VENTURE VALUATION

ASSET VALUATION REPORT

Cube Labs S.p.A.

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EXECUTIVE SUMMARY

Introduction

Cube Labs was established in 2013 as a Venture builder in Italy. The focus is on healthcare technology companies with a main focus on medtech, biotech, nutraceuticals and artificial intelligence. Cube Labs currently has a portfolio of 13 start-up companies in which it holds typically a share of 51% directly. Via a newly created trust (Trust Cube Labs), the company holds between 0% and 44% indirectly in the portfolio companies. Cube Labs has a number of collaborations with institutes and universities in Italy as a source for new projects. An exclusive partnership has been entered with INBB (Istituto Nazionale Biostrutture e Biosistemi Consorzio) in 2017 with the right of first refusal by Cube Labs for the development of research projects.

Description

Cube Labs strategy is to access innovative technologies from its partner universities and institute and built a company around such innovation. Typically, Cube Labs would invest initially around EUR 150'000 for pre-see companies, then up to EUR 0,5m for seed stage companies and up to EUR 3m for Series A financing round.

VALUATION

Value Range

Our calculations results in an asset valuation range of EUR 58.7m to EUR 106.2m, with an average value of EUR 79.2m based on an updated discount rate of 22%. We have performed an asset valuation (full asset value without assigning any value to a licensor) of each of the listed projects with different discount rates (low/medium/high values) and used the shareholding of Cube Labs. The resulting value is between EUR 37.6m and EUR 68.6m.

Portfolio Valuation

in EUR m								
Asset	**Company**	**Full Asset Value Range*** Discount rates			Cube Labs & Trust %	**Cube Labs share on full Asset Value Range*** Discount rates		
		Low	Medium	High		Low	Medium	High
Regen anti-aging (Longevity)	Cartilago	4.9	5.8	7.0	63%	3.1	3.7	4.4
Regen NAPA osteoarthritis (OA)	Cartilago	8.8	11.9	16.0	63%	5.5	7.5	10.1
C19-SMSSC (systemic sclerosis)	Orpha Biotech	2.7	4.3	6.4	95%	2.6	4.1	6.0
MRC Diabetic Neuropathy (DN)	MRC	2.8	4.4	6.5	65%	1.8	2.8	4.2
MRC Alzheimer	MRC	0.8	2.7	5.5	65%	0.5	1.8	3.6
Theakine (Pros + IBS-C)	Adamas	2.9	3.7	4.7	55%	1.6	2.0	2.6
Bio-clay	Biodiapers	5.8	7.1	8.9	85%	4.9	6.1	7.5
Neu Retina Kit (early AD diagnostic)	Bioaurum	5.0	6.1	7.6	60%	3.0	3.7	4.6
PON2 (portable assay device)	Lumina	3.7	4.5	5.5	55%	2.0	2.5	3.0
Nuvagel	DTech	3.3	4.0	4.8	60%	2.0	2.4	2.9
Biogel Spray (Covid-19 prop)	DTech	0.0	0.3	0.6	60%	0.0	0.2	0.4
Biospray for Pollutants & Allergens	DTech	0.9	1.1	1.5	60%	0.5	0.7	0.9
Thermal Matrix	Skin Plastic	2.9	3.7	4.7	55%	1.6	2.0	2.6
HiTrace	Hiperforming	4.0	5.2	6.6	60%	2.4	3.1	4.0
Hybrid scalpel	Rescue Code	1.3	1.7	2.2	60%	0.8	1.0	1.3
ROSES	CRV	1.6	2.1	2.8	55%	0.9	1.2	1.5
Oleoyl-LPI (pharmaceutical)	Lipovexa	4.1	6.0	8.8	60%	2.4	3.6	5.3
Oleoyl-LPI (nutraceutical)	Lipovexa	2.0	2.4	2.9	60%	1.2	1.4	1.7
Spray patch	ChromaPatch	1.3	2.1	3.2	60%	0.8	1.2	1.9
Value Range		**58.7**	**79.2**	**106.2**		**37.6**	**51.0**	**68.6**

* Depending on the strategy (out-licensing or M&A), each company might typically not retain the full value of each asset.

CONTENT

INTRODUCTION

Professional background

This report was prepared by Venture Valuation VV AG (Venture Valuation), a company that specializes in the independent assessment and valuation of life sciences (biotech, pharma, medtech, nutraceuticals) companies and products. Additional information on Venture Valuation is available at the back of this document.

Assignment

Venture Valuation was retained by Cube Labs to provide an independent, third party valuation up-date of the different key assets owned by the portfolio companies of Cube Labs. The up-date is based on the original valuation performed in 2021 as well as the 2022 and 2023 up-dates. For the valuation, we have considered the value of the lead products with an rNPV calculation. Each company might have additional assets (pipeline), platform technologies or services, which have not been considered in this valuation. We note that the present is a valuation each asset as per 31.12.2024, and thus represents a snapshot of the value as per this date.

Assumptions

All of the assumptions that were made are set out in the body of this report. If any of these assumptions change, the valuation represented herein may change accordingly.

Information

All information regarding the assets and the companies as well as projections for R&D expenses from 2024 onwards and a brief description have been provided by Cube Labs and we have relied on these information provided and have not been able to verify or audit the information received. We have also not had any direct contact with any of the companies. For the revenue estimates we have relied on previous assumptions made to have a consistent approach, except if we have received specific information that this assumptions would have to be changed. As we assume products will be out-licensed, the total necessary investment for each project will not all have to come from Cube Labs or direct investors, but might also be contributed by the licensing partner. However, in such an out-licensing case, the value would not be all retained by Cube Labs. In the current valuation, this has not been considered.

Statement of independence

This report is based on an independent opinion of Venture Valuation. Our fee in this case is not dependent on the outcome of the value.

PORTFOLIO

REGEN LONGEVITY (CARTILAGO)

Introduction

CARTILAGO SRL is an Italian based start-up company which owns, Regen Longevity, its lead product. The product was developed by Prof. R. Scandurra from the La Sapienza University in Rome, Italy.

Regen Longevity, a regenerative peptide candidate being developed to increase overall skin health and for the treatment of facial wrinkles (fine and medium) that occur with ageing. The anti-ageing treatment was developed to enhance the overall health of ageing skin and to improve the appearance of expression lines. The cream formulation comprises a proprietary peptide, a derivative of glucosamine.

External pre-clinical research suggest that the product could have collagen repair properties and stimulates endogenous hyaluronic acid production.

Equity Share

Cube Labs currently owns 51% of CARTILAGO and the Trust Cube Labs another 12%. Other shareholders include INBB (Biostructures and Biosystems National Institute) 5% and Prof. R. Scandurra 32%.

Financing to date

An estimated investment of over EUR 1.5m has been made in R&D, which includes a seed investment by Seed per il Sud of CHF 0.2m. In 2024, EUR 275'020 was invested.

Therapeutic Induction

The product might be offered as an anti-aging cream, specifically as an anti-wrinkle product focused on fine and medium wrinkles.

Product Positioning and Target Patient Population / market

We assume the product would be a high end cosmetic product predominantly targeting women over the age of 45. As this market is very competitive, we have focused the valuation on Europe.

Strategy

We assume Cartilago would potentially develop the product to market readiness and then license it to a marketing and sales partner. We do not assume the company to bring the product to the market under its own brand name at this point. However, the company is already in early discussion with multinational companies, thus an earlier out-licensing is also possible.

Past development

A clinical cosmetology study was conducted in Q4 2021 and Q2 2022 with 30 female subjects (average age of 55), of which 21 completed the study. The analysis focused on fine and medium wrinkles and compared the NAPA product (1%) with a base cream (control) around the left and right eye for 30 days.

The preindustrial chemical synthesis of NAPA has been performed through a novel identified and effective chemical synthesis strategy obtained by the synergy of Professor Giancarlo Cravotto from the University of Turin and Professor Roberto Scandurra from the University of Rome, La Sapienza.

Development plan

Currently further in-vitro tests are ongoing in collaboration with the University of Genova led by Prof. Grasselli which are required from a regulatory perspective and also to strengthen the validity of NAPA for a possible out-licensing. Further stability and cytotoxicity test are also planned in 2025.

Currently no further clinical study are planned.

	Time line*	**Costs (k EUR)***
Product development	- Q3 2025	20
Industrial development	Q3 2025 – Q1 2026	50
Regulatory and pilot batch	Q1 2026 – Q2 2026	30
Market entry	2026/27	

* Estimated by Cartilago

Manufacturing

The company is in discussion with manufacturing partners. In 2023 and beginning of 2024, NAPA molecule was synthesized: 30 g NAPA by C4T and 10 g NAPA by FTherapeutics/Synthelia. The industrial scale up will still need to be initiated and completed and assume this not to be a major hurdle, but it will take time to organize and complete.

Patents

The key patent for NAPA is an Italian Patent no. 102 018 000 008 758/ WO2020058889A1, filed in Italy in 2018, so we assume an expiry 2038. This patent has been granted in the US (US11685760B2). The focus on the patent is on amino acid derivative of glucosamine stimulating the synthesis of extracellular matrix and pharmaceutical composition. A further related patent was filed in the US in 2019 (US11685760B2) and granted in 2023, covering pharmaceutical compositions of NAPA

(and its analogues), methods of tissue regeneration, including skin. We assume an expiry in 2039.

Market size

The global anti-ageing market is estimated to be over USD 47bn in 2023, growing to over USD 80bn in 2033. This market can be segmented in skin care (around 50%+), hair care, makeup, eye care and others or in cream, lotion, serum or others. The anti-wrinkle market is estimated to be USD 19bn in 2033 and can be segmented in Moisturizers, Eye Creams, Cleansers and Serum.

Competitive landscape

Currently available anti-aging and longevity tissues solutions involving hyaluronic acid comprise dermal fillers and intraarticular infiltration. Both are absorbable and therefore show short term effects in comparison to the proposed solution which will be administered topically granting enhanced effects and endogenous stimulation of hyaluronic acid production.

Key companies providing anti-Wrinkle products include:
Top players Covered in Anti-Wrinkle Products Market Study are:

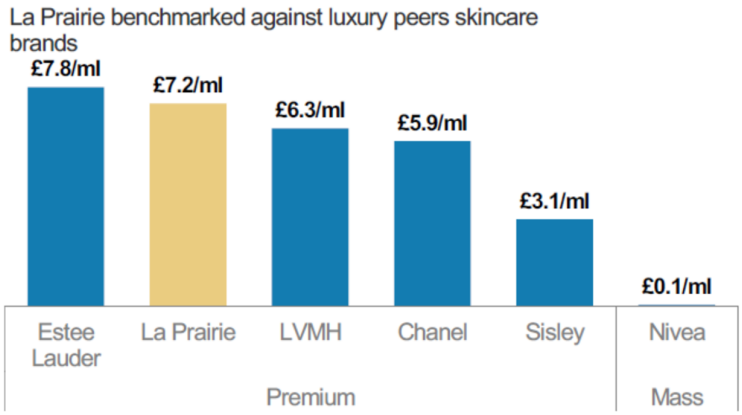
- L'Oreal S.A (France)
- The Estée Lauder Companies Inc. (US)
- The Procter & Gamble Company (US)
- Shiseido Company Limited (Japan)
- Avon Products Inc. (UK)
- Revlon Inc. (US)
- Unilever (UK)
- Forest Essential (India)
- Clarins (France)
- Beiersdorf (Germany)

The top 10 leading products sell approximately 1m up to 4m units per year in the US (2018). With an estimated sales price of USD 25, this leads to around USD 100m in sales in the US. As a comparison, on a group level, La Prairie, a premium brand of Beiersdorf, has global sales of estimated USD 500m (over 50 products).
Filorga, a company acquired by Colgate-Palmolive Co.'s in 2019 for USD 1.7bn had revenues of around USD 250m.

Pricing

Cube Labs assumes a pricing of EUR 1'800 per patient per year, which would make it at the top of premium products. Assuming the use of 15ml to 30ml per month, per patient would lead to a cost of between EUR 5 - 10/ml or GBP 4.2-8.4/ml, which is in line with the luxury peers below.

Exhibit 4: La Prairie is in the top tier of premium anti-aging/skin care brands



Source: Morgan Stanley, March 2018, Beiersdorf AG – Stepping into the Beyond

VALUATION REGEN LONGEVITY

Probability of success

Taking into consideration the stage of development and the cumulative success rate of Regen Longevity for medium and fine wrinkles, we have estimated the probability of product launch to be 71%. The key risk we see is to demonstrate efficacy in a larger market study.

Probability of Success

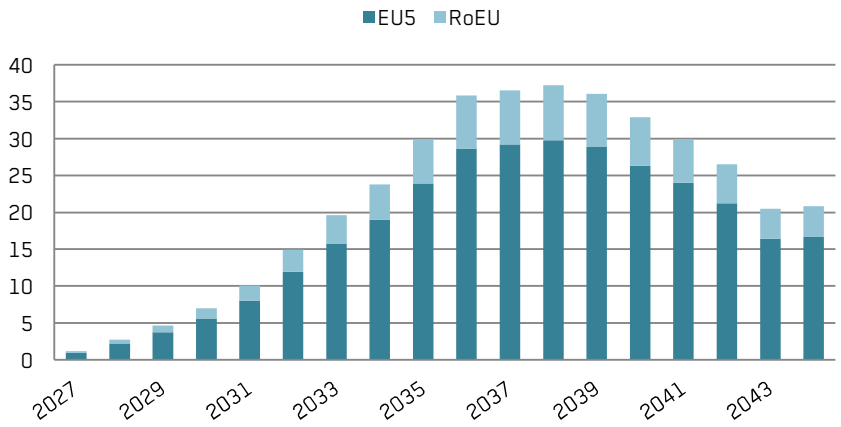
	Success rate	
	Studies / Industrial production	CE Approval
Probability of Success (PoS)	75%	95%
Cumulative PoS	75%	71%

Sales forecast

The sales curve for Regen Longevity has been forecasted from its forecasted launch in 2026 to 2045, past the expected patent expiry in 2039. We have benchmarked the sales in comparison with other peer group companies. Thus, the projected peak sales for Europe of around EUR 51m is rather optimistic. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Peak sales (2040)	USD 37m	Model estimate
Total sales (2028-2045)	USD 390m	Model estimate
Launch date	2026	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	30%	Venture Valuation estimate
Sales & Marketing (% of revenue)	30%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Regen Longevity in the treatment of fine and medium wrinkles (in m EUR)



Product valuation between EUR 4.9m and EUR 7.0m

We determine the total product value of Regen Longevity to be between EUR 4.9m and EUR 7.0m. Using a discount rate of 22%, the average value is EUR 5.8m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	4'870	5'319	5'821	6'383	7'016

References Regen Longevity:

- Morgan Stanley, March 2018, Beiersdorf AG – Stepping into the Beyond
- https://www.grandviewresearch.com/industry-analysis/anti-wrinkle-products-market?utm_source=prnewswire&utm_medium=referral&utm_campaign=fmcg_15-november-21&utm_term=anti_aging_products_market&utm_content=rl1
- https://www.futuremarketinsights.com/reports/anti-wrinkle-products-market

REGEN NAPA (CARTILAGO)

Introduction

The companies second most advanced product is Regen NAPA, at pre-clinical stage, for the treatment of Osteoarthritis. The product is being developed by Prof. R. Scandurra from the La Sapienza University in Rome, Italy.

Glucosamine (an amino sugar and a prominent precursor in the biochemical synthesis of glycosylated proteins and lipids) are believe to be involved in the repair process of connective tissue, such as damaged cartilage. Cartilago's derivative of Glucosamine is named NAPA. Cartilago believe its product is more effective than glucosamine.

Therapeutic Induction

Orthopaedics – Osteoarthritis (OA)

Product Positioning and Target Patient Population / market

The Regen NAPA product is planned to be a liquid formulation for intra-articular injection.

Past development

Cartilago has conducted in vitro and two in vivo studies (a mouse- and rabbit OA model).The mouse study was completed in 2017 with 26 mice (divided into three groups: (1) DMM surgery without treatment; (2) DMM surgery treated after 2 weeks with one intra-articular injection of NAPA (2.5 mM) and (3) no DMM surgery).
The injection of NAPA significantly improved the physical structure of articular cartilage while reducing catabolic enzymes, extracellular matrix (ECM) remodelling and IKKα expression, showing to be able to exert a chondroprotective activity *in vivo*.
The results were published: Veronesi et al., Osteoarthritis and Cartilage 25 (2017) 589-599 https://doi.org/10.1016/j.joca.2016.10.021.

Development plan

Cartiolago is in the process of identifying suitable partners for the ongoing preclinical pharmacology studies
In 2024, PQE had provided a comprehensive gap analysis has been conducted to assess the remaining preclinical activities required for regulatory submission and entry into Phase I clinical trials. Additionally, PQE provided a list of possible CDMO to contact to perform preclinical trial tests. Preclinical activities to start in Q2-2025.

In parallel, Cartiolago is navigating ongoing regulatory procedures for the progression of the novel chemical entities, a critical step to ensure compliance with regulatory standards and safety. The company has successfully completed NAPA characterization in collaboration with FTherapeutics in Madrid, which is a prerequisite for the vivo preclinical experiments. These partnerships will enable the company to ensure the quality and supply of the products for both preclinical studies and future clinical trials.

	Time line	Costs (m EUR)	Patients
Pre-clinical	2025	1	
Phase I	Q3 2027 – Q2 2028	0.4	60
Phase II	Q3 2028 – Q4 2029	7.0	168
Phase III	Q1 2030 – Q4 2031	40	500-1500
Approval	Q1 2032 – Q4 2032	4.5	
Market entry	Q1 2033		

* Estimated by Cartiolago

Patents

Three patents have been filed by Cartilago in 2016, 2018 and 2019 (with 2 US granted patents), which potentially could provide protection until 2039. The strength and level of protection remain a risk.

Market size

The osteoarthritis therapeutics market is projected to reach over USD 11.0 bn by 2025 and USD 24 bn by 2034, growing from around USD 9.9 bn in 2024 (Precedence Research).

Competitive landscape

Current practice for patients diagnosed with Osteoarthritis of the Knee is dependent on the staged disease. Those in Stage 1 (Minor) are unlikely to experience pain or discomfort. Person in Stage 2 (Mild) may note symptoms such as stiffness or joint pain. Pain and discomfort may occur while performing activities, such as running, walking, kneeling, and bending in Stage 3 (Moderate) patients. At Stage 4 (Severe), knee replacement surgery may be the only option. Non-therapeutic treatment options include weight loss, exercise, acupuncture, unloader/support knee braces and/or physical and occupational therapy. Therapeutic options tend to start with the use of OTC pain relievers, anti-inflammatory drugs such as acetaminophen (Tylenol), ibuprofen (Advil, Motrin), or naproxen sodium (Aleve), glucosamine sulphate and/or topical creams. This tends to follow with prescription anti-inflammatory drugs or other medication to relive pain. Injections of corticosteroids or hyaluronic acid into the knee tends to follow in later stages of the disease, with knee replacement surgery as an option in later stages of the disease.

