

# BRAIN Biotech AG

Creating a #BiobasedFuture

## Investor Relations Presentation

seat**11**a

## What's New @ BRAIN?

Michael Schneiders, Head IR & Sustainability

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Zwingenberg, June 7th, 2021



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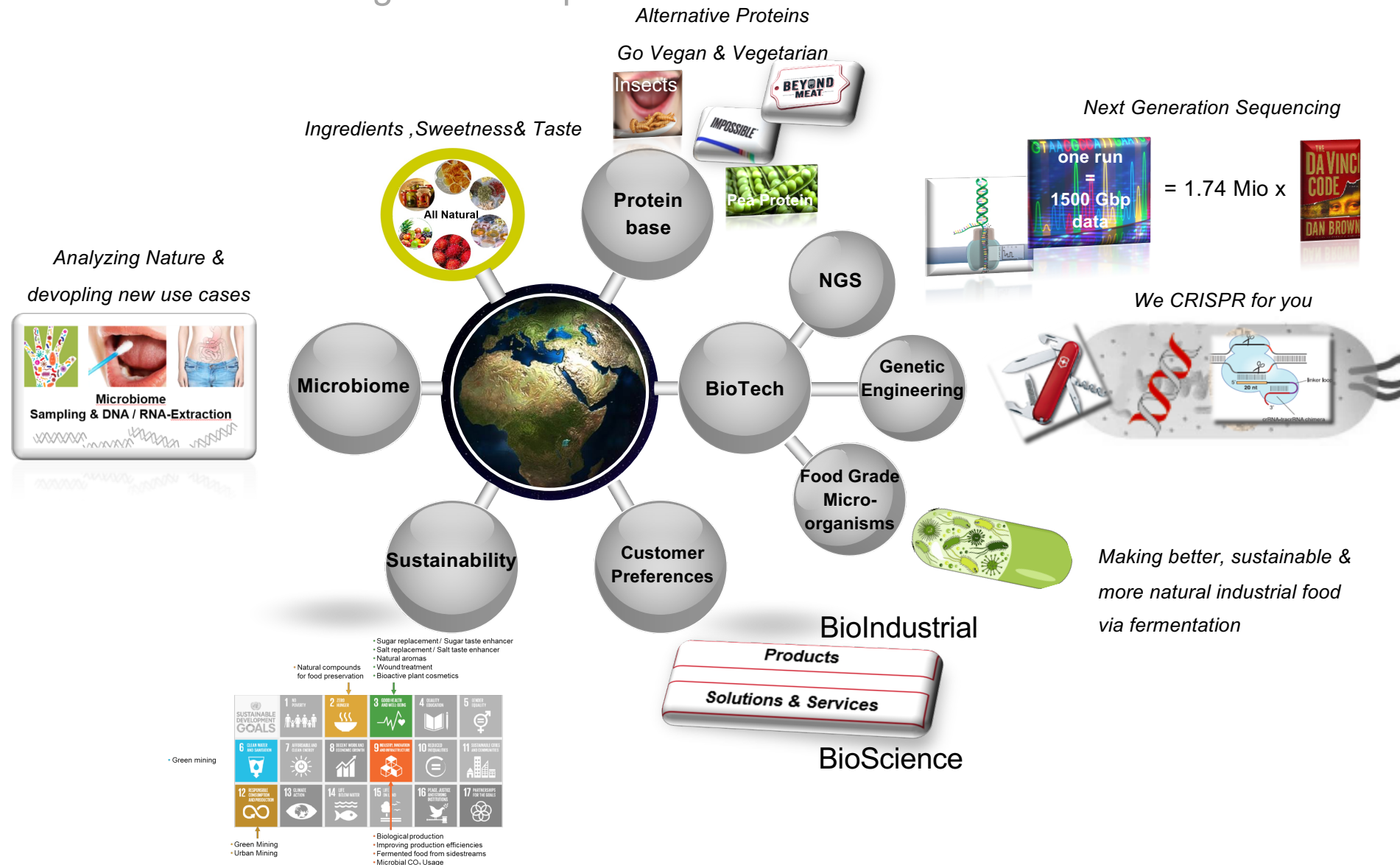
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# Mega- Trends – Where BRAIN Can Make a Difference

## Industrial Biotech: Making a Real Impact



# What's New @ BRAIN?

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## 2 New Incubator Projects:

