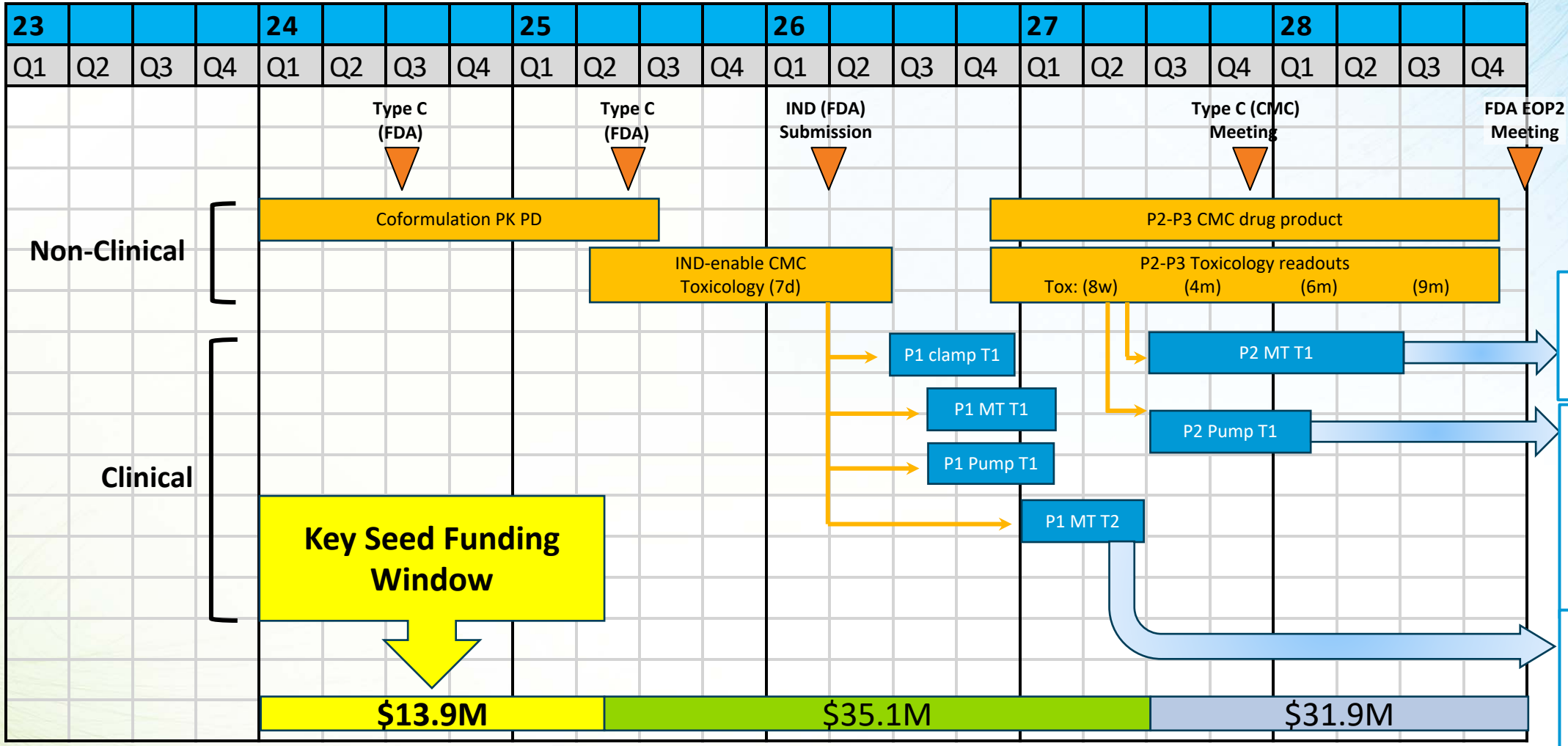
ABV100 Integrated Development Plan



Excellent T1 P2 MT clinical package for advancing to P3 pivotal and eventual indication

Excellent T1 P2 pump clinical package for advancing to P3 pivotal and eventual indication
Also advance to secure pediatric use and later use in T2s

MT dose finding/ranging allows advancing to P2 - with potential to discern between titratable vs fixed dose product forms

MT = mealtime, T1 = type 1 diabetes, T2 = type 2 diabetes

ABV100: Intellectual Property Current & Future

Secured Exclusive WW License from Vanderbilt University

1. **Co-formulation / co-administration:**
   - Insulin-glucagon molar ratios
   - Dose ranges for insulin and glucagon
   - Encompassing insulin and glucagon analogs
   - Novel, stable co-formulation compositions
2. **Method of Treating Subjects:**
   - Type 1, Type 2, Gestational and other forms of Diabetes
   - Subject presenting with hypoglycemia associated autonomic failure
3. **Delivery:**
   - Subcutaneous injection or via pump
   - Infusion rates
   - Broad array of device configurations/platforms

Vanderbilt University Patents: US Patent No. 11357829 (granted 06-16-2022); Japan Patent No. 7133229 (granted 09-08-2022); EU Patent No. 3576748 (granted 04-05-2023); Prosecution ongoing in China

PCT Application Filed by Abvance on Insulin-Glucagon Platform

1. **Exemplary human data further defining molar ratios**
2. **Novel formulation compositions**
3. **Peptide delivery for optimal PK/PD bounds**

Expected Filings

1. Excipient manipulation and phasic PK
2. Broader metabolic benefit through dual peptide agonism
3. Unique drug-device configurations to accommodate fixed dose product
4. AID algorithm adaptation

Summary

- ABV100: Patented co-formulation of two FDA approved peptides
- Collaboration with a leading global insulin manufacturer in place
- Large revenue opportunity with three potential product presentations
- Already highly de-risked with human study already validating core concept
- Significant expertise in leadership team
- Strong network of collaborators and advisors
- Strong funding interest from non-dilutive sources
- Product candidate characterization and major inflection in ~12 months through $13.9M seed investment

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