Competing players in this area are somewhat extensive, with a number of large multinationals and biotech involved, but also a broad range of generic pain relivers. There have been high-profile failures in pivotal clinical trials in recent times. Namely, Bone Therapeutics treatment JTA-004 recently failed to meet key primary and secondary endpoints in a phase III study. Post-hoc analysis did reveal efficacy in a subgroup of high-pain patients.

Pricing

For pricing there is a wide range, depending on the target patients. We consider as a lower boundary the price of currently used treatments such as Zilretta (USD 435 price per injection) and intra-articular hyaluronic acid (e.g. Euflexxa, USD 281 FSS price per injection, USD 1,200 – 1,400 estimated real-life yearly cost. If NAPA provides efficacy and quality of life improvements compared to these treatments then historical cost efficiency analysis suggest that it could be cost-efficient at a price of USD 2,500 per injection.

NUMBER OF PRODUCTS IN DEVELOPMENT (AS PER BIOTECHGATE)

Stage	Number of Products
Filed	3
Phase III	23
Phase II/III	9
Phase II	26
Phase I/II	6
Phase I	22
Preclinical	67

EXAMPLES OF MARKETED DRUGS

Product	**Company**	**Annual sales WW in 2024 (in m USD)**
Zilretta	Pacira BioSciences	118
Synvisc	Sanofi	139
Vimovo	Grünenthal Gruppe	79
Supartz	Kaken Pharmaceutical	124
Jiuli	Sino Biopharmaceutical	69
Imrecoxib	Jiangsu Hengrui Pharmaceuticals	88

X Ray	Genomma Lab Internacional	41
Resiniferatoxin	Shionogi	n/a
Loqoa Tape	Taisho Pharmaceutical Holdings	31
Meloxicam	Pharmstandard	19

VALUATION REGEN NAPA

Probability of success

Taking into consideration the stage of development and the cumulative success rate of Regen NAPA in the treatment of OA, the probability of product launch has been determined to be 9.1%.

Probability of Success

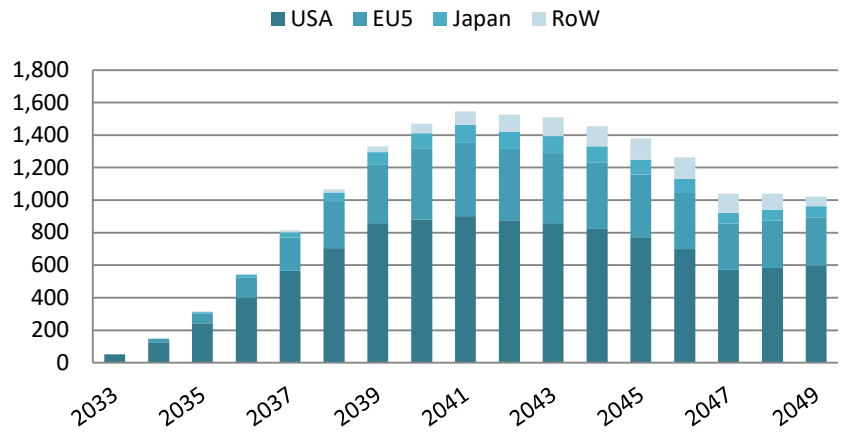
	Success rate					
	Prec.	Phase I	Ph IIa	Ph IIb	Ph III	Approval
Probability of Success (PoS)	85%	58%	80%	38%	68%	92%
Cumulative PoS		49%	39%	15%	10%	9.1%

Sales forecast

The sales curve for Regen NAPA has been forecasted from its forecasted launch in 2033 to 2050, past the expected patent expiry in 2039. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share	EU5 / US / Japan: 20% RoW: 10% of sales in EU5 / US / Japan	
Peak sales (2041)	USD 1.5bn	Model estimate
Total sales (2032-2049)	USD 18.5bn	Model estimate
Launch date	EU5: 2034 US: 2033 Japan: 2035	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	15%	Venture Valuation estimate
Sales & Marketing (% of revenue)	20%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Regen NAPA in the treatment of OA (in m EUR)



Product valuation between EUR 8.8m and EUR 16m

We determine the total product value of Regen NAPA to be between EUR 8.8m and EUR 16.0m. Using a discount rate of 23%, the average value is EUR 11.9m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	8'807	10'248	11'906	13'816	16'017

References Regen NAPA:

- Abedin et al. Predicting knee osteoarthritis severity: comparative modelling based on patient's data and plain X-ray images. Sci Rep (2019) 9, 5761.
- Cui et al. Global, regional prevalence, incidence and risk factors of knee osteoarthritis in population-based studies. E Clinical Medicine (2020) 29–30.
- Grässel & Muschter, Recent advances in the treatment of osteoarthritis Faculty Rev (2020) 9, F1000, 325.
- Heidari B. Knee osteoarthritis prevalence, risk factors, pathogenesis and features: Part I. Caspian J Intern Med (2011) 2, 205-212.
- Katz et al. Diagnosis and Treatment of Hip and Knee Osteoarthritis: A Review. JAMA (2021) 325, 568–578.
- Le et al. Healthcare costs associated with osteoarthritis in US patients. Pain Pract (2012) 12, 633-640.
- Singh et al. Rates of Total Joint Replacement in the United States: Future Projections to 2020-2040 Using the National Inpatient Sample. J Rheumatol. (2019) 46, 1134-1140.
- Weinstein et al. Estimating the burden of total knee replacement in the United States. J Bone Joint Surg Am (2013) 95, 385-392.

MRC DN (MOLECULAR RESEARCH)

Introduction	Molecular Research SRL, Lecce is a Spin-off from the University of Catania. The company provides CRO and other services as well as has its own development program. The company has two products in early development, one an Alzheimer product (MRC AD), and one on diabetic neuropathy (MRC DN). We assume the DN product will be the lead product and so the valuation is primarily based on this product. However, both programs are at a similar stage (possible start of the clinical development according the Molecular Research in 2028 or beyond)
Equity Share	Cube Labs currently owns 51% of MOLECULAR RESEARCH and the Trust Cube Labs another 14%. Additional investors include INBB with 5% and Prof. Pappalardo with 30%.
Therapeutic Induction	Diabetic peripheral neuropathy (DN) is a prevalent complication of diabetes, characterized by nerve damage primarily in the extremities. In the past, the diagnosis of DPN has relied on clinical examinations and nerve conduction studies, but recent advancements in diagnostic technologies have advanced. One such development is the use of skin biopsy, which involves taking a small sample of skin to measure intraepidermal nerve fiber density.
Product Positioning and Target Patient Population / market	The target population for diabetic neuropathy includes individuals with type 1 and type 2 diabetes who are at risk of developing nerve damage due to high blood sugar levels. The risk of diabetic neuropathy increases with the duration of diabetes and is often higher in those with poorly controlled blood sugar. Additionally, certain factors like advanced age, high blood pressure, smoking, and obesity can also increase the likelihood of developing neuropathy.
Past development	MCR had received an initial investment from its seed investors of around EUR 315'000 plus another EUR 120'000 in 2024. The proceeds were used for the following activities according to the company: • PCT patent filing on therapeutic molecule for diabetic neuropathy • In vivo preclinical implementation on murine diabetic neuropathy models and knockout mice. • Research and Development: conclusion of the preclinical phase in vitro with toxicity tests and determination of the formulation and synthesis of the molecule on a pre-industrial scale for Target. In a collaboration with C4T S.r.l, Italy, MRC had the opportunity to overcome the initial assessment that the molecule was impossible to scale-up on an industrial scale.
Development plan	To overcome stability issues, new in silico studies are planned to identify a stable active molecule. This is complemented by ongoing in vitro studies to verify the efficacy of the proposed solutions. To move MCR DN towards clinical development, the company plans to initiate the following pre clinical studies, which should be completed within 24 month. : • Synthesis and scale-up feasibility • Preclinical Development • Toxicology and toxicokinetic studies • IND application for CTA filing

Thus, the project is still at a very early stage of development and a market entry assumed for 2036.

	Time line	Costs (m EUR)
Pre-clinical	- Q3 2028	1.6
Phase I	Q3 2028 - Q1 2029	9
Phase II	Q2 2029 - Q1 2030	4.3
Phase III	Q2 2030 - Q4 2031	21.5
Approval	Q4 2032 - Q4 2033	3
Market entry	Q1 2034	

* Estimated by Molecular Research.

Strategy

MRC plans to develop the product to a phase I/II clinical trial before out-licensing to a strategic partner. Please note that for any licensing, we assume the total asset value will be shared between the licensee and licensor.

Patents

MRC currently has one patent application IT102021000007730, filed in March 2021 as a priority application and covering the use of certain molecules in the treatment of diabetic neuropathy.
Furthermore, the company reported that the European Patent Office (EPO) has officially accepted the patent application No. 22 717 008.1, titled: "Benzomorphan derivative activating adiponectin receptors in subjects affected by diabetic neuropathy." filed in 2022.

Collaborations

According the MRC, numbers collaboration exists including:

- Hong Kong University, Dr NG Chun Laam, Roy
- University of Turin, Prof. Giancarlo Cravotto
- INBB: National Institute of Biostructures and Biosystems

Market size

The global diabetic neuropathy market is estimated to grow to around USD 9bn in 2034 from USD 4.5m in 2024. Its increase is also due to better diagnostics and biomarkers.

Competitive landscape

Diabetic neuropathy has no known cure. The goals of treatment are to

- Slow progression
- Relieve pain
- Manage complications and restore function

Current treatment may include the following (according to the Mayoclinic):

- **Capsaicin.** Capsaicin cream, applied to the skin, can reduce pain sensations in some people. Side effects may include a burning feeling and skin irritation.
- **Alpha-lipoic acid.** This powerful antioxidant is found in some foods and may help relieve nerve pain symptoms in some people.
- **Acetyl-L-carnitine.** This nutrient is naturally made in the body and is available as a supplement. It may ease nerve pain in some people.
- **Transcutaneous electrical nerve stimulation (TENS).** This prescription therapy may help prevent pain signals from reaching the brain. transcutaneous electrical nerve stimulation (TENS) delivers tiny electrical impulses to specific nerve pathways through small electrodes placed on the skin. Although safe and painless, doesn't work for everyone or for all types of pain.

EXAMPLES OF PRODUCTS IN PHASE III DEVELOPMENT

Product	Company	Generic Name	Mechanism of Action	Patent expiry
Minnebro	Exelixis	esaxerenone	Mineralocorticoid receptor antagonist	Jan 27
Inpefa	Lexicon Pharmaceuticals	sotagliflozin	Sodium-glucose cotransporter 1 (SGLT1) inhibitor; Sodium-glucose cotransporter 2 (SGLT2) inhibitor	May 33
Minnebro	Daiichi Sankyo	esaxerenone	Mineralocorticoid receptor antagonist	Jan 27
Minnebro	Ligand Pharmaceuticals	esaxerenone	Mineralocorticoid receptor antagonist	Jan 27
Inaxaplin	Vertex Pharmaceuticals	inaxaplin	Apolipoprotein L (ApoL) 1 inhibitor	
SER150	Evolva Holding	-	Thromboxane synthase inhibitor	Jan 28
SER150	Serodus	-	Thromboxane synthase inhibitor	Jan 28
Envlo	Daewoong Pharmaceutical	enavogliflozin	Sodium-glucose cotransporter 2 (SGLT2) inhibitor	
Bardoxolone Methyl	Dartmouth College	bardoxolone methyl	Nuclear factor erythroid 2-related factor (Nrf2) stimulant	Jun 33
Minnebro	Exelixis	esaxerenone	Mineralocorticoid receptor antagonist	Jan 27
Inpefa	Lexicon Pharmaceuticals	sotagliflozin	Sodium-glucose cotransporter 1 (SGLT1) inhibitor; Sodium-glucose cotransporter 2 (SGLT2) inhibitor	May 33

Source: Evaluate

Product Pricing (preliminary estimate)

Indication	Country	Annual Treatment Price EUR
Diabetic neuropathy	EU, JP	1'500
	US	3'000

VALUATION MRC DN

Probability of success

Taking into consideration the stage of development the cumulative success rate of MRC DN in the treatment of Diabetic neuropathy, the probability of product launch has been determined to be 7%.

Probability of Success

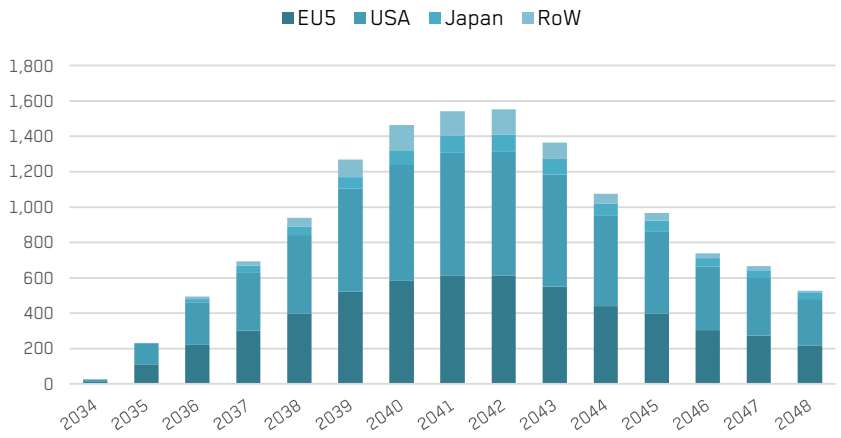
	Success rate				
	Prec.	Phase I	Ph II	Phase III	Approval
Probability of Success (PoS)	60%	63%	34%	67%	85%
Cumulative PoS		38%	13%	9%	7%

Sales forecast

The sales curve for MRC DN has been forecasted from its forecasted launch in 2034 to 2050, past the expected patent expiry in 2042. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share	EU5 / US / Japan: 5% RoW: 10% of sales in EU5 / US / Japan	
Peak sales (2042)	EUR 1.6bn	Model estimate
Total sales (2034-2050)	EUR 14bn	Model estimate
Launch date	2034	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	25%	Venture Valuation estimate
Sales & Marketing (% of revenue)	25%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for MRC DN (in m EUR)



Product valuation between EUR 2.8m and EUR 6.5m

We determine the total product value of MRC DN to be between EUR 2.8m and EUR 6.5m. Using a discount rate of 22%, the average value is EUR 4.4m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	2'804	3'531	4'374	5'353	6'489

References Regen MRC DN:

- www.mims.co.uk;
- www.medscape.com
- https://www.biospace.com/diabetic-peripheral-neuropathy-market-size-to-reach-a-usd-5-365-9-million-by-2034-impelled-by-transcutaneous-electrical-nerve-stimulation-therapy
- https://www.mayoclinic.org/diseases-conditions/diabetic-neuropathy/diagnosis-treatment/drc-20371587

MRC AD (MOLECULAR RESEARCH)

Introduction	Molecular Research SRL, Lecce is a Spin-off from the University of Catania. The company provides CRO and other services as well as has its own development program. The company has two products in early development, one an Alzheimer product (MRC AD), and one on diabetic neuropathy (MRC DN). We assume the DN product will be the lead product and so the valuation is primarily based on this product. However, both programs are at a similar stage (possible start of the clinical development according the Molecular Research in 2028 or beyond)
Equity Share	Cube Labs currently owns 51% of MOLECULAR RESEARCH and the Trust Cube Labs another 14%. Additional investors include INBB with 5% and Prof. Pappalardo with 30%.
Therapeutic Induction	Alzheimer's disease is associated with the abnormal accumulation of two proteins in the brain, called Aβ (plaques) and Tau (tangles).
Product Positioning and Target Patient Population / market	Globally, around 50m people have dementia, with nearly 10m new cases per year. AD accounts for up to 70% of dementia. We assume approximately 35m people worldwide have AD. An estimated 6.9m Americans aged 65 and older are living with AD in 2023. We assume approximately 54m living in the US aged 65 and older (equating to an age-related prevalence of 10.7%). The prevalence of AD in the US is expected to increase to around 8.5m by 2030. We assume a total US population of 363m in 2029 (equating to a total prevalence of 2.3%). We assume similar prevalence for EU5 and JP. As the older population is growing over proportionally, we have calculated a growth rate of 2% for the US to reach the forecasted patient population of around 11.6m in the US in 2040. The same growth rate is assumed for the EU5 and JP.
Past development	MCR had received an initial investment from its seed investors of around EUR 215'000 plus another EUR 100'000 in 2023. The proceeds were used for the following activities according to the company: • PCT patent filing on therapeutic molecule for diabetic neuropathy • In vivo preclinical implementation on murine diabetic neuropathy models and knockout mice. • Research and Development: conclusion of the preclinical phase in vitro with toxicity tests and determination of the formulation and synthesis of the molecule on a pre-industrial scale for Target. Initial developments also included the separation of enantiomers and the commencement of in vitro testing. However, it was discovered that these enantiomers lack stability, necessitating the exploration of alternative approaches.
Development plan	To overcome stability issues, new in silico studies are planned to identify a stable active molecule. Concurrently, efforts to secure intellectual property rights through patent filings for applications in Alzheimer's and cancer treatments are underway. This is complemented by ongoing in vitro studies to verify the efficacy of the proposed solutions. Moreover, to bolster the development process and ensure the successful formulation and analytical characterization of the molecule, a potential collaboration with FTherapeutics is being considered. This partnership is anticipated to leverage FTherapeutics' expertise in molecule formulation, thereby enhancing the project's chances of success.

To move MCR AD towards clinical development, the company plans to initiate the following preclinical studies, which should be completed within 24 month. :

- In silico computational studies of the molecule.
- *in vitro* studies
- *In vivo* studies
- *In vivo* pharmacokinetics and ADME studies
- Preclinical trial
- IND application for CTA filing

Thus, the project is still at a very early stage of development and a market entry assumed for 2036.

	Time line	**Costs (EURm)**
Preclinical	Q3 2024 – Q4 2025*	2.5*
Phase I	Q1 2026 – Q4 2027	3.5
Phase II	Q1 2028 – Q1 2031	50
Phase III	Q2 2031 – Q3 2035	83.5
Approval	Q4 2035 – Q3 2036	13.5
Market entry	Q4 2036	

* Estimated by Molecular Research.

Strategy

MRC plans to develop the product to a phase I/II clinical trial before out-licensing to a strategic partner. Please note that for any licensing, we assume the total asset value will be shared between the licensee and licensor.

Patents

MRC currently has one patent application IT102021000007730, filed in March 2021 as a priority application and covering the use of certain molecules in the treatment of diabetic neuropathy. According to Cube Labs, there is a second application in preparation to cover Alzheimer disease, thus we assume an expiry of 2042.

Please note that the AD patent has not been filed, which is an additional risk factor. The valuation assumes a solid patent protection will be possible – however, this is still uncertain at this point.

Collaborations

According the MRC, numbers collaboration exists including:

- Hong Kong University, Dr NG Chun Laam, Roy
- University of Turin, Prof. Giancarlo Cravotto
- INBB: National Institute of Biostructures and Biosystems

Market size

The global Alzheimer market is estimated to grow to around USD 10bn in 2030 according to analysts GlobalData with double digit growth rates. Healthcare analysts estimated the market to grow up to USD 25bn by 2027 driven by rapidly ageing population, increasing prevalence of AD, coupled with technological advancements in diagnostics and biomarkers.