- PHA 121, Pharma Compound
- CRISPR-Cas Genome Editing

❖ + Biocatalysts running at full speed



# PHA121 / Pharvaris

New Incubator Project, Pharma Compound



## Pharvaris N.V.\*

- Is a clinical-stage discovery and development company, founded in 2015 (CH)
- IPO at the NASDAQ (phvs) on February 9<sup>th</sup>, raising USD 190.2 mio; MarketCap ~ USD 670 mio
- Focus: treatment of hereditary angioedema (HAE)
- **HAE:** medical disorder caused by gene mutation, which results in recurrent attacks of severe swelling (every 2-4 weeks without treatment), swelling caused by excess level of bradykinin
- **New Treatment:** novel oral bradykinin B2-receptor antagonists (PHA121)
- <https://pharvaris.com/>

## BRAIN Group Discovery Contribution

- **AnalytiCon** performed Hit Identification, Hit to Lead and Lead Optimization
- Library access, TMS business, license agreement, milestones and royalties
- New milestone paid this quarter on good progress– triggered public communication

\*Source: Pharvaris corporate presentation



# PHA121 / Pharvaris

## Value Creation



- Successful example how we can create long-term value for BRAIN shareholders initiated by the TMS business
- Has entered our incubator as a project initially with “Medium” rNPV potential, could become “Large” with clinical progress

### The Market\*

- Large global HAE market of ~USD 2 Billion size with robust growth ~9% CAGR
- Rare but potentially life-threatening genetic condition: painfully, hospitalization
- IP: issued US patent expires in 2038

### Value Creation\*\*

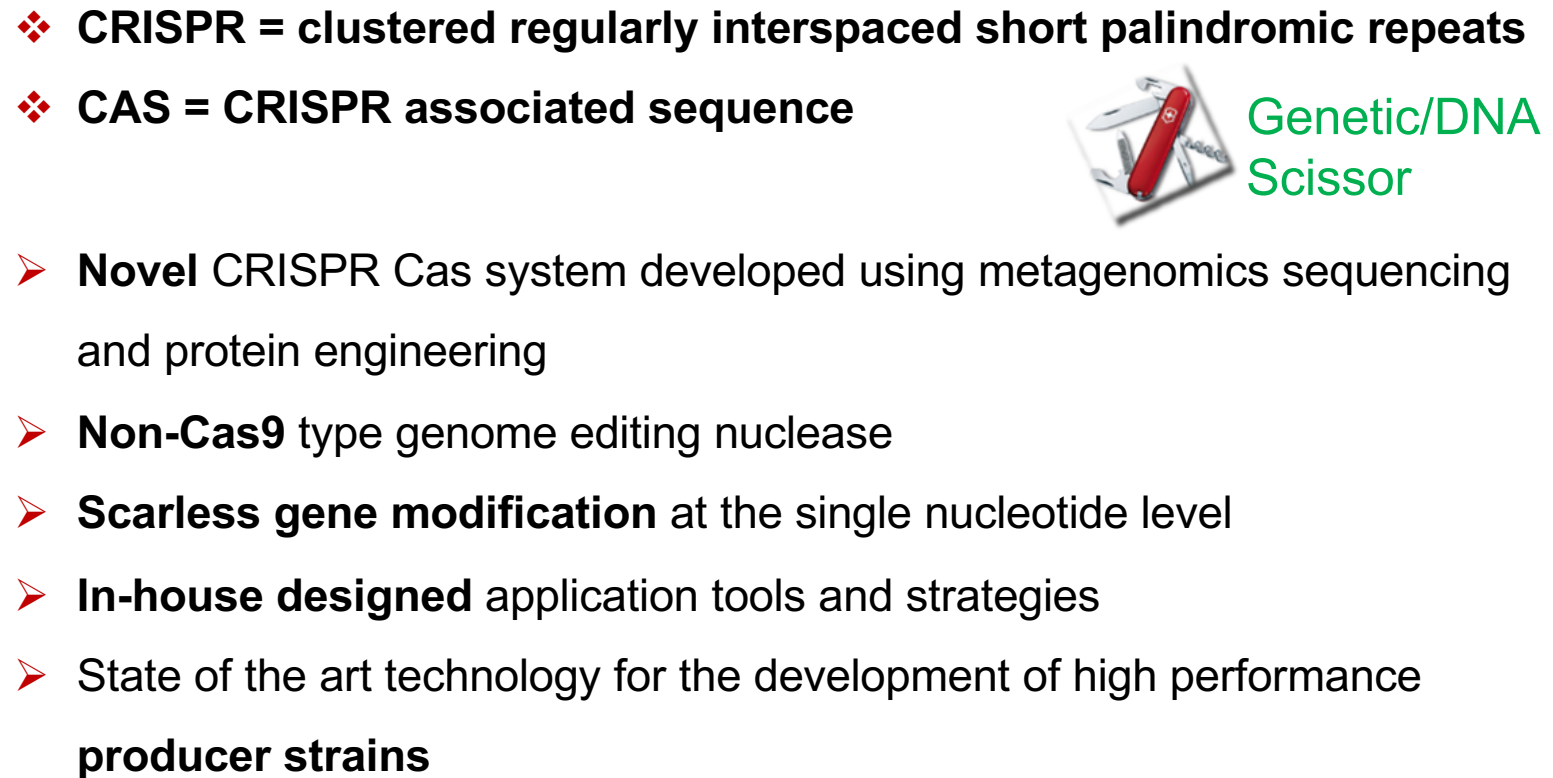
- PHA121 discovered by AnalytiCon
- Licensing agreement combined with a research agreement for Lead Optimization and CMC as a TMS service
- Milestone payments based on clinical development, regulatory events and sales development (up to EUR 11.4 million, paid to date EUR 1.15 million (€250K '16, €100K '18, €300K '19, €500K '21)
- Tiered Royalty Agreement: low to medium-single digit on direct and/or indirect net sales