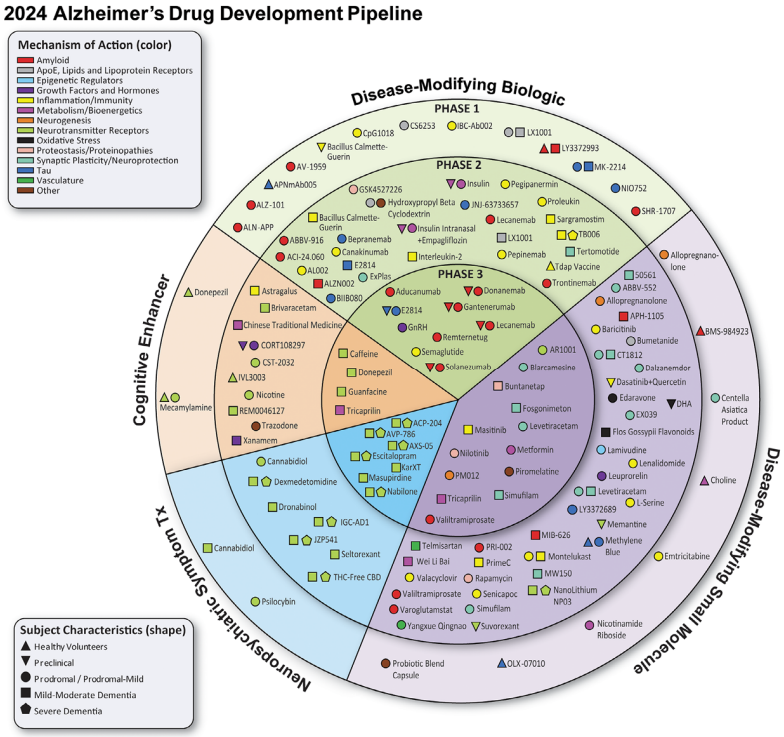
Competitive landscape

Current practice in the area of Alzheimer's disease is limited to symptomatic treatments, primarily acetylcholinesterase inhibitors and NMDA receptor antagonists. A number of disease modifying therapeutic approaches have been attempted for development, although none have, as yet, reached the market.

Competition may come from the following:

- therapies targeting the APP/Aβ protein pathway, including gamma-secretase (GACE) inhibitors, beta-secretase (BACE) inhibitors, Aβ monoclonal antibodies and Aβ modifiers
- therapies targeting the Tau protein pathway
- therapies targeting the inflammatory component of Alzheimer's disease
- novel methods attenuating neuronal damage

The graph below shows how the space has become increasingly crowded and our analysis also show increasing investment activities in the CNS space in general.



Source: Alzheimer's disease drug development pipeline: 2024, https://doi.org/10.1002/trc2.12465

EXAMPLES OF PRODUCTS IN DEVELOPMENT

Produkt	Company	Mechanism of Action	Development Stage
ALZHEIMER'S DISEASE			
Lecanemab	Biogen, Eisai	Aβ mAb (passive)	approved
Aducanumab (BIIB037)	Biogen, Neurimmune	Aβ mAb (passive)	Approved, returned to Neurimmune
Gantenerumab (RO4909832)	Roche, Chugai Pharm	Aβ mAb (passive)	Ph III (NCT03444870) failed
Crenezumab (MABT5102A)	Roche, Genentech, AC Immune	Aβ mAb (passive)	Terminated (NCT02670083)
Solanezumab (LY2062430)	Eli Lilly	Aβ mAb (passive)	Terminated (NCT02760602)
UB-311	United Neuroscience	Aβ vaccine (active)	Terminated (NCT03531710)
Umibecestat (CNP520)	Novartis, Amgen	BACE inhibitor	Terminated (NCT02565511)
Elenbecestat (E2609)	Biogen, Eisai	BACE inhibitor	Terminated (NCT03036280)
Lanabecestat (AZD3293)	AstraZeneca, Eli Lilly	BACE inhibitor	Terminated (NCT02783573)
Atabecestat (JNJ-54861911)	Janssen, Shionogi Pharma	BACE inhibitor	Terminated (NCT02569398)
ACI-35	AC Immune, Janssen	Tau vaccine (active)	Ph II/III (NCT04445831)
Donanemab (LY3002813)	Eli Lilly	Pyroglutamate Aβ antibody	Ph III (NCT05738486)
GRF6019	Grifols, Alkahest	Albumin/Plasma fractions	Ph II/III (NCT01561053)
Remternetug	Eli Lilly	Aβ antibody (passive)	Ph III (NCT05463731)

Product/Service Summary and Pricing

Indication	Country	Annual Treatment Price EUR
Alzheimer's disease	EU, JP	20'545
	US	37'800

Explanatory Note: Benchmarking EU/JP: Oral disease modifying therapies used for multiple sclerosis: Fingolimod (0.5mg qd, 28 tablets of 0.5mg = GBP 1'470.00/mth; EUR 19'404 annual). Siponimod (2mg qd, 28 tablets of 2mg = GBP 1'643/mth; EUR 21'687 annual).
Benchmarking US: Ocrelizumab Federal Supply Schedule (FSS) annual price is used as upper boundary (USD 65'000/EUR 54'600); European price and health economics cost-efficiency estimate are used as lower boundary (USD 25'000/EUR 21'000) due to the substantive budget impact that can be expected from a disease modifying Alzheimer's drug. Sources: www.mims.co.uk; www.medscape.com; Evaluate database; health economic modelling.

VALUATION MRC AD

Probability of success

Taking into consideration the stage of development, the possibility of an orphan designation and the cumulative success rate of MRC AD in the treatment of Alzheimer Disease, the probability of product launch has been determined to be 3.7%.

Probability of Success

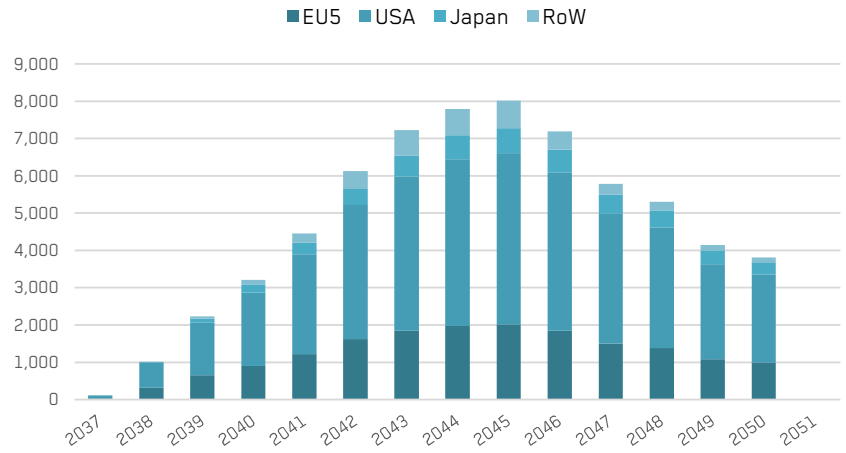
		Success rate			
	Prec.	Phase I	Ph II	Phase III	Approval
Probability of Success (PoS)	60.0%	53.3%	24.4%	54.5%	84.1%
Cumulative PoS		32.0%	8.1%	4.4%	3.7%

Sales forecast

The sales curve for MRC AD has been forecasted from its forecasted launch in 2036 to 2050, past the expected patent expiry in 2042. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share	EU5 / US / Japan: 4% RoW: 10% of sales in EU5 / US / Japan	
Peak sales (2044)	EUR 7.8bn	Model estimate
Total sales (2036-2050)	EUR 77bn	Model estimate
Launch date	2036	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	25%	Venture Valuation estimate
Sales & Marketing (% of revenue)	25%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for MRC AD (in m EUR)



Product valuation between EUR 0.8m and EUR 5.5m

We determine the total product value of MRC AD to be between EUR 0.8m and EUR 5.5m. Using a discount rate of 22%, the average value is EUR 2.7m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	780	1,673	2,740	4,012	5,529

References Regen MRC AD:

- www.medscape.com
- 2024 Alzheimer's disease facts and figures: https://doi.org/10.1002/alz.13809
- Alzheimer's disease drug development pipeline: 2024, https://doi.org/10.1002/trc2.12465
- https://drug-dev.com/alzheimers-disease-treatment-market-value-will-exceed-13-billion/

C19-SMSSC (ORPHA BIOTECH)

Introduction	Orpha Biotech SRL, Maglie (www.orphabiotech.it) founded in 2019, is a Spin-off dedicated to the R&D on rare diseases and orphan drugs based on a new generation of antifibrotic therapies. The lead product of the company is for the treatment of Systemic Sclerosis (which is an Orphan disease) (SMSSC). The mechanisms of action is a Lysophosphatidic Acid Receptor 1 Antagonists
Equity Share	Cube Labs currently owns 51% of ORPHA BIOTECH, the Trust Cube Labs 44% and INBB the remaining 5%.
Therapeutic Induction	Scleroderma (sklair-oh-DUR-muh), also known as systemic sclerosis, is a group of rare diseases that involve the hardening and tightening of the skin. It may also cause problems in the blood vessels, internal organs and digestive tract. Scleroderma is categorized in two types 1) "limited" and 2) "diffuse,". It refers to the degree of skin involvement. Both types can involve any of the other vascular or organ problems. Localized scleroderma, also known as morphea, affects only the skin. (www.mayoclinic.org) Currently there is no drug which can significantly influences the natural course of systemic sclerosis overall. However, there are various drugs that support the treatment of specific symptoms or organ systems. Corticosteroids are used in case there is overt myositis or mixed connective tissue disease but may predispose to renal crisis. Due to their side effects, they are used only if necessary. (www.msdmanuals.com)
Financing to date	So far investments of EUR 0.5m (EUR 140'000 2024) has been made for in vitro and in vivo toxicity studies as well as in vivo studies (scleroderma mouse model), dosage determination and CTA preparation. The investment was made mainly by Seed per il Sud.
Product Positioning and Target Patient Population / market	The prevalence of systemic sclerosis is not very clear. Based on a aggregation of 18 studies, we use a prevalence of 2.3 per 100'000 patients, which would be in line with the estimated 75,000 to 100,000 people affected in the United States in varying degrees. Most are women between the ages of 30 and 50. Some more conservative studies estimate the prevalence to be 1.4 per 100,000 person-years in 2021 and but is expected to increase in the future.
Past development	The company had identified the chemical synthesis route and production of SMSSC19 (API) as well first in vitro efficacy studies.
Development plan	The company has initiated early pre-clinical work looking at five synthetic routes for the design and synthesize of the new molecules which are inspired by compound 37 (Cpd37) according to the company. In-vitro test should begin in Q 3 2025. The planned market entry would be in 2031.

	Time line	Costs (m EUR)
Preclinical	– Q4 2026	1.6
Phase I	Q1 2027 – Q4 2027	5.5
Phase II	Q1 2028 – Q4 2028	5.5
Phase III	Q1 2029 – Q4 2029	7.9
Approval	Q1 2030 – Q4 2030	3
Market entry	Q1 2031	

Patents

Orpha Biotech has one granted patent (Peptide to Regenerate Lesioned Tissues), expiring in 2029 plus a patent for the application for Interaction inhibitors of uPAR/FPR receptors (expiring in 2040). Further patents will be applied for with priority filing in Q3 2025.

Market size

The global systemic scleroderma treatment market size was valued at around USD 1.5 bn in 2021 by Coherent Market Insights analysts, growing to an estimated USD 2.3 bn by 2030.

Competitive landscape

Even though there is no approved product on the market, there are a number of products in development. According to Biotechgate, there are 25 assets in development by different companies, of which 11 are in clinical development stage. For example, Kadmon Holdings, Inc., (bought by Sanofi in 2021) received orphan drug designation in the US for its potential drug candidate belumosudil. Belumosudil has successfully completed phase II for the treatment of systemic scleroderma. Its a rho-associated coiled kinase inhibitor.

Key players operating in the global systemic scleroderma treatment market include Boehringer Ingelheim International GmbH, Sanofi, Kyowa, Genentech.

Analysts of H.C. Wainwright have estimated the PoS of model belumosudil (Kadmon / Sanofi) to be 20% from its phase II trial for systemic scleroderma with potential revenues of USD 300m up to USD 873m (peak penetration of 25%). As SMSSC19 is behind its competitors, still being in pre-clinical stages, we assume a market share/peak penetration of 12%, with peak sales of EUR 268m.

Pricing

For the pricing of SMSSC19 we have used the estimated price of belumosudil which was estimate by Jefferies at around USD 15'000 per month in the US. We have used an annual cost for the US of EUR 144'000 and EUR 72'000 in the EU5 and Japan.

VALUATION C19-SMSSC

Probability of success

Taking into consideration the stage of development, the possibility of an orphan designation and the cumulative success rate of C19-SMSSC in the treatment of systemic sclerosis, the probability of product launch has been determined to be 16%.

Probability of Success

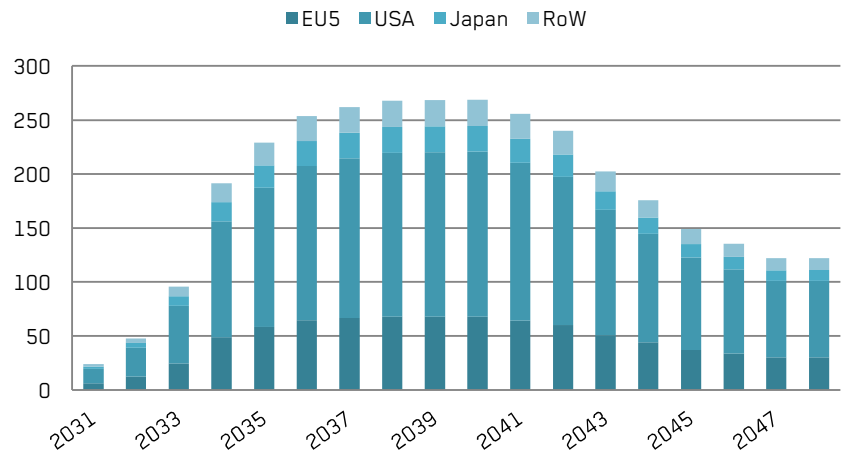
	Success rate			
	Prec.	Phase I/II	Ph II/III	Approval
Probability of Success (PoS)	70%	62%	42%	89%
Cumulative PoS	70%	44%	18%	16%

Sales forecast

The sales curve for C19-SMSSC has been forecasted from its forecasted launch in 2031 to 2048, past the expected patent expiry in 2040. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share	EU5 / US / Japan: 12% RoW: 10% of sales in EU5 / US / Japan	
Peak sales (2040)	EUR 269m	Model estimate
Total sales (2030-2047)	EUR 3.3bn	Model estimate
Launch date	2031	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	25%	Venture Valuation estimate
Sales & Marketing (% of revenue)	25%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for C19-SMSSC (in m EUR)



Product valuation between EUR 2.7m and EUR 6.4m

We determine the total product value of C19-SMSSC to be between EUR 2.7m and EUR 6.4m. Using a discount rate of 22%, the average value is EUR 4.3m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	2'746	3'473	4'305	5'259	6'355

References Regen C19-SMSSC:

- https://rarediseases.org/rare-diseases/systemic-scleroderma/
- Initiating Coverage KD025 ROCK2, Nomura, 10.1.2020, Pharmatell, Kadmon Holdings, Inc.
- https://pubmed.ncbi.nlm.nih.gov/31621157/
- https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwia0f3hzqn2AhWm_bsIHW-_DP0QFnoECAYQAw&url=https%3A%2F%2Frarediseases.org%2Fwp-content%2Fuploads%2F2021%2F03%2Forphan-drugs-in-the-united-states-NRD-2020.pdf&usg=AOvVaw1afISzagBkZp9g3zegzzPq
- https://www.grandviewresearch.com/industry-analysis/systemic-scleroderma-treatment-market

BIOKINE ADVANCE (ADAMAS)

Introduction	ADAMAS BIOTECH is an Italian academic spin-off specialized in the development of bioactive extracts derived from botanicals, in particular, green tea catechins. The company's lead product, Theakine Prost (formally Biokine Advance), was developed at the University of Parma (Italy) as a probiotic and catechins to reduce symptoms and intestinal inflammation associated with irritable bowel syndrome (IBS). Adamas has a co-development agreement / ownership with its sister company DTECH for BioGel Spray, a prophylactic technology to combat viral infections (which could include COVID-19 and other coronavirus-induced infections). We attribute 50% of the value of the BioGel Spray to Adamas.
Equity Share	Cube Labs currently owns 51% of Adamas Biotech and the Trust Cube Labs another 5%. INBB has 5% and Nutralogos 40%.
Financing to date	Based on the available information, around EUR 3.5m has been invested since 2018 mainly for R&D, of which around EUR 0.3m was invested in 2023.
Future financing	Cube Labs estimates to invest around EUR 1m to bring the product to commercial stage.
Technology	Theakine Pros are capsules of green tea catechins mixture (containing analytically defined bioactive compounds) to be used as nutraceuticals against symptoms of benign prostatic hyperplasia. The product has gone through an exploratory trial to study its prevention of the development of PCa in HG-PIN patients. The study was conducted with 60 patients prior to 2006 (publication in 2006, *Cancer Res* (2006) 66 (2): 1234–1240.) The initial focus on prostate cancer was not feasible. The clinical study on HG-PIN was employed to collect successful results on absence of collateral effects in humans and efficacy data. Following scale-up to regulatory pathway it was decided to apply the technology also to the field of irritable bowel syndrome (IBS). In this respect, the company has decided on combining product with catechins and probioitics to enhance catechins effects. The company is in discussions with a possible clinical trial partner.
Therapeutic Induction	According to Adamas the new product is based on a green tea extract for treatment of Low Urinary Track Symptoms (LUTS). LUTS can affect both male and female populations and may hinder the quality of life. In men are more common with up to 41% of men over the age of 40 years reporting bothersome symptoms. Adamas' IBS product is a combined product that contain probiotic and green tea extract for the treatment of Irritable bowel syndrome (IBS).With a global prevalence ranging from 10 to 20% and an estimated incidence of around 1.5%, IBS is the most common functional gastroenteric disease.
Strategy	Adamas plans to register the product as a nutraceutical initially in Italy within a 12 month period (through European Food Safety Authority, EFSA). Adamas has secured exclusive access to the API (green tea catechins mixture) from Tea Solutions, Hara Office Inc., Japan.
Past development	According to Adamas, Theakine Pros has been validated through a placebo-controlled, double-blind, randomized clinical trial in preventing the development of PCa in HG-PIN

patients, performed by Prof. Saverio Bettuzzi from the University of Parma prior to 2006.

However, the intent of creating a new therapy for treating HG-PIN patients with the final goal of diverting the bulk of men away from radical treatments, such as prostatectomy was not feasible with regulatory norms governing nutraceuticals and the focus of the product was shifted towards IBS.

According to the company the following new milestones have been achieved:

- Accelerated stability studies completed
- Long-term stability study on-going will assess the product's durability, and the 12-month endpoint is already reached (out of 36 months).
- Technical dossier excluding that catechins are a novel food is prepared and filed – expected to speed-up the registration of the nutraceutical
- Identified FSC certification pathway for sustainable packaging
- Product pilot batch for IBS has been manufactured by Salix Group

Development plan

A long-term stability study will assess the product's durability. A technical dossier is prepared for submission to the European Food Safety Authority (EFSA) for review. The company also considers a clinical studies using a combination of catechin and probiotics.

Post-approval, the focus shifts to notifying regulatory bodies about the food supplement, producing an industrial batch, and finalizing packaging, labelling, and technical data sheets. This streamlined plan covers essential steps from initial production to market readiness, adhering to regulatory and consumer expectations. Agreements have been finalized with partners Salix Group and IBI Lorenzini S.p.A. for the development and marketing of the supplement. Specifically, Salix Group S.r.l. will handle the industrial development, preparing the nutraceutical made from green tea extract and probiotics. IBI Lorenzini will serve as the commercial partner, supporting Adamas in market entry.

	Time line	Costs (m EUR)
Regulatory & Market Access	2025	0.3
Market entry	2026	

Manufacturing

The product is sourced from Tea Solutions, Hara Office Inc. which is selling Theaphenon E in a capsule formulation in Japan and also through its website worldwide. Adamas has secured exclusive bulk access for the product for Europe. Furthermore, with the permission of the developer of the Theaphenon E active catechin mixture, an Italy-based plant extracts company, with experience in extracting and marketing polyphenols, has begun to replicate and optimise the Theaphenon E manufacturing. This provides an alternative, European source of quality material for future studies and products. The CDMO has already been secured (Salix Srl) which has produced pilot batches that will can be used in the clinical trials.

Patents

The company currently has 3 active patents, which are granted and expire by 2028 in Italy, Europe, USA, and Canada. Furthermore, the has filed for an additional patent for the use of the Theaphenon E + probiotics mix to support gut function. Overall, we believe the patents only provide very limited protection and thus increase the risk of securing a licensing partner.

Market size

The nutraceutical and additive market was worth an astounding USD 220.3 billion by 2022 according to analysts of which the Tea Extracts market worldwide will be worth around USD 2.5 billion in 2019 growing up to USD 4.3 billion by 2027 with Green tea extract to estimate to have the highest share.

The global market for tea polyphenols was estimated to be worth USD 457m in 2024 and was expected to surpass USD 800m by 2033.

The urinary tract and prostate area nutraceuticals market in Italy alone was worth EUR 190 million in 2023, according to the Italian Food Union. The gastrointestinal area market was worth EUR 774 million in Italy in 2023, of which EUR 36 million represent the IBS Market.

Competitive landscape

Tea Extracts Market Competitive Landscape includes

- A.Holliday & Co. (Canada)
- Amax Nutrasource Inc. (US)
- Archer Daniels Midland (US)
- AVT Tea Sources Ltd. (India)
- Cymbio Pharma Pvt. Ltd. (India)
- Dupont (US)
- Finlays (UK)
- Frutarom (US)
- Futureceuticals (US)
- Givaudan (Switzerland)
- Halssen & Lyon GmbH (Germany)
- Harrisons Tea (India)
- Indena SPA (Italy)
- Kemin Industries (US)
- Martin Bauer Group (Germany)
- Phyto Life Sciences Pvt Ltd (India)
- Synergy Flavors (US)
- Synergy Flavors (US)
- Synthite Industries Ltd (India)
- Tea Solutions, Hara Office Inc. (Japan)
- Taiyo International (Japan)
- Teawolf (US)

Pricing

For its Theaphenon E capsules, the supplier of Adamas Biotech, charges around EUR 300 for a year's supply in the B2C market. This would equal 900mg of green tea extract per day.

VALUATION THEAKINE PROS

Probability of success

Adamas has successfully registered the product as a nutraceutical with the Italian Ministry of Health. We therefore assign a 100% probability, as the company will be able to bring the product on the market.

Probability of Success

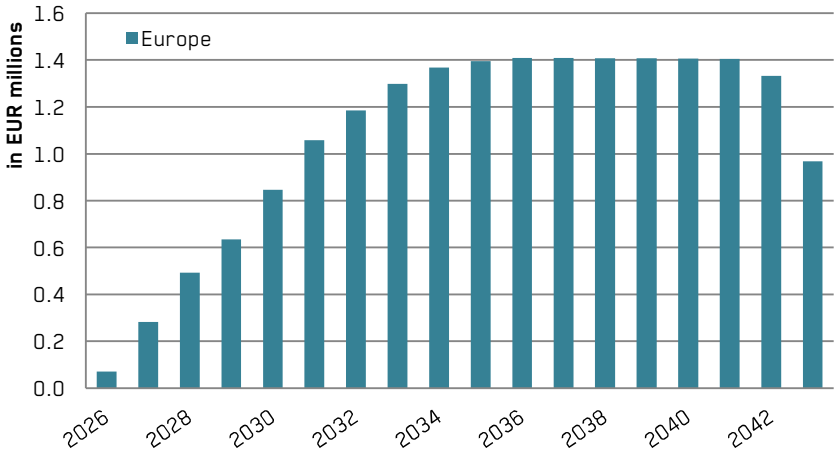
	Success rate
	Approval
Probability of Success (PoS)	100%

Sales forecast

The sales curve for Theakine Pros has been forecasted from its forecasted launch in 2026 to 2043 for Europe (as the company only holds exclusive access to the material in Europe and current plans are only for Europe). Additional key assumptions for the valuation can be found below:

Criteria	**Value**	**Reference**
Market share	0.8% (Europe)	Venture Valuation estimate
Peak sales (2039)	EUR 1.4m	Model estimate
Total sales (2026-2043)	EUR 19m	Model estimate
Launch date	2026	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	5%	Venture Valuation estimate
Sales & Marketing (% of revenue)	25%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	0%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Theakine Pros (in m EUR)



Product valuation between EUR 1.0m and EUR 1.4m

We determine the total product value of Theakine Pros to be between EUR 1.0m and EUR 1.4m. Using a discount rate of 22%, the average value is EUR 1.2m.
Adding the 50% value share of BioGel Spray, the total value is between EUR 1.1m and EUR 2.0m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value Biokine	1,027	1,101	1,183	1,274	1,375
rNPV BioGel Spray Adamas (50%)	35	151	285	440	621
rNPV Theakine Pros (Biokine & BioGel Spray)	1,062	1,252	1,468	1,714	1,996

References Theakine Pros:

- https://ascopubs.org/doi/abs/10.1200/JCO.2019.37.7_suppl.116
- https://exonpublications.com/index.php/exon/article/view/358/611
- Saverio Bettuzzi;et al. Chemoprevention of Human Prostate Cancer by Oral Administration of Green Tea Catechins in Volunteers with High-Grade Prostate Intraepithelial Neoplasia: A Preliminary Report from a One-Year Proof-of-Principle Study Cancer Res (2006) 66 (2): 1234–1240.

VALUATION THEAKINE IBS-C

Probability of success

Adamas also plans to register this product as a nutraceutical with the Italian Ministry of Health. We assign a 75% probability, as this very simple registration will allow the company to bring the product on the market and achieve the projected sales.

Probability of Success

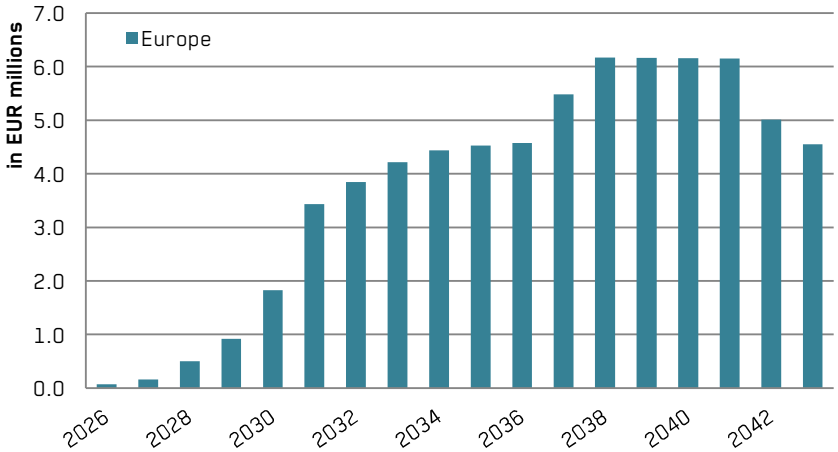
	Success rate
	Approval
Probability of Success (PoS)	75%
Cumulative PoS	75%

Sales forecast

The sales curve for Theakine IBS-C has been forecasted from its forecasted launch in 2026 to 2043 for Europe (as the company only holds exclusive access to the material in Europe and current plans are only for Europe). Additional key assumptions for the valuation can be found below:

Criteria	**Value**	**Reference**
Market share	2.5% (Europe)	Venture Valuation estimate
Peak sales (2039)	EUR 6.2m	Cube-Lab estimates
Total sales (2026-2043)	EUR 68m	Model estimate
Launch date	2026	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	5%	Venture Valuation estimate
Sales & Marketing (% of revenue)	25%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	0%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Theakine IBS-C (in m EUR)



Product valuation between EUR 1.9m and EUR 2.7m

We determine the total product value of Theakine IBS-C to be between EUR 1.9 and EUR 2.7m. Using a discount rate of 22%, the average value is EUR 2.7m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value IBS-C	1,858	2,039	2,241	2,468	2,722

References Theakine IBS-C:

- https://ascopubs.org/doi/abs/10.1200/JCO.2019.37.7_suppl.116
- https://exonpublications.com/index.php/exon/article/view/358/611

BIO-CLAY (BIODIAPERS)

Introduction	Biodiapers is an Italian company founded in 2018 with the goal to raise the standard in absorbency products and reduce the environmental impact of conventional diapers. The technology of their lead product, Bio-Clay, was developed at the University of Pisa, Italy.
Equity Share and investments	Currently, Cube Labs holds 50.7% of the share of the company and the Trust Cube Labs another 33.4%, INBB 4.9% and Prof. Albanese and Prof. Chiarelli each 4.9%. So far, investments of around EUR 0.8m have been made into the development of the product (of which around EUR 275'000 in 2024) Furthermore, Biodiapers has signed a licensing deal with Cube Labs. However, these potential future payments of 3% to 8% of net sales have not been included in the valuation.
Future financing	According to the preliminary development plan, an investment of roughly EUR 1m will be needed to bring the product to a commercial stage.
Technology	To cut down on environmental waste and embrace CleanTech procedures, Biodiapers has developed a biodegradable material made from natural clay, rather than petrochemical polymer. The product is completely free of dyes and harmful chemicals, hypoallergenics and antibacterials. It exploits the absorbent and hygienic properties of clay nanoparticles in order to deliver a product that is not treated chemically and that is eco-friendly. Biodiapers nano-clay particle-based absorbent technology is designed to eliminate urine and faeces and reduce the incidence of adverse skin reactions and urinary tract infections. Currently, 90% of the material used is biodegradable. However, the company is still further developing the product to increase its biodegradability.
Product Positioning and Target Patient Population / market	The majority of the target patient population consists of elderly patients and infants as well as women. The initial market will be elderly people by improving hospital and home care hygiene. Thereby the initial target market will be Italy where EU norms do not require female and infant products to be regulated and clinical trials are not needed.
Strategy	Currently, Biodiapers has planned the production of Bio-Clay with a strong industrial partner. The partner would commercialize the product and be responsible for the regulatory filing procedure. Overall, we assume Biodiapers would develop the product to market readiness and utilize the collaboration with the partner for marketing and sales. We do not assume the company to bring the product to the market under its own brand name at this point.
Past development	The absorbency product has been developed to a prototype stage and now needs to be integrated into a sellable and viable product. According to Cube Labs, Bio-Clay has reached the technology readiness level 5, indicating that the basic technological components are integrated with reasonably realistic supporting elements so it can be tested in a simulated environment.
Development plan	The development plan for the Bio Clay product involves advancing it from its current stage towards a market ready product. Current/future development steps include some regulatory tests in Q3 2025 as well as a first pilot batch in Q1 2026. The main objective during the current stage is to assess the absorbency of the Bio Clay material and to explore the feasibility of scaling the technology up to an industrial prototype. Through the collaboration with SICAM Srl, the following steps are planned: 1. Preliminary Design of Products: This includes the core components for different product lines:

- Core Pantyliner / Feminine Hygiene
- Core Sanitary Napkin / Feminine Hygiene
- Core Baby Diaper

2. These core components will be tested in two configurations: A mixture of superabsorbent powder and clay (for product testing configurations).
3. Separation and stratification of clay and superabsorbent applications, with the clay part in contact with the liquid/feces acquisition layer.

Benchmarking: According to the company, the core components have been developed with reference to the performance of leading products in the market, specifically P&G and J&J for pantyliners, J&J and TZMO for sanitary napkins, and P&G for baby diapers. This benchmarking serves to ensure that the Bio Clay product meets or exceeds current market standards.

	Time line	Costs (m EUR)
Product development	2025	0.1
Regulatory + Industrial Prototype	2026	0.4
Market entry (baby diapers, then women and elderly)	2027/28	0.4

Manufacturing

In May 2023, Biodiapers signed a pivotal industrial partnership agreement with SICAM Srl, a leading industrial operator specializing in non-woven fabric development and absorbent technology. The partnership aims to develop the "core" product line of absorbent solutions using Biodiapers' innovative 100% natural nano-clay particles for infants, women, and the elderly. Currently the company is in early discussions for another manufacturing partner.

Patents

Biodiapers technology is currently protected by a patent by an Italian Patent no. IT102019000007006 "Absorbent product with a system of aggregation and isolation of faeces", filed on 20.05.2019, due to expire in May 2039. This patent application was extended internationally via the PCT system on 18.05.2020, with publication number WO2020234745, and potential expiry in May 2040.

Market size

The global diaper market reached a value of USD 91bn in 2024 and is expected to grow to around USD 167bn by 2033, with a CAGR of 5.6%. The adult diaper market is around 1/3 of the total market (estimated at USD 60bn in 2024). For Europe, the adult diaper market is estimated to be at around EUR 4.9bn in 2030.

As a submarket, the global biodegradable diapers market reached a value of USD 4.3 bn in 2024 and is expected to grow to USD 8.2 bn in 2033 according to IMARC Group, an analyst company. The European adult diapers market was around USD 200m in 2021, estimated to grow to over USD 370m in 2027.

With the rising adult population, the prevalence of urinary incontinence has increased across the globe. Along with this, the high birth rates in emerging economies, delayed toilet training of children and the increasing trends of online purchase of baby diapers have boosted the market growth. Besides this, there has been a significant rise in the demand for biodegradable diapers that are made of eco-friendly materials. This trend, in confluence with the increasing environmental concerns regarding the harmful effects of diaper disposal, has prompted the leading diaper manufacturers to develop products using raw materials that decompose much faster than traditional diapers.

The diaper market can be split into baby and adult diapers. The adult diaper market can be categorised into pad, flat and pant diapers with pad diapers being the leading segment, holding the largest market share. This type of diaper is useful in retaining moisture and absorbing leaks without irritating the skin.

Competitive landscape

The competitive landscape of the market is characterized by the presence of numerous small and large manufacturers who compete in terms of prices and quality. Key companies dominating the global diaper market include:

- Kimberly-Clark Corporation
- The Procter & Gamble Company
- Kao Corporation
- Svenska Cellulosa Aktiebolaget (SCA)
- Unicharm Corporation

To date, products of competitors contain plastics and petroleum-derived superabsorbent polymer gel, which is non-biodegradable and its long-term health effects are unknown. Their organic/natural products are 50-80% biodegradable only and can take up to 50 years to decompose in a landfill, all the while emitting methane, a harmful greenhouse gas. Additionally, the risk of urinary tract infections is not reduced.

Competitors in the biodegradable diapers market include:

- Earth's Best (Hain Celestial)
- Bamboo Nature
- Seventh Generation
- Kimberely-Clark
- GroVia
- Naty AB
- The Honest Company
- Ontex Group
- Babyganics
- Unicharm
- Pamper
- Flip Diaper
- Bumkins Company

Since 2021, Pampers, a baby product brand, has been selling a new diaper made of plant-based liner and reusable cloth. In 2020, DYPER Inc. and TerraCycle announced a composable diaper called ReDyper.

We assume a very fierce but growing competitive environment and thus challenging to find a global partner and/or gain significant market share.

Pricing

According to National Bank Network, the average costs for diapers are USD 70-80 per month. Leading companies such as Kimberly Clark Corporation or Proctor & Gamble indicated that the prices for diapers will rise in the near future.

VALUATION BIO-CLAY

Probability of success

Taking into consideration the stage of development, we have assigned a 80% probability that the company can bring the prototype to a scalable product with reasonable COGS. As a class I medical device, we do not see a high risk and use a 95% probability for the CE mark. Thus, the probability of product launch has been determined to be 76%.

Probability of Success

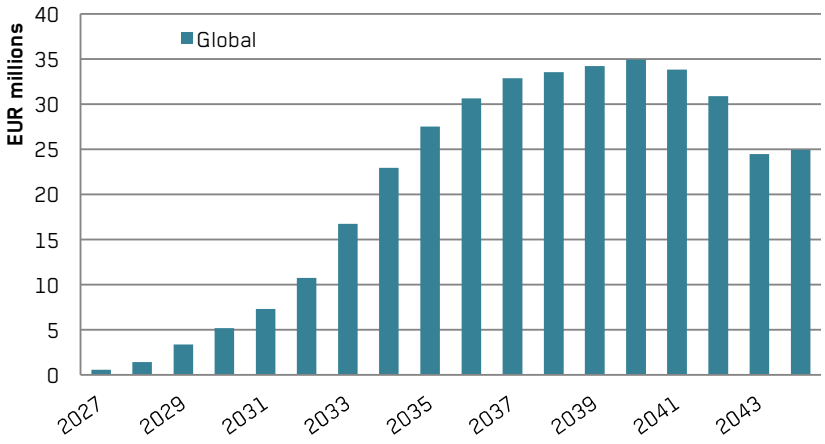
	Success rate	
	Development	CE Mark
Probability of Success (PoS)	80%	95%
Cumulative PoS	80%	76%

Sales forecast

The sales curve for Bio-Clay has been forecasted from its forecasted launch in 2027 to 2044, past the expected patent expiry in 2040. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share biodegradable	0.5% (global) / 10% (European adult)	Venture Valuation estimate
Peak sales (2041)	EUR 35m	Model estimate
Total sales (2027-2044)	EUR 376m	Model estimate
Launch date	2027	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	35%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Bio-Clay (in m EUR)



Product valuation between EUR 5.8m and EUR 8.9m

We determine the total product value of Bio-Clay to be between EUR 5.8m and EUR 8.9m. Using a discount rate of 22%, the average value is EUR 7.1m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	5'765	6'405	7'127	7'944	8'870

References Bio-Clay:

- https://www.imarcgroup.com/diaper-manufacturers

NEU RETINA KIT (BIO AURUM)

Introduction	Founded in 2018, Bio Aurum is an Italian company conducting medical research for the development of diagnostics and nature-based treatments that target a range of neurodegenerative diseases. Their lead product is Neu Retina Kit for the early detection of Alzheimer's disease (AD).
Equity Share & Financing to date	Cube Labs currently owns 51% of the shares of Bio Aurum and the Trust Cube Labs 9%. INBB hold 5% and Hortus Novus 35%. So far, around EUR 1.3m has been invested in the R&D of the technology and product (EUR 340'000 in 2024). The current business plan foresees an investment of around EUR 0.9m to bring the product to a CE mark stage.
Technology	The lead product being developed is the Neu Retina Kit is for the early detection of degenerative diseases and evaluation of pharmacological efficacy. Pathogenic processes in AD can begin as much as a decade before symptoms appear. This invention has been developed based on the Bio Aurum inventors' past work on retinal disease (Stargardt disease). The approach uses observable tissue in the retina, which acts as cellular and functional markers and is expected to allow for diagnostic methods for the early detection of Alzheimer's disease (AD). The future solution will consist of a device to expose the patient's retina to light (it might be possible to use visible light) and a sensor/camera to measure changes in the tissue. A software/algorithm to be provided/developed by BIO ARUM would provide an indication of a possible future AD. The company is currently looking for device partners to apply its algorithm.
Therapeutic Induction	Early diagnosis can confer critical benefits, such as management of lifestyle factors that contribute to disease development, access to innovative treatments, potentially more efficacious response to early-stage treatment, and time for patients and families to better plan and manage through the course of the disease.
Product Positioning and Target Patient Population / market	Neurodegenerative diseases are debilitating illnesses caused by the progressive degeneration and/or death of nerve cells. AD is the most common neurodegenerative disease, with millions of new cases across the globe each year. It mainly affects people over 65. Above this age, a person's risk of developing Alzheimer's disease doubles about every five years. One in six people over 80 have dementia – many of them have Alzheimer's disease. Therefore, we assume Bio Aurum is mainly targeting people above the age of 60.
Strategy	Based on the company's strategy, a range of mid-to-large sized international partners will be approached, to try to establish partnerships for one or more major territories for the device but also for the sales and marketing.
Past development	According to the company, the possibility of an early diagnostic device/product for AD has been tested in animal models (mouse models). In 2024, the company received approval from the ethics committee in Italy (CEAVC) to conduct a first clinical trial for the Neuretin MD device. I manufacturing partner has been identified with CSO Firenze.
Development plan	The planned study will include 120 healthy volunteers of different age groups (from 21 to 80+ years old) The aim of the study is to investigate if highlighting any changes in eye saccades related to the physiological aging process; these data will then be compared in a second phase with a population of 30 subjects aged >50 years with subjective cognitive decline. The study is planned to launch in Q2 2025 according to the company.