➤ Exploring additional pharma opportunities & business models

\*Source: Pharvaris corporate presentation

\*\*Source: Pharvaris Form F-1 Registration Statement

# New Incubator Project, Technology Breakthrough



B·R·A·I·N

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# Genome Editing – developed by BRAIN

## BRAIN's CRISPR-Cas, Status Quo

### Status Quo

- Today validated as a **genome editing tool** in selected bacteria, fungi and yeast
- Today **demonstrated DNA targeting activity** in selected bacteria, fungi and yeast
- Technology **already employed** in internal projects
- Activity in **plants** has been achieved but still needs to be validated
- **International Partner** for plant cells involved since the beginning of the program (non disclosed)
- Genome editing activity tests ongoing for additional applications incl. mammalian cell lines
- **First IP application** to protect the BRAIN developed CRISPR associated nuclease (BEC) sequence is already submitted



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# Genome Editing – developed by BRAIN

Significant Economic Potential

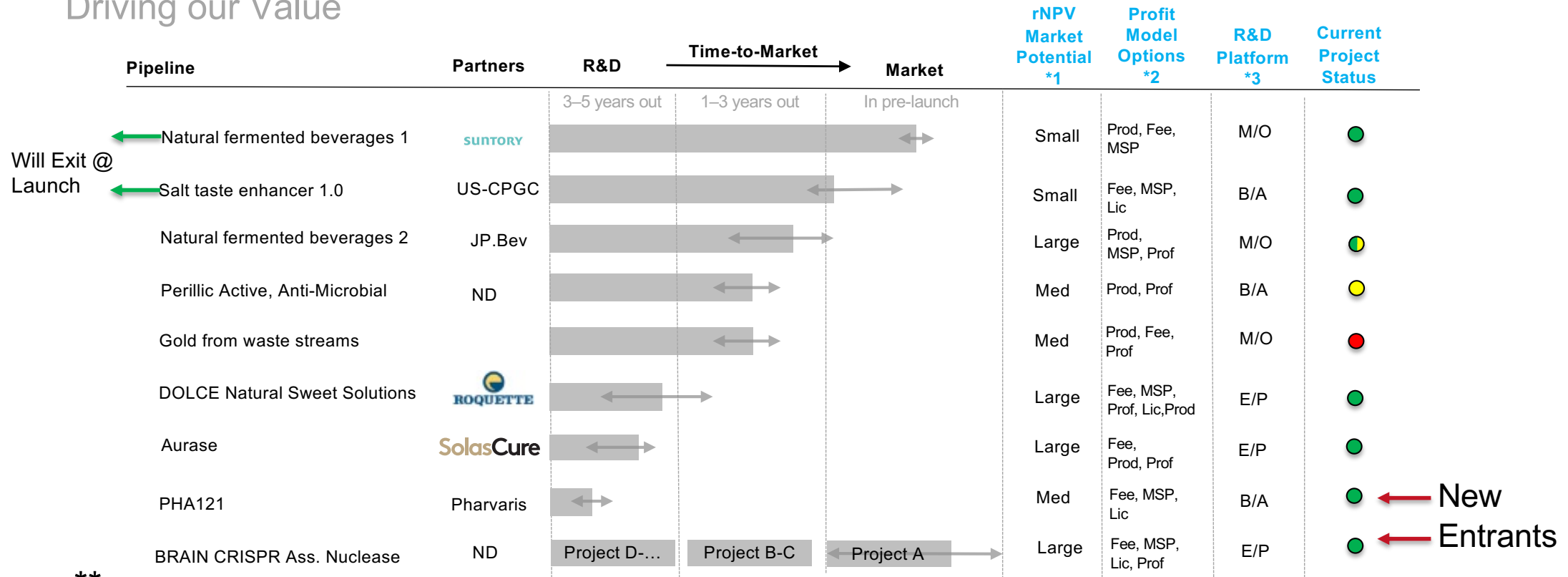
## **Genome editing developed by BRAIN has significant economic potential**

- Speed up own strain and product development
- Become a TMS partner of choice for genome editing, harvest additional TMS business
- Freedom to operate in genome editing
- Omit license fees for own development and TMS business
- Tech access and license potential for TMS business
- Significant license/x-license upside if technology can be validated for further plant and especially in mammalian cell lines
- All options open for commercialization model

**Has entered our incubator as a project with “Large” rNPV potential, if next development steps are successful could have very large potential**

# Our Incubator: BRAIN's Future Business

Driving our Value



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- Projects Green Metal Mining, Sweet Taste Enhancer and CO<sub>2</sub> moved to TMS business, fully funded programs
- Projects Salt-E, Fresco shelved, searching for partners
- New enzymes now part of BioIndustrial regular product development, see page 12

- Programs without contractually bound partners are marked red by default
- Contractual, technology or registration hurdles still need attention
- Phase 1 has been successfully completed but contract negotiations for the next development phase are progressing but not yet finalized

\*1: BRAIN-Group rNPV FCF+TV: **Small** < €5M, **Medium** €5M - €15M, **Large**: €15M+

\*2: **Prod**: Product sales. **Fee**: Research fee income. **MSP**: Milestone payments. **Lic**: License/royalty payments **Tec**: Tech fees **Prof**: Entity formation or profit participation

\*3: **B/A**: BioActives, **E/P**: Enzymes and proteins, **M/O**: Microorganisms/starter cultures

ND: not disclosed

# Biocatalysts Ltd.

Stake Expanded, Additional Capacity Expansion

## Aquired additional shares

- Stake expanded by 16.7% to 82.2%
- GBP 3.9 million purchase price
- Additional call/put options remain in place



## Strong business performance

- Despite Brexit and Covid-19
- 6M: high single digit growth
- New large scale fermenter fully utilized although only coming on stream early 2021
- Second phase of expansion planned to be accelerated
- Increased focus on own fermentation will boost EBITDA margins over time

# Appendix

Take a deep dive on the next slides or @

<https://www.brain-biotech.com/investors/financial-publications/2020-21> &  
<https://www.brain-biotech.com/investors/capital-markets-day>

# This is BRAIN

## BRAIN Biotech AG

### Breakthroughs & Services

#### BioScience

##### Incubator

Breakthrough Discoveries  
Nutrition/Health/Environm.  
Big Societal Themes  
Focused Pipeline  
Own&Partner Investment

~ €5m-€7m Annual  
Investment

##### Tailor Made Solutions

Discovery  
Characterization  
Cellular Biology  
Bioprocess Development  
Gene/Protein Engineering  
Strain Development/Opt.

~ €13m Annual Revenues\*  
Profitable Cost-plus Contract Research,  
Milestones, Technology & License Fees

##### BioActive Compound Libraries

Proprietary Bio-Archive  
Bioprospecting  
Discovery  
Customized Search  
Third-Party Access

B·R·A·I·N

**AnalytiCon**  
discovery  
The Natural Product Company



**SolasCure**

Spin-Out, 41% stake

### Products

#### BioIndustrial

##### Enzymes

##### Microorganisms

##### Bioactives

Nutrition, Healthcare, Environment, Cosmetics  
Large Scale Fermentation  
Formulating/Blending  
Production Scale-up  
Cell Factories  
Fermented Foods / Precise Fermentation