	Time line	Costs (m EUR)	Patients
Clinical Trial	2025	0.09	150
Industrial Prototype, Scale-up	2025/2026	0.22	
Regulatory & Market Access	2026/27	0.23	
Market entry	2028		

Patents

Bio Aurum is the owner of a patent application for an interactive gaze analysis kit for the early diagnosis of neurodegenerative diseases, which is intended to provide early detection of AD - patent application number: 102021000007313 (Italy). PCT filing planned, potential patent expiry 2041.

Market size

The global AD diagnostics market size was valued at USD 8.5bn in 2023. The market is expected to reach over USD 28bn by 2034 as projected by Research and Markets. The major factor driving the growth of the Alzheimer's disease diagnostics and therapeutics market is the increasing use of the biomarkers in the Alzheimer's diagnosis and drug development coupled with the rising prevalence of Alzheimer's around the world. For instance, according to the September 2021 report of the World Health Organization, about 55 million people around the world are living with dementia and nearly 10 million cases are reported every year and as per the same source, Alzheimer's is the most common form of dementia and constitute about 60-70% of the total cases of dementia. Further, with the growing prevalence of Alzheimer's around the world, the government and non-government entities are investing heavily in the development of diagnostics and therapeutics for Alzheimer's which will further augment the growth of the market.

Competitive landscape

The Alzheimer's disease diagnostics and therapeutics market is moderately competitive and consists of several major players. With technological advancements and product innovation, mid-size to smaller companies are expanding their market presence by introducing new technologies with better results. Some of the key players in the AD diagnostic market are:

- Siemens Healthineers
- Abbvie Inc.
- Eisai Co.
- Eli Lilly and Company
- F. Hoffmann-La Roche AG
- Biogen Inc.
- Amgen Inc.
- Quest Diagnostics Inc.

There are a number of products and projects in development for the diagnostic (including optical/imaging) of early AD including Cognoptix (USA), Nocturne (Germany); NeuroVision Imaging LLC (US) and Optina Diagnostics (Canada) all based on some type of AI algorithm combined with an ophthalmic camera/imaging device. Other companies active in the early diagnostic of Alzheimer/CNS diseases include:

- AC Immune, Switzerland
- Biocross, Spain
- NeyroblastGX LLC, USA
- NeuroXT Inc., South Korea
- T-Neuro Pharma, USA
- Rio Pharmaceuticals, USA

VALUATION NEU RETINA KIT

Probability of success

Bio Aurum still has to show in a clinical trial that it can detect the early stage of AD with its algorithm and device. We have assigned a PoS for this of 40%. With the clinical trial, the company would have to get a CE mark class IIa, which was assumed with a probability of success of 80%. Thus, the probability of product launch has been determined to be 32%.

Probability of Success

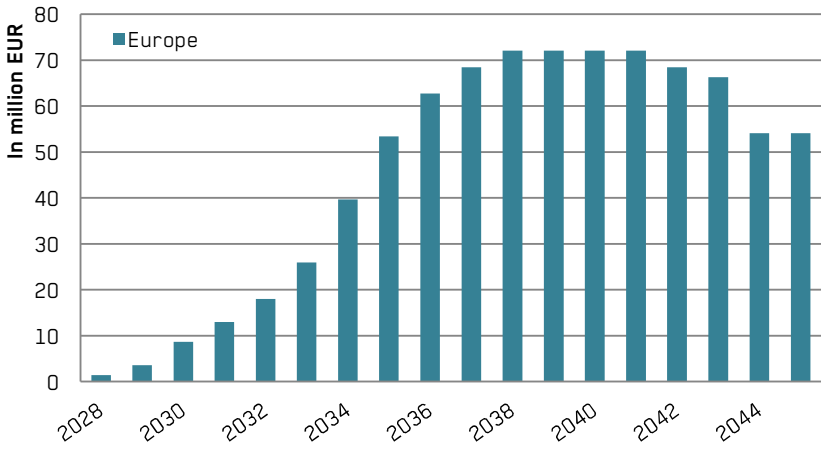
	Success rate	
	Clinical trial	CE Mark
Probability of Success (PoS)	40%	80%
Cumulative PoS		32%

Sales forecast

The sales curve for Neu Retina Kit has been forecasted from its forecasted launch in 2028 to 2045, past the expected patent expiry in 2041. Additional key assumptions for the valuation can be found below:

Criteria	**Value**	**Reference**
Market share of AD diagnostic market	8% (Europe)	Venture Valuation estimate
Peak sales (2039)	EUR 72m	Model estimate
Total sales (2028-2045)	EUR 827m	Model estimate
Launch date	2028	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	35%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Neu Retina Kit (in m EUR)



Product valuation between EUR 5.0m and EUR 7.6m

We determine the total product value of Neu Retina Kit to be between EUR 5.0m and EUR 7.6m. Using a discount rate of 22%, the average value is EUR 6.1m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	4'962	5'508	6'124	6'823	7'617

References Neu Retina Kit:

- Serena Riccitelli, et all. The Timecourses of Functional, Morphological, and Molecular Changes Triggered by Light Exposure in Sprague–Dawley Rat Retinas, Cells 2021, 10, 1561.
- https://www.researchandmarkets.com/reports/4591925/alzheimers-disease-diagnostics-and-therapeutics
- https://www.alzheimers.org.uk/about-dementia/types-dementia/who-gets-alzheimers-disease
- https://www.sphericalinsights.com/reports/alzheimers-disease-diagnostics-and-therapeutics-market

PON2 (LUMINA)

Introduction	Lumina NanoBiotech was founded in 2019 and is an academic spinoff focusing on innovating and advancing the state-of-the-art in point-of-care (POC) diagnostics. The lead product (PON2) will be capable of performing tests outside the laboratory for diagnostic use and for the monitoring of vital signs and other bio parameters, including clinical and oncological biomarkers in biological samples such as blood, urine, saliva and sweat.
Equity Share, Financing to date	Cube Labs currently holds 51% of the company's shares and the Trust Cube Lab 4%. INBB holds 5% and Prof. Roda 40% of the company shares. Past investments in R&D of the product are reported to be around EUR 0.6m of which EUR 180'000 have been invested in 2024.
Future financing	To implement its business plan, the company plans to invest EUR 1.48m to bring the product market readiness.
Technology	PON2 is a portable bioassay device to be adapted on demand. The device has the form of a disposable stick that features an external cartridge containing the reagent materials. The organic specimen to be analysed is loaded onto the cartridge and is then rapidly assayed via a chemiluminescence reaction. It can be used to make rapid clinical decisions in emergency scenarios, for the daily screening of bio-parameters that need to be monitored in real-time, and as a tool for routine medical diagnostics. Chemiluminescent immunoassay (CLIA) is an immunoassay technique where the label is a luminescent molecule. Luminescence is the emission of visible or near-visible radiation. The resultant potential energy in the atom gets released in the form of light. Chemiluminescence is where the type of luminescence applied to immunoassay techniques generally is a chemical reaction as the energy source. Key advantages of chemiluminescent analytical methods are: • wide dynamic range • high signal intensity • absence of interfering emissions • rapid acquisition of the analytical signal and incubation time • high stability of reagents and their conjugates, • low consumption of reagents, • full compatibility with immunology assay protocols Some limitations are the following: • Limited Ag detection • High costs • Closed analytical systems Lumina hopes to overcome some of these limitations and make it a real alternative to existing immunoassay systems. Specifically, with no reagent needed, it is easier to handle and more cost-effective.
Product Positioning and Target Patient Population / market	The use of the device is not limited only to experts in the field but can also be used by unqualified personnel and patients themselves. Key focus will be the point of care market.

Strategy

The technology offers multiple strategies for applications due to its versatility. We assume that it will be driven to market through a B2B strategy that involves licensing out through a major player.

Most recently, the company has secured a partnership with Consonant S.r.l. and Italian interaction design and cross-media communication studio.

Partnerships with University of Bologna (UNIBO) Collaboration:

A partnership with the University of Bologna (PI Luca Prodi), has been secured to scale up the MVP (minimum viable product) from TRL4 to TRL5 and will eventually be developed by the industrial partner Consonance (agreement signed). The collaboration has lead to synthesis of molecules for TCL (patent protected technologie as no miniaturized device uses it) and detection of analytes. The MVP is now beeing developed for screening of cellular toxicity as planned.

A research plan will be initiated with the following aims: standardization of sample preparation, chemical and thermal stability characterization, quantification of tcl analytical signal vs chemical-physical parameters.
The companies sees the following milestones completed:

- TRL4 moved to TRL5
- The reagents and active molecules are scaled-up
- Protocol for essays developed
- Filing of new patent (with data collected)
- Increased chemical stability of the active TCL molecules
- On-going functionanalization of the TCL molecules with specific ligands to broaden analyte measurement
- The platform is currently being developed for different use cases, such as cell toxicity and environmental monitoring

Past development

Proof of concept has already been demonstrated with multiple analysts. The system has been analysed in extreme environmental conditions (like microgravity, on-board the ISS orbital station in cooperation with NASA), checking cortisol levels in astronauts' saliva. The MVP has already been tested for cortisol, ochratoxin and valproic acid.
A partnership with the University of Turin, represented by Luca Prodi, has been secured to scale up the prototype product. The collaboration with Luca Prodi has lead to synthesis of molecules for thermochemiluminescence (TLC) which according to the company is a patent protected technologies. The product is now being developed for screening of cellular toxicity.

In the process of the development, the analytical assays showed a certain degree of chemical instability of the active TCL molecules ("dioxyethanes") in aqueous solutions. However, the project team (R&D Team at the University of Bologna (UniBo) and the University of Perugia (UniPg)) have been able the overcoming this issue. The solution included the encapsulation of the active TCL molecules and their precursors in innovative nanoparticles, made of a material called pluronic silica ("PluS NPs").

Development plan

As the next step is now to enhance the performance of TCL compared to the results achieved under the previous development plan and identifying the product to be developed from the TCL technology.

The companies development plan foresees the follow optimization steps:

1) Identification of new TCL molecules.
2) Synthetic optimization.
3) Standardization of sample preparation.

4) Characterization of chemical and thermal stability.
5) Quantification of TCL analytical signal vs. physicochemical parameter.

	Time line	Costs (m EUR)
R&D/Proof of concept	2025-2026	0.5
Clinical trial & pre-industrial prototype	2026-2027	0.5
Manufacturing & scale-up	2027-2028	0.7
CE mark and preparation	2027-2028	0.3
Market Access	2028	

* estimated by Lumina

Patents

WO 2014/024106 A1 «Method to produce thermochemiluminescent silica nanoparticles and their use as markers in bioanalytical methods»: the invention relates to TCL silica nanoparticles containing in dispersion in the silica matrix molecules of TCL acridine-based and additional chemical species and a method for the synthesis. The patent will expire in August 2032. The patent has been in-licensed from R D PHARMADVICE S R L, Bologna with potential royalties between 30% to 15% on net sales. For this valuation, we assume these terms will be renegotiated for an out-licensing scenario, where Lumina would pay 3% of net sales in case the product is out-licensed to a third party. The company believes it can also file additional patents for the technology once the testing has been completed.

Market size

The global POC diagnostics market size was USD 47.8bn in 2024. The impact of COVID-19 has been unprecedented and staggering, with POC diagnostics witnessing a positive demand shock across all regions amid the pandemic. The market is projected to grow to over USD 60bn in 2030. One of the driving factors of the market is the growing prevalence of chronic and infectious diseases fuelling the demand for rapid diagnosis. Additionally, the improved patient-centric care and the launch of advanced testing kits propel market growth.

The Global food safety testing market size was valued at USD 19.8bn in 2022 and is estimated to reach USD 36 bn by 2030, registering a CAGR of 7.8%. The rising number of foodborne diseases, adulteration cases, and toxicity have been a threat to food safety and increased the need for food safety testing. With the rising disease incidences and awareness about foodborne diseases across the world, the current food safety testing market is shifting toward rapid culture-independent molecular or microbiological tests, driving the growth of the market.

The global chemiluminescence immunoassay market size was valued at USD 13.2 bn in 2023 and is expected to grow to USD 19m in 2028 according to Markets and Markets.

Competitive landscape

The global POC diagnostics market is semi-consolidated in nature. Continuous investments in the research and development activities coupled with a strong portfolio of products in the POC testing segment are some of the considerable factors supporting the growth of POC diagnostics companies. Companies leading the market are:

- F. Hoffmann-La Roche Ltd
- Thermo Fisher Scientific Inc.
- Abbott Laboratories
- Quest Diagnostics Incorporated
- Cardinal Health

According to Grandview Research analysts, some prominent players in the global chemiluminescence immunoassay market include:

- Abbott Laboratories
- Beckman Coulter Inc.
- DiaSorin S.p.A.
- Shenzhen Mindray Bio-Medical Electronics Co., Ltd.
- F. Hoffmann-La Roche AG
- Siemens Healthineers
- Ortho Clinical Diagnostics

VALUATION PON2

Probability of success

The PoC for a prototype as well as the clinical trial we see as the key risk of bringing the product to the market. Thus, we have assigned a PoS for 30%. From there industrial production in a cost-effective way will need to be established plus the CE mark will need to be obtained. We have used PoS for this of 70%. Thus, the probability of product launch has been determined to be 21%.

Probability of Success

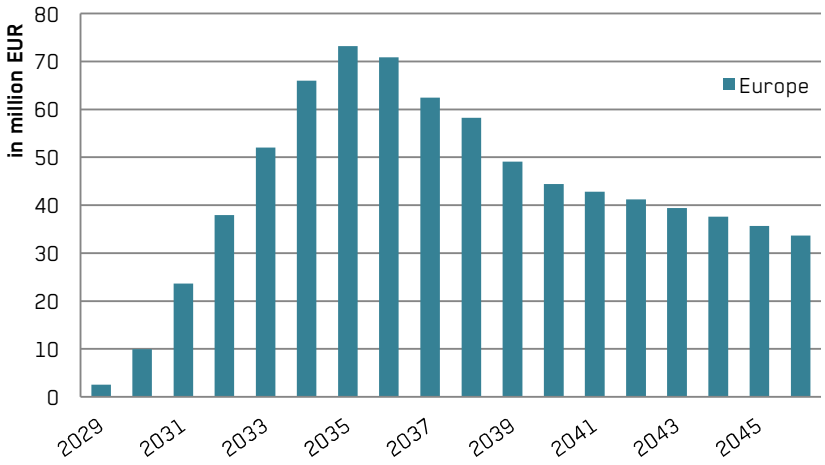
	Success rate	
	Prototype & Clinical Trial	CE Mark
Probability of Success (PoS)	30.0%	70.0%
Cumulative PoS	30.0%	21.0%

Sales forecast

The sales curve for PON2 has been forecasted from its forecasted launch in 2029 to 2046, past the expected patent expiry in 2032. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share	3% (Europe)	Venture Valuation estimate
Peak sales (2035)	EUR 73m	Model estimate
Total sales (2029-2046)	EUR 781m	Model estimate
Launch date	2029	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	30%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for PON2 (in m EUR)



Product valuation between EUR 3.7m and EUR 5.5m

We determine the total product value of PON2 to be between EUR 3.7m and EUR 5.5m. Using a discount rate of 22%, the average value is EUR 4.5m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	3'970	4'381	4'841	5'355	5'932
rNPV Value RD PHARMADVICE*	-269	-297	-328	-363	-402
rNPV Net total product value	**3'701**	**4'085**	**4'513**	**4'992**	**5'530**

References PON2:

- https://www.fortunebusinessinsights.com/industry-reports/point-of-care-diagnostics-market-101072
- https://www.marketsandmarkets.com/Market-Reports/food-safety-365.html
- https://www.grandviewresearch.com/industry-analysis/chemiluminescence-immunoassay-market

NUVAGEL (DTECH)

Introduction	DTech is an academic Spin-off dedicated to the development of a bio-gel able to incorporate and modulate the release of active substances (drug delivery platform). The products developed aim at the prevention of formation of bacterial substrate between gingiva and tooth typical of patients suffering from pyorrhoea and other common oral infectious diseases. The products may be exploited in the prevention and treatment of infections in dental implants and surrounding tissues.
Equity Share, Financing to date	Cube Lab currently holds 51% of the shares of the company, the Trust Cube Labs another 9%, INBB 5% and Prof. Chiarelli 35%. There has been an estimates an investment of EUR 2.1m in the development of the technology so far (EUR 300'000 in 2024).
Future financing	For the further development of Nuvagel, Cube Labs estimates a necessary investment of EUR 1.0m.
Technology	Nuvagel is a technology of renewable, biodegradable, and biocompatible hydrogels to be employed in the treatment of mild and complex infections of the oral cavity and dental implants. A crosslinker or "activator" is applied to rapidly transform the hydrogel into a "rubbery" compound that permits adherence to soft and hard tissues and the eventual release of active substances in a controlled manner. It permits enhanced occluding action, muco-adherence and wetting effect, limiting bacterial recolonization in periodontal pockets. Additionally, the property of DTech's solution is believed to increase the bioavailability of the active molecule, otherwise unable to enter the local circulation and tissue with currently available solutions. The competitive advantage of the product is according to the company its ability to remain longer in or around hard and soft tissues and also should provide a more effective delivery of the active drug added.
Therapeutic Induction	Nuvagel is being developed for the treatment of Periodontitis which is a chronic inflammatory disease of periodontal tissues caused by pathogenic microorganisms. It is disrupting the tooth-supporting structures. Conventional drug administration and delivery in the treatment of periodontal disease have many drawbacks including poor biodistribution, low selectivity of the therapeutic effect, burst release of the drug, and damage to healthy cells. There are a number of products in development to overcome this limitation. The main focus of these new innovative solutions is controlled drug delivery. The areas of exploitation include the applications of various polymer-based delivery systems such as hydrogels, liposomes, micro-, and nanoparticles in the treatment of chronic periodontal disease. Nuvagel is such a possible solution to overcome the short-comings of current treatments.
Product Positioning and Target Patient Population / market	734m people suffer from periodontitis worldwide. It is found in 5-20% of middle-aged (35-44 years) adults in the EU and up to 70% in elderly people (65-74). At present, for the therapy of any form of periodontal disease, there exists no protocol with proven superiority, in terms of efficiency or effectiveness, over scaling and root planning, which may result uncomfortable in elderly. DTech proposed solution makes mechanical removal by patients unnecessary since it adheres to periodontal pockets for an extended period of time. The biological properties of the technology permit enhanced occluding action, mucosal adherence and wetting effect, limiting bacterial colonisation in periodontal pockets.
Strategy	Currently, the company is looking to select the active ingredient for combination with its Novagel. One possibility to be considered is Chlorhexidine, an unspecific antiseptic used in dentistry.
Past development	The product has already undergone a PoC trial in a non-affiliated centre. The product has successfully passed safety and biocompatibility assessments.