~ €25m Annual Revenues  
~10% adj. EBITDA Margin\*

**BIOCATALYSTS**  
exceeding enzyme expectations

**BIO SUN**  
FLAVORS & FOOD INGREDIENTS

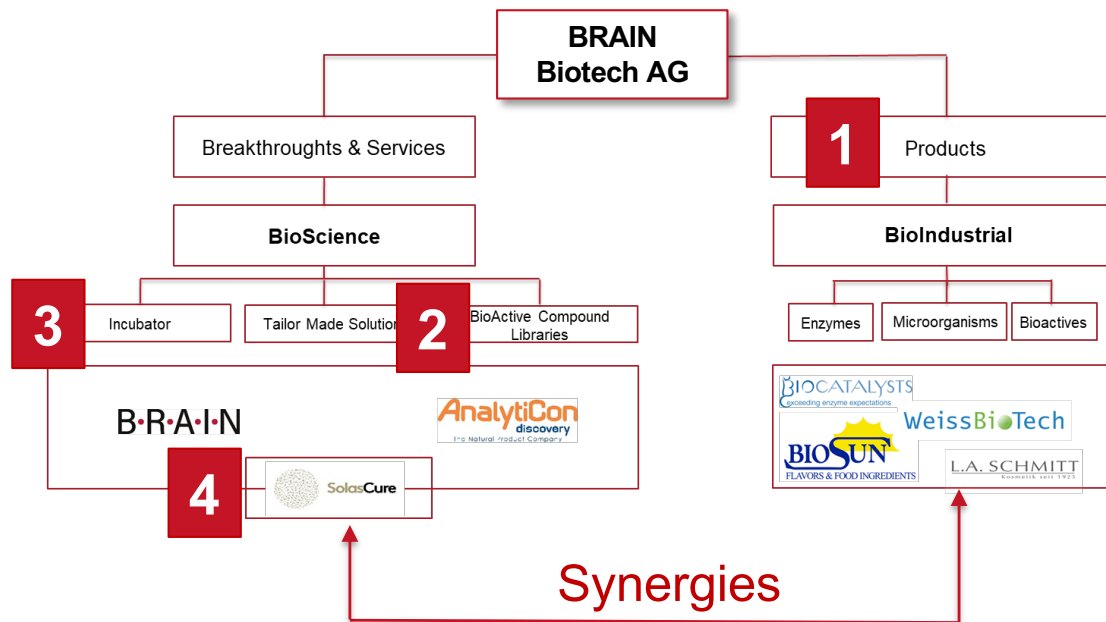
**WeissBioTech**

**L.A. SCHMITT**  
Kosmetik seit 1925

\*FY '19/'20

# BRAIN Group

## Value Creation & Synergies



- Integrated value chain from lab to production
- Industrial Scale-up and application know-how
- In-house strain optimization & development
- Customer strain development & Bio Process
- Variable scientist pool for internal/external projects
- TMS creates strong industrial network
- Utilize TMS knowledge for Incubator Projects and alternative use-cases
- Shared corporate services & financing

1

### Products Business

- Focus on high-growth & high-margin niches
- Re-shape from a purchase for resale to an own production model
- Strong target markets with healthy sales and margin growth in F&B, healthcare and environment

2

### TMS /Libraries Business

- TMS: longer term contract research programs (average duration 2 years); strong industrial partner network; rich pipeline of possible new projects
- Libraries: main customers from food, pharma & cosmetics industries. Access fees and upside from milestone payments / license income

3

### Incubator

- Focus on breakthrough products with a strong societal impact
- Significant value creation from development to launch
- De-risk R&D with partners and public funding
- Dynamic pipeline: mature products marketed, new products will enter

4

### SolasCure

- Innovative enzymatic wound care
- Spin-out, 41% participation
- IP for enzyme Aurase owned by BRAIN
- All options open to crystalize value from stakeholding



# Our Targets

## Guidance and Mid-Term Targets

### This FY Guidance, Detailed

(excluding CRISPR investments)

- **CRISPR** associated nuclease investments will be detailed and separately reported in the next quarters
- **Group Sales** EUR 37-40 million
- **YoY EBITDA improvement**
- **BioScience** below previous year as guided
- **BioIndustrial** slower growth than expected due to COVID-19 impacts and operational challenges at WeissBioTech; other BioIndustrial companies performing to or above plan

### Mid-Term Targets, Unchanged

(issued 09/20, 4-5 year targets)

(excluding CRISPR)

#### Double group revenue from base '18/19

- Double digit topline product CAGR
- Accretive M&A
- Contract research "TMS" proportionally reduced (excl. milestones)

#### Group adj. EBITDA margin 15% (+/- 5PP)

- Double digit fermentation production volume of customized novel enzymes
- Mid single digit annual productivity improvements