Furthermore, DTech has engaged Consonance as a strategic developing partner. Consonance has a track record in medical device development and at least 50 projects developed in the last 7 years.

Development plan

Following the completion and formulation of the combined product, DTech plans to conduct a clinical trial involving 10-20 patients. It will file for the CE mark as a class III device by the end of 2027, the market entry is expected in 2028.

	Time line	Costs (m EUR)
Development of Prototype of combined product / manufacturing set-up	2026	0.05
Manufacturing & Scale-up	2026-2027	0.2
Clinical Trial with 10 patients	2026-2027	0.6
Regulatory	2027	0.1
Market entry	2028	

Manufacturing

Cube Labs S.p.A., and Istituto Biochimico Italiano G. Lorenzini Spa (IBI), an international biopharmaceutical company specializing in sterile injectable medicines, have signed an agreement for developing and commercializing healthcare technologies. This partnership increases time to market by scale-up processes and provides IBI with preferential rights to R&D, as well as national and international business development and distribution. Intellectual and industrial property rights from the collaboration remain with Cube Labs.

Patents

1 Patent filed for Italy + PCT in 2018-2019 conferring protection up until 2039. A new Patent was filed for Italy in 2019 + PCT ext. ready (pending application for 2041).

Market size

The global periodontal disease therapeutics market was valued at USD 859m in 2023 and is expected to reach USD 1.7bn in 2032, growing at a CAGR of 7.6% over the forecast period. The growth of the global periodontal market is due to the increasing geriatric population across the world. Higher incidence and prevalence of periodontal diseases, rise in several diabetic patients and increased use of tobacco-related products also drive the growth of the market size. Additionally, oral hygiene has become one of the most important parameters for staying healthy. Therefore, the growing awareness about oral hygiene is driving the periodontal market, specifically in developed countries. However, in developing countries, ignorance of personal hygiene is negatively affecting the growth of the periodontal market.

The global hydrogel-based drug delivery system market size was estimated to be around USD 4.9 bn in 2023 and is expected to reach USD 10.8 bn in 2030. However, only around 8% of this is attributed to oral cavity, which would be around USD 0.4 bn in 2023, growing to USD 0.9bn in 2030.

Competitive landscape

The global periodontal market is highly competitive and consists of several major players. The existing major players in the periodontal market employ strong competitive strategies, leading to a high rivalry among themselves. Moreover, the increasing level of advertising expenses, coupled with powerful strategies, is further increasing the competition among key players. Major players and possible partners of DTech are:

- Straumann AG
- Dentsply Sirona
- Geistlich Pharma AG
- Nova Instruments
- BEGO GmbH & Co. KG
- NewTom

In the market of hydrogel-based Drug Delivery systems, some of the key players include:

- Galderma
- Blairex Laboratories, Inc.
- Johnson & Johnson
- Bausch and Lomb
- Medtronic
- Ocular Therapeutix, Inc.
- Ferring B.V.
- Endo International plc
- Akorn, Incorporated
- Tolmar Pharmaceuticals, Inc.

VALUATION NUVAGEL

Probability of success

For the formulation with the API, we have assigned a PoS of 90%. In the following clinical trial, we assume a PoS of 70% and then the class III device CE mark with 90% PoS. Thus, the probability of product launch has been determined to be 57%.

Probability of Success

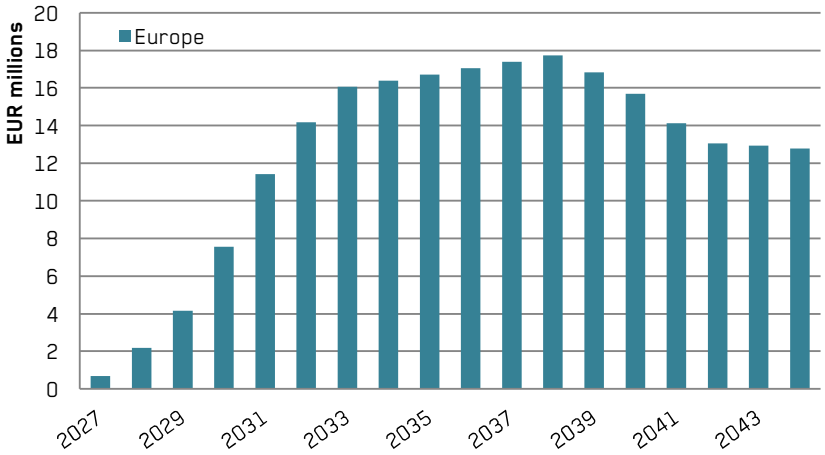
	Success rate		
	Formulation	Clinical trial	CE Mark
Probability of Success (PoS)	90%	70%	90.0%
Cumulative PoS	90%	63%	57%

Sales forecast

The sales curve for Nuvagel has been forecasted from its forecasted launch in 2027 to 2044, past the expected patent expiry in 2040. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share hydrogel drug delivery for oral cavity	10% (European)	Venture Valuation estimate
Peak sales (2040)	EUR 18m	Model estimate
Total sales (2027-2044)	EUR 227m	Model estimate
Launch date	2027	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	30%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Nuvagel (in m EUR)



Product valuation between EUR 3.3m and EUR 4.8m

We determine the total product value of Nuvagel to be between EUR 3.3m and EUR 4.8m. Using a discount rate of 22%, the average value is EUR 4.0m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	3'260	3'590	3'960	4'374	4'840

References Nuvagel:

- https://www.precedenceresearch.com/chemiluminescence-immunoassay-market
- https://www.grandviewresearch.com/industry-analysis/hydrogel-based-drug-delivery-system-market

BIOGEL SPRAY (DTECH)

Introduction	The Biogel Spray is the second product of DTech, which is based on the same technology as the Nuvagel.
Future financing	According to Cube Labs, around EUR 0.4m is budgeted for the development of this product.
Technology	For the development of the Biogel Spray, DTech has joined forces with its sister company Adamas Biotech (also a portfolio company of Cube Labs) to develop a prophylactic technology to combat viral infections (which could include COVID-19 and other coronavirus-induced infections). The product comprises a hydrogel-bioactive plant polyphenol mixture (Theaphenon E®) formulation. According to the company, conventional nasal/oral sprays suffer from a dilution of active ingredients at the site of application. It is expected that the hydrogel enhanced DTech Biogel Spray product can safely be administered to the upper respiratory tract and remain in place for up to 12 hours, thanks to the viscosity provided by the cross-linking components of the hydrogel. The active catechin components have been demonstrated to inactivate viral infections including SARS-CoV-2 in external laboratory studies. The DTech Biogel hydrogel-bioactive compound formulation is designed to trap and inactivate virions before they can infect host cells and facilitate their expulsion from the body.
Therapeutic Induction	The respiratory antiviral treatment market is expected to grow to USD 5.3 bn by the end of 2030 according to analysts from Transparency Market Research. The rise in prevalence and incidence of respiratory viral diseases such as influenza, bronchiolitis, and others drives the demand for respiratory antiviral treatment. The incidence and prevalence of flu are gradually increasing across the globe. According to the Centers for Disease Control and Prevention (CDC) in the US, around 5% to 20% of the population is affected with the flu in the U.S. every year. Additionally, an estimated 200,000 people are hospitalized due to flu infection in the country every year; of these 36,000 succumb to flu complications.
Product Positioning and Target Patient Population / market	Initially, the positioning of the product will be the prophylactic use against viruses in general. Considering the emerging scientific correlation between clinical manifestations and viral load, DTech sees that future versions of the spray may be used for the prevention and early treatment of SARS-CoV-2 and other respiratory viruses. However, without specific trials, the company will not be able to make any specific claims, especially for COVID-19. But the goal would be to position the product also as an anti-COVID-19 product with additional trials.
Strategy	DTech is currently in discussion with a possible CMO partners to bring a CE approved nasal spray on the market. The company hopes through the partnership to be able to shorten the regulatory pathway to the market. It would then in parallel with a market launch also do additional trials to add claims with regards to the anti-viral effect and possible prophylactic use. Term sheet discussions are underway with Pharmascience (Canada) and Eminence Financial Holding Co. (China, with links to Sinovac) for such a partnership.
Past development	The product has not yet formally been tested in humans, but DTech plans clinical studies which will be used to build the technical file for a CE mark. In an exploratory study with 10 patients, a simple nebulizer version of the same catechin extract had positive results in a COVID-19 therapy study, showing a reduction in time to recovery and negative tests.
Development plan	Tests to evaluate efficacy were conducted, yielding positive outcomes as the Biogel spray demonstrated anti-viral properties. However, the gel barrier effect was unsuccessful. The company is now experimenting with a new gel formulation, focusing on pore width, to reassess the barrier effect. Next steps are now a clinical trial

The assumed cost by the company to get early market access / CE mark and have a market ready product is EUR 0.4m.

	Time line	Costs (m EUR)
In Vivo Studies, Regulatory, Market Access	2025	0.1
Clinical trials	2026	0.3
Up-scaling and manufacturing	2027	0.04
Market launch	2028	

* DTech estimates

Manufacturing

For this product, there are ongoing discussions with manufacturing partners where DTech hopes to get access to a partner's QMS and have them take over the manufacturing and provide access to the CE marking, significantly shortening the time-to-market.

Patents

Registered (May 2021) as Class I Medical Devices in Italy (2105730 & 2105716). An international (PCT) patent application was filed in April 2021 concerning a two-component medical device designed to create a barrier to the penetration of coronaviruses and in particular SARS-CoV-2, as well as other catechin preparations and supporting clinical data, with potential patent expiry in 2041. The patent is co-owned between DTech and Adamas. A royalty split between them needs to be agreed upon. For the valuation, we have assumed that DTech and Adamas will each retain 50% of the value.

Market size

The anti-viral therapeutics market is expected to reach at USD 56.7 bn in 2025, and it is expected to reach USD 62.8 bn in 2030, by registering a CAGR of 2.1% during the forecast period according to Mordor Intelligence analysts. The major reason attributed to the growth of the Influenza Anti-viral Drugs segment is the prevalence of influenza worldwide and an increasing number of drug launches coupled with several drugs currently in the pipeline. COVID-19 has also triggered many activities in the nasal anti-viral market.

In addition, the World Health Organization (WHO) is also encouraging countries to continue routine influenza surveillance, test samples from influenza surveillance sites for influenza and SARS-CoV-2 viruses where resources are available, and report epidemiological and laboratory information in a timely manner to established regional and global platforms. The increased diagnosis of influenza is expected to affect the market in a positive way, as more patients will reach out for antiviral therapies after being diagnosed.

Competitive landscape

There have been many initiatives to block and prevent infections and there has been many activities for anti-viral nasal sprays. There are numerous products on the market, however, there is no scientific evidence yet of any of the marketed products that they actually can prevent COVID. Players in the Antiviral Nasal Spray market are:

- Cipla Limited
- Starpharma Holdings Limited
- Glenmark Pharmaceuticals Ltd.
- Merck & Co., Inc.
- GSK Plc
- Bayer AG
- Dr. Reddy's Laboratories Ltd.
- Viatris Inc.
- AstraZeneca Plc
- Abbott Laboratories Inc.

Starpharma Holdings Limited, Australia has developed an antiviral Nasal Spray, which could also be used as intranasal prophylactic therapy. The company has out-licensed its product to a number of partners including Vietnam, a possible test market for DTech. Annual sales of the whole company are grown to USD 9.8m in 2024. Marionmed, Austria also sells an anti-viral Nasal Spray, with possible prophylactic effects of COVID-19. The company has a number of distribution agreements in place. Annual sales of the whole company were around EUR 4.7m in 2024.

Pricing

According to DTech, the pricing of the product is expected to be 20 EUR for a spray lasting 30-45 in daily use. This is in the upper range of current anti-viral nasal spray costs which are between EUR 10 to EUR 20.

VALUATION BIOGEL SPRAY

Probability of success

For the formulation with the API, we have assigned a PoS for 85%. The company plans to bring the product to the market and in parallel do additional trials for health claims. We assigned a PoS of 45% for this. Thus, the probability of product launch (with health claims) has been determined to be 38.3%.

Probability of Success

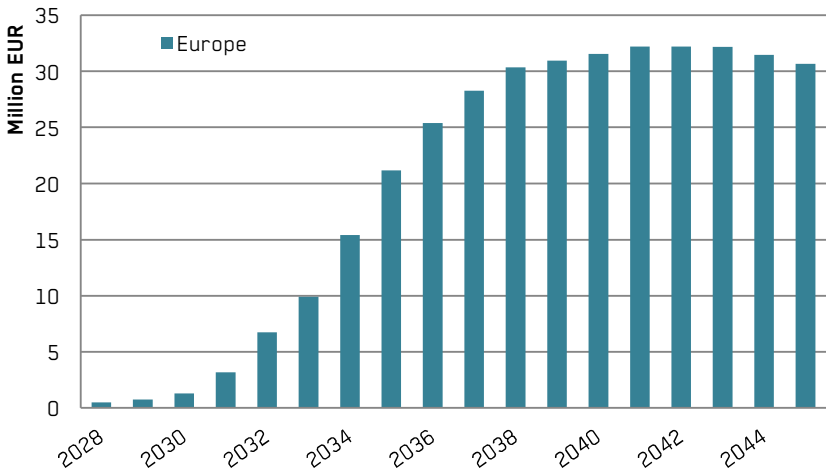
	Success rate	
	Formulation	CE Mark / Health claims
Probability of Success (PoS)	85.0%	45.0%
Cumulative PoS	85.0%	38.3%

Sales forecast

The sales curve for Biogel Spray has been forecasted from its forecasted launch in 2028 to 2045, past the expected patent expiry in 2041. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share hydrogel drug delivery for oral cavity	10% (European)	Venture Valuation estimate
Peak sales (2041)	EUR 32m	Model estimate
Total sales (2028-2045)	EUR 364m	Model estimate
Launch date	2028	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	35%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Biogel Spray (in m EUR)



Product valuation between EUR 0.04m and EUR 0.6m

We determine the total product value of Biogel Spray to be between EUR 0.07m and EUR 1.2m. Using a discount rate of 22%, the average value is EUR 0.6m. If we assume 50% of the value to goes to Adamas, the value of BioGel Spray to DTECH would be between 0.04m and 0.6m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	71	302	570	881	1'242
rNPV BioGel Spray Adamas (50%)	-35	-151	-285	-440	-621
rNPV BioGel Spray DTECH (50%)	**35**	**151**	**285**	**440**	**621**

References Biogel Spray:

- https://www.mordorintelligence.com/industry-reports/anti-viral-therapeutics-market
- https://www.ihealthcareanalyst.com/global-periodontal-disease-therapeutics-market/
- https://www.mdpi.com/2673- 8112/1/1/2

BIOGEL BIOSPRAY FOR POLLUTANTS & ALLERGENS (DTECH)

Introduction

The Biospray for Pollutants & Allergens is the third product of DTech, which is based on the same technology as the Nuvagel.

Future financing

According to Cube Labs, around EUR 0.3m is budgeted for the development of this product.

Technology

For the development of this asset, DTech also benefits from its collaboration with its sister company Adamas Biotech (also a portfolio company of Cube Labs). It is a direct evolution of the DTech Nasal Spray, originally developed to counteract influenza viruses and seasonal oropharyngeal infections. The DTech Nasal Spray project is expanding: from the original concept emerges a spinout, DTech Biospray, dedicated to daily protection against airborne pollutants and environmental allergens.

The product comprises a hydrogel-bioactive plant polyphenol mixture (Theaphenon E®) formulation. According to the company, conventional nasal/oral sprays suffer from a dilution of active ingredients at the site of application. It is expected that the hydrogel enhanced DTech Biogel Spray product can safely be administered to the upper respiratory tract and remain in place for up to 12 hours, thanks to the viscosity provided by the cross-linking components of the hydrogel. The DTech Biogel hydrogel-bioactive compound formulation is designed to trap airborne pollutants and environmental allergens before they can infect host cells and facilitate their expulsion from the body.

Therapeutic Induction

The global nasal sprays market is expected to grow to USD 28.3 bn by the end of 2035 according to analysts from Future Market Insights.
The rise in prevalence and incidence of allergic rhinitis, cold, or asthma drives the demand for nasal sprays. Additionally, the increasing preference for over-the-counter (OTC) nasal sprays to manage minor allergic conditions is boosting demand.

Product Positioning and Target Patient Population / market

Initially, the product will target the population affected by conditions such as primarily allergic rhinitis, non-allergic rhinitis, and pollution-induced nasal symptoms. Cube Labs estimates that 45% of this patient population is addressable, considering severe/chronic cases needing systemic treatment are excluded, and including patients preferring non-pharmaceutical options (e.g., children, pregnant women, polytherapy avoiders). Ultimately, the proportion of the addressable population that actively seeks or uses any form of treatment for nasal symptoms represents 60% (Cube Labs estimates).

Past development

The anti-pollution and anti-allergen spray is not a product developed from scratch. It builds on the original DTech Nasal Spray targeting viruses and seasonal infections.

Development plan

The assumed cost by the company to get early market access / CE mark and have a market ready product is EUR 0.3m.

To see the detailed strategy and development plan, please refer to the Biogel Spray for respiratory infections section.