#### Proportion of new product sales: ~30% of total revenues

- Continuous innovation pipeline management

# NBD Deep Dive, The Pipeline

## Large Market Potential

### Natural Beverage 2

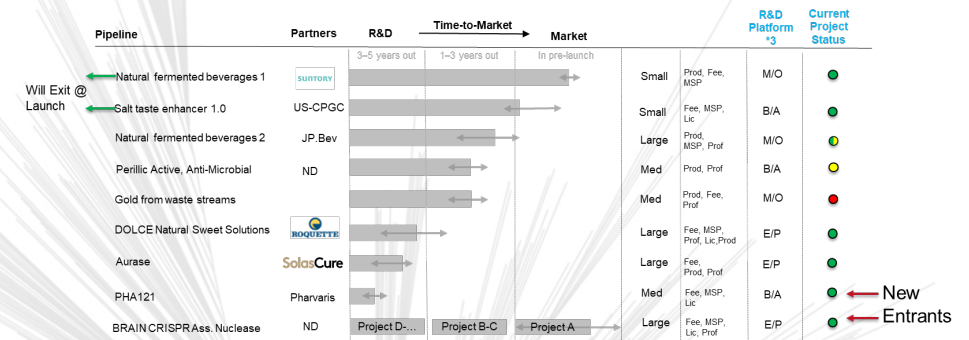
- Partners: Japanese Beverage Company
- Scope: undisclosed, confidentially agreement
- Exclusive to partner
- Technology Platform: microorganism
- Research Business Model: milestone payments
- Commercial Model: starter cultures, production, license fee, JV an option/profit share

### Dolce Natural Sweet Solution

- Partners: BRAIN, AnalytiCon Discovery, Roquette
- Scope: program for the discovery, development, approval and commercialization of new natural sweet solution
- Members get first-hand access to desired application and access to our SweetBox and Human Tongue Cell technology derived sweetener and sweet taste enhancer candidates
- Technology Platform: BioActive and process development
- Research Business Model: tech access fee, annual membership fee, success fees
- Commercial Model: currently in negotiations

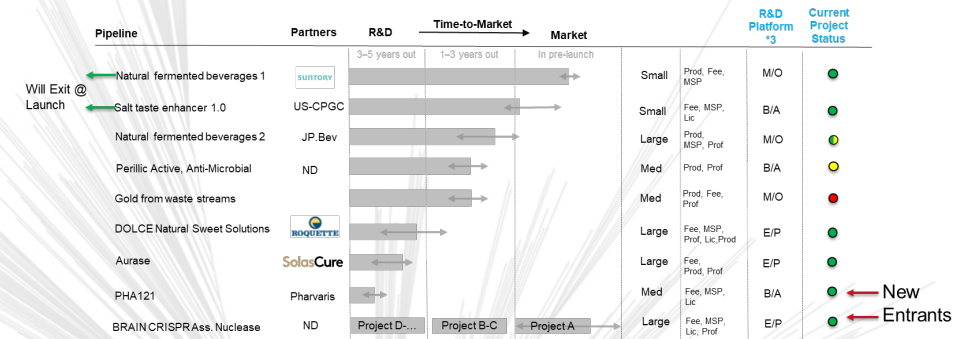
### Aurase

- Partners: Spin-off SolasCure
- Scope: innovative wound debridement agent for the cleaning of chronicle wounds
- Exclusive development through SolasCure, IP at BRAIN
- Technology Platform: enzyme/proteins
- Research Business Model: fees, technology transfer
- Commercial Model: spin-off, exit optionality, production through BRAIN (independent from owner)