	Timeline	Costs* (m EUR)
In Vivo Studies, Regulatory, Market Access	2025	<0.1**
Clinical trials	2026	0.2
Up-scaling and manufacturing	2027	<0.1**
Market launch	2028	<0.1

* DTech estimates

** Including costs accounted for in Biogel Spray for respiratory infections development plan

Manufacturing	For this product, there are ongoing discussions with manufacturing partners where DTech hopes to get access to a partner's QMS and have them take over the manufacturing and provide access to the CE marking, significantly shortening the time-to-market.
Patents	Registered (May 2021) as Class I Medical Devices in Italy (2105730 & 2105716). An international (PCT) patent application was filed in April 2021 concerning a two-component medical device designed to create a barrier to the penetration of coronaviruses and in particular SARS-CoV-2, as well as other catechin preparations and supporting clinical data, with potential patent expiry in 2041. The patent is co-owned between DTech and Adamas. A royalty split between them needs to be agreed upon. For the valuation, we have assumed that DTech and Adamas will each retain 50% of the value.
Market size	The global nasal sprays market is expected to grow from USD 15.8 bn in 2025 to USD 28.3 bn by 2035, by registering a CAGR of 6.0% during the forecast period according to Future Market Insights' analysts. The rising prevalence of respiratory diseases remains the main driver of market growth, and the increasing preference for over-the-counter (OTC) nasal sprays to manage minor allergic conditions contributes to an increasing demand.
Competitive landscape	Competition in the global nasal spray market is focused on therapeutic applications, including allergy relief, but also pain management and opioid overdose treatment. The key players in the nasal spray market include: • Becton Dickinson & Company • GlaxoSmithKline • Novartis AG (Sandoz) • AstraZeneca • Pfizer Inc. • Bayer AG • Merck & Co., Inc. • Sanofi • Boehringer Ingelheim International GmbH • Viatris Inc. (Mylan N.V.)
Pricing	According to DTech, the pricing of the product is expected to be 10 EUR per bottle/spray container. It is estimated that patients will administer 1-2 sprays a day, especially during allergy seasons or pollution peaks, which is similar to other preventive nasal devices and saline sprays, according to the company.

VALUATION BIOSPRAY FOR POLLUTANTS & ALLERGENS

Probability of success

For the formulation with the API, we have assigned a PoS for 80%. The company plans to bring the product to the market and in parallel do additional trials for health claims. We assigned a PoS of 90% for this. Thus, the probability of product launch (with health claims) has been determined to be 72.0%.

Probability of Success

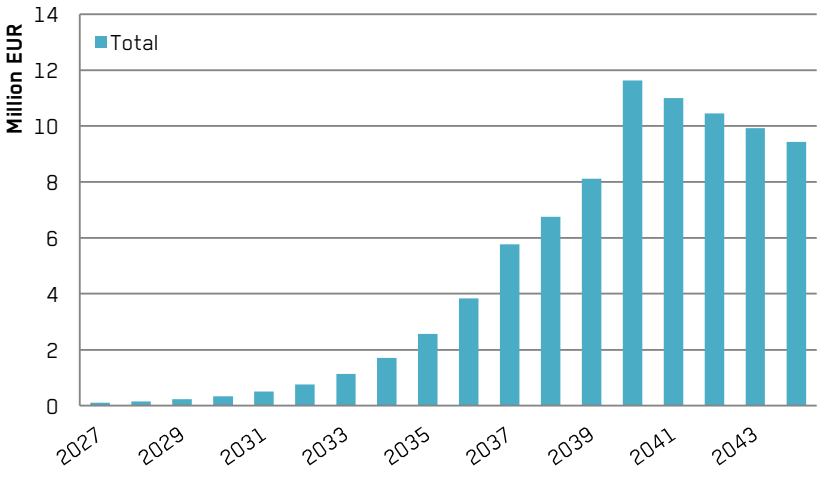
	Success rate	
	Formulation	CE Mark / Health claims
Probability of Success (PoS)	80.0%	90.0%
Cumulative PoS	80.0%	72.0%

Sales forecast

The sales curve for Biospray for Pollutants & Allergens has been forecasted from its forecasted launch in 2027 to 2044, past the expected patent expiry in 2041. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Peak sales (2040)	EUR 12m	Venture Valuation estimate
Total sales (2028-2045)	EUR 84m	Model estimate
Launch date	2027	Cube Labs estimate
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	35%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	0%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Biospray for Pollutants & Allergens (in m EUR)



Product valuation between EUR 0.9m and EUR 1.5m

We determine the total product value of Biospray for Pollutants & Allergens to be between EUR 0.9m and EUR 1.5m. Using a discount rate of 22%, the average value is EUR 1.1m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	892	1,010	1,146	1,304	1,487

References Biospray for Pollutants & Allergens:

- https://www.futuremarketinsights.com/reports/nasal-spray-market
- https://secure.constellation.iqvia.com/OTC-Review-2024
- Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines–2016 revision - Journal of Allergy and Clinical Immunology

THERMAL MATRIX (SKIN PLASTIC LAB)

Introduction	SKIN PLASTIC LAB was founded in 2019 in Lecce, Italy. The company develops medical devices designed for plastic and reconstructive surgery. The company's platform created a temperature sensor as a matrix. The temperature sensors are OEM Thermistors. The uniqueness is the arrangement in a matrix and the software analysis. The device allows detailed and accurate thermal mapping of the interested area through a non-invasive technology, enabling users to monitor skin temperature for clinical diagnostics in a broad range of research and diagnostic fields.
Equity Share, Financing to date	Currently Cube Labs holds 51% of the share of the company and the Trust Cube Labs 4%, INBB 5%, Prof. Papa 10% and Radio Analog Micro Electronics 30% So far, investments of around EUR 0.5m have been made into the development of the product of which around EUR 133'000 were invested in 2024.
Future financing	To bring the product to market a total amount of approximately EUR 1.0m is budgeted.
Technology	Skin Plastic Lab has used nanotechnology to develop thermistors that exploit a different heat transfer methodology from any conventional thermal sensors: heat transfer via conduction. The Thermal Matrix device evaluates changes in skin temperature related to various conditions affecting integumentary tissues so that correlations between temperature changes and vascularization may be obtained. It is non-invasive, low cost and increases accuracy of measurement. Thus, the instrument may be applied to fill a gap in current patient's monitoring after a skin transplant. The device is made of an electronic apparatus connected to a novel sensor and a thermographic imager. The technology allows skin temperature measurement with an accuracy of 0.01 °C and derivation of the data to qualitatively evaluate skin vascularization parameters.
Product Positioning and Target Patient Population / market	The fields of application are broad since the device may be used during plastic surgery, in the traumatology field and in other biomedical fields such as oncology, angiology and wound care.
Strategy	Currently the company is trying to improve the supporting materials and sensing elements, embed the sensor matrix into medicaments and/or bandage as well as tailor the sensor densities to specific applications. The goal for the near future is to receive medical certification for the medical device and start a clinical trial to refine the operative procedure and to validate it statistically. We assume that the product would be sold/licensed to a third party medical device company after the company has been able to show a working device which would be a viable solution in real live.
Past development	The solution developed TRL (technical ready level) 5 (out of 9) and has been validated in the relevant sector showing the required degree of accuracy. A functional prototype has been developed and proof of concept is completed according to the company. An industrial partnership has been established with Omnidermal, a spin-off from the University of Turin. This collaboration is expected to leverage the strengths of both entities, enhancing the technological development and facilitating the commercialization of the innovative sensor matrix technology in the market.
Development plan	Skin Plastic Lab will first start with the preclinical and early clinical operations, and then continue with the implementation of a Quality Management System (QMS). The goal is to further optimization of the software and hardware component of the smart patch. The

following step is CE Marking with the Notified Body, including possible interactions with test labs. By the end of the CE Marking process, the company plans to launch a pivotal clinical study that can continue post market launch.

The company is actively enhancing the Minimum Viable Product (MVP) through the advancement of supporting materials and the refinement of sensing elements. This process is crucial for ensuring the product's effectiveness and reliability in real-world applications.

Research and Development Initiatives
Currently SKIN PLASTIC LAB is focusing its effort on the thermal Matrix and the aim to integrate the sensor matrix technology into medical products, such as medicaments and bandages. This initiative is focused on customizing sensor densities to cater to specific applications, thereby increasing the versatility and applicability of the technology in various medical contexts.

	Time line	Costs (m EUR)
Development of a prototype (TRL 6 & TRL 7)	2025-2026	0.6
Clinical Trial (TRL 8)	2026-2027	0.4
Regulatory + Market Access	2027	0.1

Patents

A patent for superficial skin temperature sensor and a system for comparing physiological parameters in patients was filed in 2018 in Italy. (102018000008854), which according to the company has been granted. An additional Italian and PCT patent has been filed in 2020 (IT202000011881A1).

Market size

The dermatology devices market was valued at USD 15.2bn in 2023, and it is expected to reach USD 22bn by 2031. Key factors that are driving the market growth include the increasing prevalence of skin cancer and other skin diseases, growing awareness of cosmetic procedures to improve the aesthetic appeal, and technological advancements in dermatology devices.

The Biomedical Temperature Sensors Market is estimated to be USD 12.8bn in 2023 and growing to USD 20.6 bn in 2030. The market can be segmented into the following groups:

- TE Connectivity Ltd.
- Amphenol Advanced Sensors.
- Texas Instruments Incorporated.
- Minco Products Inc.
- Smiths Medical Inc.

Thermistors have become the second-most used temperature sensors in various industries and can be segmented into Positive Temperature Coefficient (PTC) and Negative Temperature Coefficient (NTC).

Competitive landscape

Currently, the most accurate measurement tool implies the injection of Indocyanine green and the usage of optical instrumentation to see where the fluorescent dye flows. This technique has the following drawbacks:

- The measurement of skin perfusion does not have the same resolution requirements of ophthalmic analysis.
- The cost of both dye and optical equipment is very high, making it out of reach for most of the hospitals.
- It is an invasive diagnostic technique since it involves the injection of non-biological substances in the blood flow.

Major players in the dermatology device market are:

- Cutera Inc.
- Cynosure Inc.
- Lumenis Ltd
- Candela Corporation
- Alma Lasers
- Solta Medical

Key players in the medical sensors market are:

- TE Connectivity
- Medtronic
- Analog Devices
- Texas Instruments
- ST Microelectronics
- NXP Semiconductors
- Sensirion AG

VALUATION THERMAL MATRIX

Probability of success

For the prototype development, we have assigned a PoS for 85%. The company plans to do a clinical trial. We assigned a PoS of 60% for this. For market approval we use a 90% PoS. Thus, the probability of product launch has been determined to be 46%.

Probability of Success

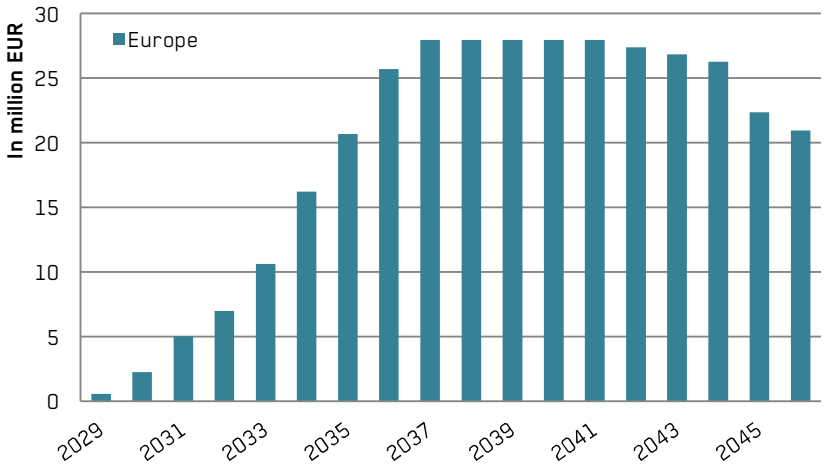
	Success rate		
	Development of a prototype	Clinical Trial	Regulatory + Market Access
Probability of Success (PoS)	85%	60%	90%
Cumulative PoS	85%	51%	46%

Sales forecast

The sales curve for Thermal Matrix has been forecasted from its forecasted launch in 2029 to 2046, past the expected patent expiry in 2041. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share	5% (European)	Venture Valuation estimate
Peak sales (2039)	EUR 28m	Model estimate
Total sales (2029-2046)	EUR 352m	Model estimate
Launch date	2029	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	25%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Thermal Matrix (in m EUR)



Product valuation between EUR 2.9m and EUR 4.7m

We determine the total product value of Thermal Matrix to be between EUR 2.9m and EUR 4.7m. Using a discount rate of 22%, the average value is EUR 3.7m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	2'921	3'290	3'707	4'182	4'722

References Thermal Matrix:

- https://www.marketsandmarkets.com/Market-Reports/sensors-market-healthcare-applications-372.html
- https://www.mordorintelligence.com/industry-reports/global-thermistor-temperature-sensors-market-industry
- https://www.mordorintelligence.com/industry-reports/dermatology-devices-market

HITRACE (HIPERFORMING RESEARCH)

Introduction	HIPERFORMING RESEARCH is a start-up founded in 2017, that comprises the production and commercialization of artificial intelligence (AI), with multiple applications that span from the life science field to business purposes. Among the possible verticals that may be developed employing HIperforming technology: bio-analysis and cell recognition, the creation of innovative and sophisticated sales tools for commercial companies and environmental monitoring for integrated IOT platforms.
Equity Share, Financing to date	Cube Labs currently holds 51% of the company's shares, the Trust Cube Labs 9% and Tracanna 40%. Past investments in R&D of the product are reported to be around EUR 0.7m (EUR 275'000 in 2024)
Future financing	According to the preliminary development plan, an investment of roughly EUR 3m will be needed to bring the product to a commercial stage.
Technology	HiTrace was developed in Turin through a partnership with the IZSTO, the national prophylactic institute. The technology is an AI software for comparative analysis and automatic monitoring of microscopic and cellular particles, for research, analysis and cellular testing laboratories. It allows the automatic recognition, counting and traceability of any microscopic particle starting from any image format (microscope image, film image or photo). The advantage is that it makes it easier to count samples such as abnormal white blood cells, which is now often done manually by healthcare professionals or even if it is done in an automated fashion, it requests manual selection of population to identify. With HiTrace, following particle recognition on the basis of morphological characteristics (or identified by the internal database), it will be automatically recognized in any image. Another area where the technology is applied is the food industry, in particular it allows detection of alterations in both fresh and frozen food. Being able to automatically recognize any cell sent, the technology can be employed to guarantee the freshness of the food by recognizing whether it has been previously frozen. In 2023, new software architecture for HiTrace system has been defined to empower the system engine with new AI technologies and methods as well as cloud based service delivery and "any screen" multi platform application model for clients.
Product Positioning and Target Patient Population / market	HiTrace is mainly aimed at healthcare, veterinary, food safety and medico-legal sectors. Since it is an AI software that allows to obtain the recognition, counting and traceability of any microscopic particle in a very short time, it can potentially be offered to any healthcare facility, both public and private, and can evolve through a Big Data Cloud platform, which will allow the end user to immediately benefit from the information recorded from the platform.
Strategy	The platforms that the start-up intends to develop, has already been sold to a number of customers, including Allianz Group, Automator, BPE Group, CSP. Thus, the company sees the products ready for the market. Some development is still necessary to broaden the market spectrum and access its future target audience including the focus on IoT (Internet of Things).
Past development	The validation of the accuracy of the Hiperforming AI imaging procedure has been carried out through the analysis of over 2000 images compared to manual measurements carried out by specialized personnel. PoC of the destination of use for evaluation of meat conservation at different conservation temperatures has been performed. The company is also in the process of applying for new patents in the area of predictive diagnosis.

The company has signed a licensing agreement with Modi Cube Labs AI, part of Modi Global Enterprises India. The agreement intends to distribute HiTrace in India.

Development plan

The company focuses on 5 different products (see overview below)

According to the company, the focused activity for the future development is related to the intellectual protection of the HiTrace Evolution platform. Besides a cloud integration, we assume it is mainly a further development of the software, provide a beta platform for testing, before the product could be released to the market. The company projects a market entry in 2027.

Through a new partnership with B4 S.r.l., HiTrace will be able to enrich its product with proprietary IoT devices and new edge computing architecture. IoT devices will be used for continuous monitoring and real time monitoring of specific conditions of human patients and research environment. Specific IoT devices are being implemented also for automated pattern and phenomena monitoring in the research field.

Product name	Description	Use of funds	Market entry	Investments
HiKeep	Condition Based Maintenance AI platform	Scale deployments, enhance AI layer.	2025	0.6
HiSales	AI-powered platform designed to optimize sales processes by automating key tasks such as document creation, CRM updates, and workflow management	Final development, go-to-market setup.	2026	0.4
HiTrace R&D Lab	AI-driven smart recognition to ensure product authenticity, enhancing food safety and traceability.	Industrial integration, certification.	2027	1.5
Posturographic System	synchronized signals from an IoT-based platform and wearable inertial sensors device for real-time posture monitoring	Clinical validation, production launch.	2027	0.5
Tremors Monitoring	continuous and automated monitoring of body tremors	Product miniaturization, pilot programs.	2028	0.5

* Company estimates

Patents

The initial Software has been registered with the SIAE (authors' rights) in Italy on 26/06/2018 with No. 012536 and further patents are in preparation. However, we do not accept a patent protection for this product.

Market size

The global cell counting market was valued at USD 10.8bn and projected to reach USD 16.1bn in 2029, at a CAGR of around 6% during the forecast period. The market growth is largely driven by factors such as growing funding for cell-based research, rising incidence of chronic and infectious diseases, growing biotechnology and biopharmaceutical industries, the development of enhanced solutions and improved image analysis, and the growing use of high-throughput flow cytometry and automated hematology analysers. On the other hand, the high cost of cell analysis is expected to hinder market growth to a certain extent.

Artificial Intelligence in the Life Sciences Market was valued at USD 2.3 bn in 2024, and it is estimated to be worth USD 14.2 bn by 2034, so a tremendous growth of 20% CAGR.

Competitive landscape

The cell counting market is moderately competitive. A few of the crucial approaches followed by players are product advancement, invention, acquisitions, and mergers. The major companies in the cell counting market include:

- Danaher Corporation
- Thermo Fisher Scientific Inc.
- Becton, Dickinson and Company
- Merck KGaA
- Bio-Rad Laboratories

Artificial intelligence in the Life Sciences Market is very competitive and consists of several major players (see list below). The market is still very fragmented, with many innovative start-up companies active. Big player are expanding geographically leveraging their solutions through collaborations. They are also acquiring start-ups working on artificial intelligence in life sciences technologies to strengthen their positions. Some key players according to analysts include:

- IBM Corporation
- NuMedii Inc.
- Atomwise Inc
- AiCure LLC
- Nuance Communications Inc. (acquired by Microsoft)
- Sensely Inc. (acquired by Mediktor)
- Insilico Medicine Inc.
- Apixio Inc. (acquired by Datavant)
- Zebra Medical Vision (acquired by Nano-x Imaging

Peer group

Publicly listed peer group companies, which apply AI for the life sciences industry, specifically including imaging are:

Company	Country	Website	Market cap (in m USD) 2024	Revenues (in m USD) 2024
DIAGNOS Inc	Canada	www.diagnos.ca	17.2	0.2
FRONTEO, Inc.	Japan	www.fronteo.com	142	48
Median Technologies SA	France	www.mediantechnologies.com	50	6
Scryb Inc.	Canada	www.relaymedical.com	4.5	1.5
Enlitic Inc.	Australia	www.enlitic.com	30	1.7
Sophia Genetics SA	Switzerland	www.sophiagenetics.com	198	65

VALUATION HITRACE

Probability of success

With the current available information, we have used a PoS of 64% for bring the product to market.