# NBD Deep Dive, The Pipeline

Large Market Potential

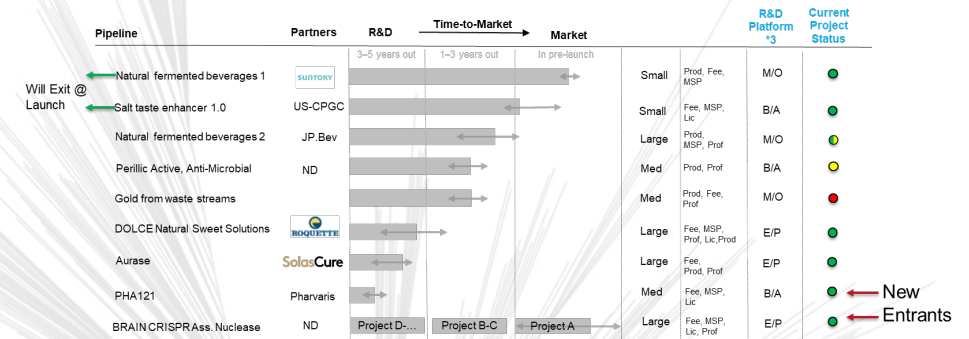


## BRAIN CRISPR Non-Cas9 Associated Nuclease

- **Genome Editing:** directed and precise change or use of a chromosomal target in a given organism
- **CRISPR** = clustered regularly interspaced short palindromic repeats
- **CAS** = CRISPR associated sequence
- **CRISPR-Cas** systems have enabled genome editing in multiple species and provided genetic tools with speed as well as simplicity that were previously unavailable
- **Editing** requires only two components (1. Cas nuclease 2. programmable guide RNA), and can be multiplexed for simultaneous modification of multiple sites in a single transformation event
- Novel BRAIN CRISPR Cas system developed using metagenomics sequencing and protein engineering
- Non-Cas9 type genome editing nuclease
- Scarless gene modification at the single nucleotide level
- In-house designed application tools and strategies
- Development of customized screening cells for target identification / validation or bioactive product development / identification
- State of the art technology for the development of high performance producer strains
- Business Model: all option are still being evaluated
- **If next development steps are successful could have very large potential**

# NBD Deep Dive, The Pipeline

Medium Market Potential



## Pharvaris N.V.\*

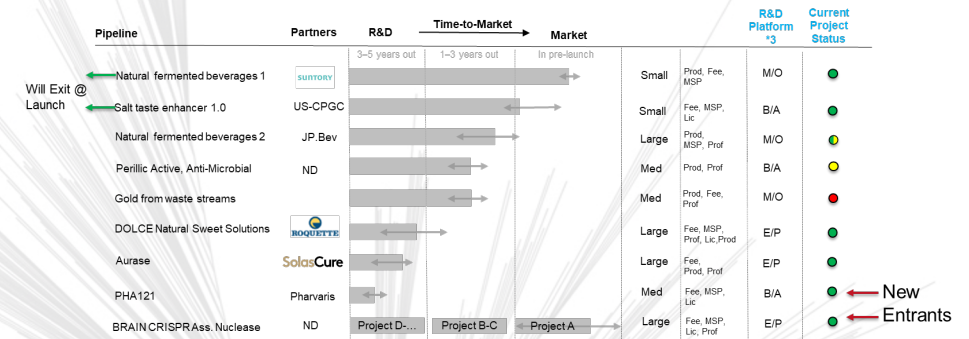
- Is a clinical-stage discovery and development company, founded in 2015 (CH)
- IPO at the NASDAQ (phvs) on February 9<sup>th</sup>
- Focus: treatment of hereditary angioedema (HAE)
- **HAE:** medical disorder caused by gene mutation, which results in recurrent attacks of severe swelling (every 2-4 weeks without treatment), swelling caused by excess level of bradykinin
- **New Treatment:** novel oral bradykinin B2-receptor antagonists (PHA121)
- **Phase 2** clinical development: for on-demand HAE treatment: PHVS416 a softgel capsule formulation containing PHA121
- **Preclinical:** PHVS416 softgel capsule prophylaxis HAE and PHVS719 XR tablet prophylaxis HAE, FDA acceptance of IND application granted on April, 21<sup>st</sup>
- Commercial Model: JV/profit share
- Milestone payments based on clinical development, regulatory events and sales development (up to EUR 11.4 million)
- Tiered Royalty Agreement: low to medium-single digit on direct and/or indirect net sales

\*Source: Pharvaris corporate presentation



# NBD Deep Dive, The Pipeline

Medium Market Potential



## Perillic Active

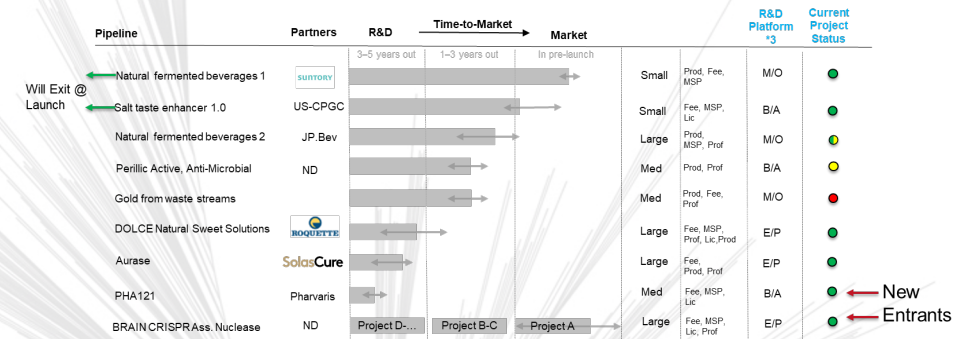
- Partners: US distribution partner contracted (non-disclosed); toll manufacturing
- Scope: nature based anti-microbial for food, feed, drinks and cosmetic applications, generated from industrial side streams
- Exclusive development with partners
- Technology Platform: BioActive
- Research Business Model: fee
- Commercial Model: JV/profit share

## Gold from Waste Streams / Urban Mining

- Partners: partner search actively running; LOI in place; non-exclusive partnerships
- Scope: CO<sub>2</sub> efficient biological process for gold extraction from low-grade waste streams, today these valuable waste streams are deposited
- Technology Platform: microorganisms
- Research Business Model: own development, partially public funding
- Commercial Model: flexible, dependent on partner and options for BRAIN (options: royalty, license, JV or franchise system)

# NBD Deep Dive, The Pipeline

## Small Market Potential



### Natural Beverage 1

- Partners: Suntory
- Scope: nature based low calorie drink innovation through fermentation
- Exclusive to Suntory, in a certain field
- Technology Platform: microorganism/starter cultures
- Research Business Model: milestone payments
- Commercial Model: starter cultures, license fee, royalties

### Salt Taste Enhancer 1.0

- Partners: US-Consumer Packed Goods Company
- Scope: salt reducing taste enhancement via taste modulation
- Exclusive development with partner for one identified molecule
- Technology Platform: BioActive
- Research Business Model: fee, milestone payment (research phase finalized)
- Commercial Model: royalties



# SolasCure Ltd.

## Revolutionizing Chronic Wound Care through Biomimicry



### For BRAIN:

- Discovering a unique technology and spinning it out in 2017 as a separate company
- 41% shareholding of BRAIN AG, at equity consolidated
- Created a targeted team at SolasCure Ltd.
- Share the commercialization financing burden with new investors
- Allows monetization at exit (e.g. IPO, Strategic Investor, PE)
- Aurase® IP stays with BRAIN AG, (patent estate, WO 2010/099955)

### The Market:

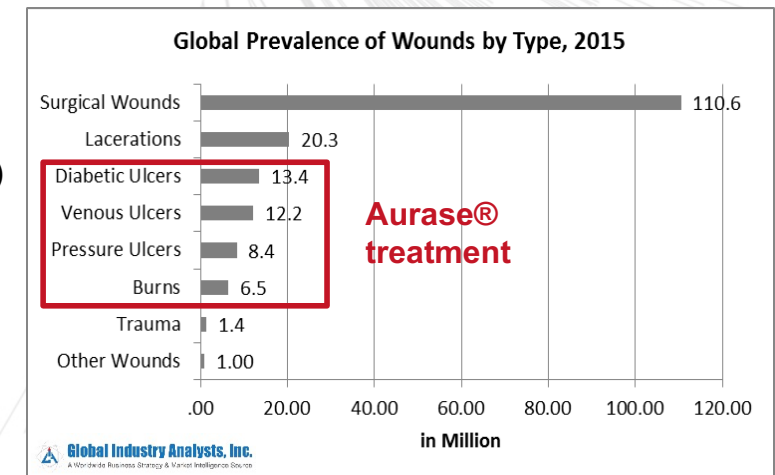
- Chronic wounds effect about 40mln people and consume about 10% of health care expenditures
- Advanced wound care market CAGR expected at 6,5% '18-26\* (aging, diabetes and obesity are the main growth drivers)
- Alternative to ineffective and painful surgical or autolytic debridement
- Current target market size ~€600mln

### The Product:

- Aurase® is a hydrogel containing a safe, active, highly specific enzyme
- The enzyme has been isolated and cloned from medical maggots (green bottle fly)
- Currently phase 2 of clinical trials
- Aurase® to be produced in a GMP biotechnological process
- Santyl® of S&N is currently the market leading drug for non-surgical wound debridement

### Latest Funding, Q1

- GBP 3 Mio in total
- New investor attracted: Seneca Partners (VC) with Seneca Growth Capital VCT
- BRAIN participated below pro-rata stake
- Pre-Money valuation +20% versus last capital injection
- BRAIN invested GBP 0.5 Mio
- New partner attracted
- Valuation keeps rising despite Covid-19 related delays



\*allied market research '19

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# Thank you for your attention.

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