Probability of Success

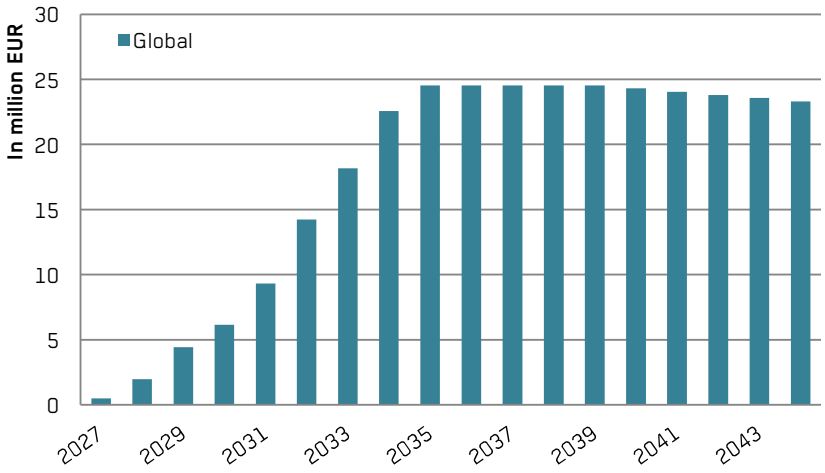
	Success rate	
	Test in R&D Lab	Market ready and approved product
Probability of Success (PoS)	85%	75%
Cumulative PoS	85%	64%

Sales forecast

The sales curve for HiTrace has been forecasted from its forecasted launch in 2027 to 2044. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share	0.5%	Venture Valuation estimate
Peak sales (2035)	EUR 25m	Model estimate
Total sales (2027-2044)	EUR 319m	Model estimate
Launch date	2027	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	5%	Venture Valuation estimate
Sales & Marketing (% of revenue)	35%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for HiTrace (in m EUR)



Product valuation between EUR 4.0m and EUR 6.6m

We determine the total product value of HiTrace to be between EUR 4.0m and EUR 6.6m. Using a discount rate of 23%, the average value is EUR 5.2m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	4'016	4'551	5'152	5'830	6'597

References HiTrace:

- https://www.marketsandmarkets.com/Market-Reports/cell-counting-market-157450728.html
- https://www.mordorintelligence.com/industry-reports/artificial-intelligence-in-life-sciences-market

HYBRID SCALPEL (RESCUE CODE)

Introduction	RESCUE CODE an Italian start-up founded in 2018 focusing on the field of cardiac surgery, emergency cardiac surgery and interventional cardiology.
Equity Share, Financing to date	Cube Lab currently holds 51% of the shares of the company, the Trust Cube Labs 9%, INBB 5% and Prof. S. Massetti 35%. We estimate an investment of around EUR 0.54m in the development of the technology so far (EUR 107'000 in 2024).
Future financing	For the further development of Hybrid Scapel, Cube Labs estimates a necessary investment of EUR 1.7m.
Technology	Rescue Code has developed a hybrid spatula that combines a hydro-dissector with a standard mono-polar electrical scalpel. The hydro-dissector is driven by a fluid, which is a combination of sterile water and carbon dioxide. It is used to separate delicate tissues and cool down scalpel tip. During laparoscopy, bleeding is frequent and may represent a challenge and impaired vision. Rescue Code improves vision and speeds procedures. Moreover, it represents an evolvement in the field of cardiology and cardiac surgery, eliminating the side effect of carbonization of tissues typical of this class of instruments.
Product Positioning and Target Patient Population / market	Rescue Code is focusing on cardiology and cardiac surgeries. Heart disease is one of the leading causes of death for men and women. An estimated 2 million cardiac surgeries are performed around the world each year. It is most often used for complicated procedures, such as coronary artery bypass, or complex procedures to the aorta or the heart itself. Initially the device will be tested in humans as a generic surgical tool for soft tissues and subsequently implemented for cardiac use.
Strategy	The company plans to develop the product to a market ready product including a CE mark (class IIb active device). We assume that latest before bringing it to the market, a partner would need to be found for the marketing and sales.
Past development	According to the company it already has preliminary in vivo results with a first functional prototype. Rescue Code is in the process of identifying and selecting a manufacturing partner with the necessary capabilities for a new prototype development.
Development plan	The following steps are planned by the company to bring a product to market readiness: - Prototype development and optimization - Pre-clinical studies - Industrialization / scale-up - Clinical trials - Regulatory approval The device is a medium-high risk active device that requires animal models before entering the clinical phase. Pilot data will support the design verification & validation activities, including risk management and usability engineering. The pivotal data will provide evidence of safety and efficacy.

	Time line	Costs (m EUR)
Prototype development and optimization as well as pre-clinical studies	2026	0.25
Clinical Trial / industrialization	2027	0.93
Regulatory approval / Market Access	2028	0.47

Patents

RESCUE CODE has applied for a patent for a hydro-dissector and its applications: (Number: 102021000022994). The patent was filed in September 2022, thus would expire in 2042.

Market size

According to Market Data Forecast the size of the global cardiac surgery devices market was valued at USD 17bn in 2023 and estimated to be growing at a CAGR of 3.18% to reach USD 25bn by 2030 during the forecast period.

The laparoscopic instruments market is expected to reach USD 30.7 bn by 2032 from an estimated USD 16.5 bn in 2024, at a CAGR of 7.9%. The market can be segmented in:

- Energy Devices
- Laparoscopes
- Insufflation Devices
- Handheld Instruments
- Suction/Irrigation Devices
- and other Products

Competitive landscape

The global laparoscopy devices market is highly competitive and consists of a number of major players. Key companies in the global laparoscopic instruments market are:

- Karl Storz GmbH & Co. KG
- Medtronic PLC
- Olympus Corporation
- Boston Scientific Corporation

Major companies operating in the cardiac surgery devices market are:

- Edwards Life Science Corporation
- Medtronic PLC
- Abbott Laboratories
- Boston Scientific Corporation
- Becton, Dickinson
- Braun Melsungen

VALUATION HYBRID SCALPEL

Probability of success

For the Prototype and initial trial, we assign PoS of 75%, for the pivotal trial at PoS of 60% and for the subsequent CE mark 90%. Overall PoS would be at 40.5%.

Probability of Success

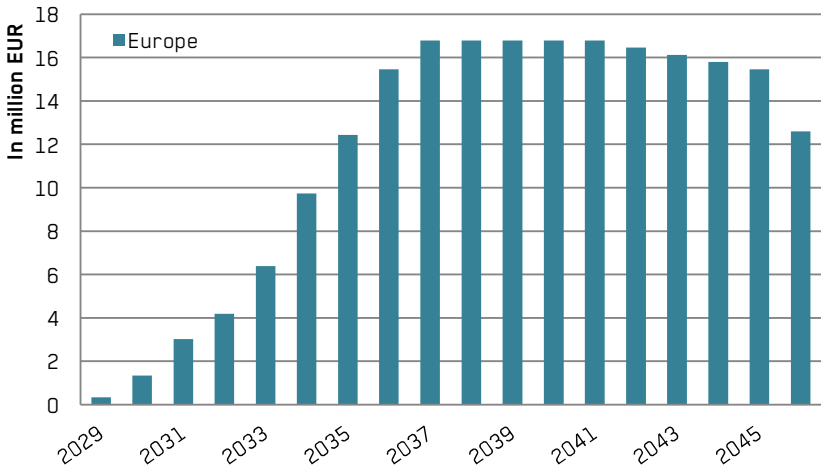
		Success rate	
	Prototype / phase I	Clinical trial / pivotal study	CE mark
Probability of Success (PoS)	75%	60.0%	90.0%
Cumulative PoS		45.0%	40.5%

Sales forecast

The sales curve for Hybrid Scalpel has been forecasted from its forecasted launch in 2029 to 2046. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share	0.5%	Venture Valuation estimate
Peak sales (2039)	EUR 16.8m	Model estimate
Total sales (2029-2046)	EUR 213m	Model estimate
Launch date	2029	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	25%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for Hybrid Scalpel (in m EUR)



Product valuation between EUR 1.3m and EUR 2.2m

We determine the total product value of Hybrid Scalpel to be between EUR 1.3m and EUR 2.2m. Using a discount rate of 22%, the average value is EUR 1.7m.

Product Valuation	Discount rate				
in EUR 000's	25%	24%	23%	22%	21%
rNPV Total product value	1'295	1'483	1'697	1'941	2'220

References Hybrid Scalpel:

- https://www.marketdataforecast.com/market-reports/cardiac-surgery-devices-market
- https://www.globenewswire.com/news-release/2022/01/27/2374094/28124/en/Global-Cardiac-Arrest-Treatment-Market-2021-to-2026-by-Treatment-Distribution-Channel-and-Geography.html
- https://www.marketsandmarkets.com/Market-Reports/laparoscopic-instruments-market-130019497.html

ROSES (CRV)

Introduction	Crati River Valley Medical Industries Srl (CRV) is an Italian start-up, founded in Maglie in 2020. The company deals with the research, development and marketing of products, devices, and solutions in the field of robotics initially applied to endovascular surgery.
Equity Share, Financing to date	Cube Labs holds 55% of the shares from CRV. Other shareholders include INBB with 5%, and Prof. G. Danieli with 40%. To date, approximately EUR 0.4m has been invested in the company.
Future financing	According to the information provided, Cube Labs has budgeted around EUR 2m to bring the technology to the market.
Technology	Conventional vascular interventional surgery (VIS) is manually performed under fluoroscopic guidance, requiring lead protection for the surgeons due to exposure to x-ray. A remote-control vascular interventional surgery robot (VISR) which can remotely, safely and precisely perform VIS has clear advantages. The product of CRV is a Robotic System for Endovascular Surgery (ROSES) is such a remote-controlled robot. It is composed of the console, the master, that controls a slave together with a number of disposable instruments (i.e. guided wires or catheters) that allows driving and guiding them in an endovascular surgery. This allows separating the doctor from the patient and eliminates issues of exposure to ionizing radiations for the medical staff.
Therapeutic Induction	According to a publication from 2010, data indicates that a peripheral vascular intervention corresponds to exposure of the medical staff of up to equivalent to 1,500–2,500 chest X-rays. The rapid development of X-ray imaging technology and medical devices has made vascular surgery increasingly endovascular in nature. In the United States, a 300% increase has been reported in the number of endovascular treatment procedures performed in a ten year period alone for lower extremity vascular disease. It is reported that about 80% of abdominal aortic aneurysms can be treated with endovascular therapy, and 40% to 70% of all vascular interventions will be performed with an endovascular method in the future.
Product Positioning and Target Patient Population / market	According to CRV, in Italy there are 330 centres for angioplasty and 220 for endovascular surgery. Thus, the company sees a big potential for such systems in Europe, with the possibility to install more than 3,000 procedure rooms and perform around 1.6 million interventions annually.
Strategy	The strategy of CRV is to involve a number of key centres in Europe and engage key opinion leaders for them to use and promote ROSES. For marketing and sales, eventually, the goal is to complete a range of valuable agreements with international partners, such as Philips, Siemens, or GE. The commercialization will be left to partners whereas the production of ROSES remains in-house with CVR. The company is also exploring the possibility of using the device in the field of brain surgery.
Past development	According to the company a first exploratory study on angioplasty patients has been performed. The technical dossier for the CE mark is in preparation and the product itself is under current development in order to broaden its applications.

Development plan

To this aim, CRV will firstly start with the preclinical and early clinical operations, finalize the prototype, and launch a pivotal clinical study. The device will be tested in adequate animal models (either sheep or pig) before entering the clinical phase. The pilot study will support the CE Marking process, focusing both on early safety and efficacy. The pivotal study will provide additional efficacy and safety data to extend the claims. Interactions with test labs are expected to take significant resources. The technical dossier for the CE mark is in preparation by the company.

	Time line	Costs (m EUR)	Patients
Clinical Trial + Start Regulatory	2025/2026	0.7	25
TRL 8 + Trial Multicentre	2027	0.83	100
Market Access	2028/2029	0.54	

Manufacturing

The commercialization will be left to partners whereas the production of ROSES remains in-house.

Patents

CRV has the license of use on the International patent EP18807725.9, PCT/IT2020/050109 and of the Italian patent protection: 102020000020734, 102020000020740, 102020000020746, license for ROSES and all the endovascular robotic applications developed. In 2024, the additional 3 patents have been filed:

- Danieli G. Sterile covering system for the robotic system for endovascular surgery. Italian Patent Application 102024000004642. 2024.
- Danieli G, De Rosa S, Benedetto O, et al. ROSES robotic system updates for angioplasty and endocranial procedures for future AI control. Italian Patent Application 102024000019465. 2024.
- Danieli G, De Rosa S, Di Benedetto O, et al. Automatic interface algorithm to guide the catheters inside an intracranial circle affected by aneurysms in order to position a stent and eventually position also the Guglielmi coils inside the aneurysms. Italian Patent Application 102024000020641. 2024.

Market size

Market Study Report expects the global Endovascular Treatment Devices market size to reach USD 4.9bn by 2030, from USD 3.5bn in 2024.

The global surgical robots market size is estimated to be around USD 11.4bn in 2024 growing to around USD 23bn in 2030. The robots are mainly used for gynaecological, urological, orthopaedic, general, neurosurgeries, and other minimally invasive surgeries and driven by the advantages of robotic-assisted surgery, technological advancements and thus increasing adoption of surgical robots. However, the high costs are still a prohibitive factor. The da Vinci system, one of the most commonly used robotic systems, costs between USD 1.5 million and USD 2.5 million, while the CyberKnife robotic system costs around USD 4 million per unit.

Competitive landscape

Key players in the Endovascular Treatment Devices are:

- Boston Scientific Corp
- Getinge AB
- Cardinal Health
- Cook Group Inc
- Terumo Corp

The only direct competitor of CRV is Magellan by Hansen Medical, which uses standard size catheters, while CRV has developed a patent-protected technology for 24 French Catheters (8 mm in diameter), or even more.

Key players for surgical robots include:

- Intuitive Surgical (US)
- Stryker Corporation (US)
- Medtronic (Ireland)
- Smith & Nephew (UK)
- Zimmer Biomet (US)

VALUATION ROSES

Probability of success

For the Prototype and initial trial, we assign PoS of 85%, for the pivotal trial at PoS of 55% and for the subsequent CE mark 90%. Overall PoS would be at 42%.

Probability of Success

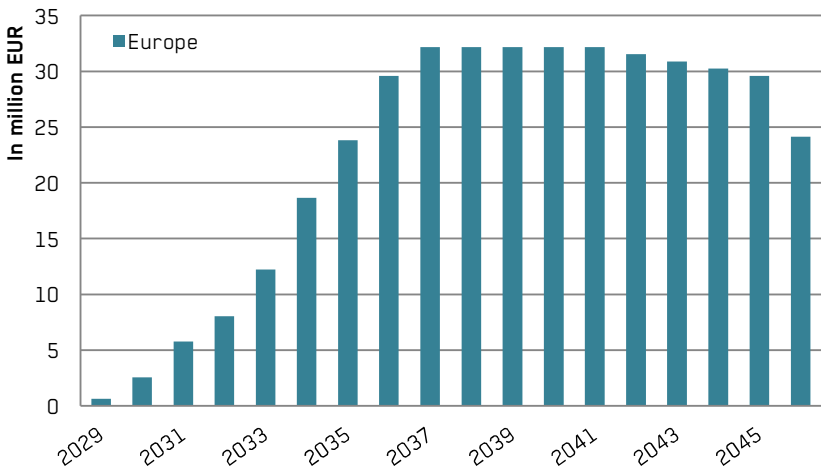
		Success rate	
	Prototype / phase I	Clinical trial / pivotal study	CE mark
Probability of Success (PoS)	85%	55%	90%
Cumulative PoS		47%	42%

Sales forecast

The sales curve for ROSES has been forecasted from its forecasted launch in 2029 to 2046. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share	1%	Venture Valuation estimate
Peak sales (2036)	EUR 32.2m	Model estimate
Total sales (2029-2046)	EUR 408m	Model estimate
Launch date	2029	
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	20%	Venture Valuation estimate
Sales & Marketing (% of revenue)	35%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for ROSES (in m EUR)



Product valuation between EUR 1.6m and EUR 2.8m

We determine the total product value of ROSES to be between EUR 1.6m and EUR 2.8m. Using a discount rate of 22%, the average value is EUR 2.1m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	1'602	1'844	2'119	2'432	2'791

References Roses:

- https://www.marketstudyreport.com/reports/global-endovascular-treatment-devices-market-2020-by-manufacturers-regions-type-and-application-forecast-to-2025?utm_source=Marketwatch.com&utm_medium=SK
- https://www.marketsandmarkets.com/Market-Reports/surgical-robots-market-256618532.html
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6393411/

PS297/PS318 (LIPOVEXA)

Introduction	Founded in 2024, Lipovexa is a spin-off company headquartered in Maglie, Italy, from the University of Western Australia - Harry Perkins Medical Research Institute, Perth, where the research unit is located. Lipovexa is pioneering a novel therapeutic approach with the aim of targeting metabolic disorders such as diabetes, obesity, and non-alcoholic fatty liver disease. The team leverages academic and industry expertise to transform natural byproducts of olive oil into cutting-edge nutraceutical and pharmaceutical solutions.
Equity Share & Financing to date	Cube Labs currently owns 60% of the shares of Lipovexa, Professor Marco Falasca holds 35%, and the remaining 5% are held by INBB. So far, a total amount of approx. EUR 0.91m has been invested in the company's activities, including costs related to patent applications, personnel and grants totalizing AUD 1.59m. The current business plan foresees an investment of around EUR 40.0m to take the pharmaceutical asset through preclinical and clinical development, and approx. EUR 160,000 to bring the nutraceutical asset to the market.
Technology	The therapeutic candidates being developed by Lipovexa are based on oleoyl-lysophosphatidylinositol (Oleoyl-LPI), which is a potent endogenous molecule capable of stimulating the release of glucagon-like peptide 1 (GLP-1) via activation of the GPR119 receptor in enteroendocrine cells. The company aims to develop synthetic mimetics of Oleoyl-LPI and achieve a gut-restricted, safer mechanism of GLP-1 induction, with the potential to overcome limitations of current injectable GLP-1 analogues, such as patient discomfort and adverse gastrointestinal effects.
Therapeutic Induction	This therapeutic approach works by stimulating the body's natural secretion of GLP-1, thereby improving glycaemic control, increasing satiety, and potentially lowering overall food intake. Preclinical studies show that both natural Oleoyl-LPI and its synthetic mimetics markedly enhance GLP-1 release, resulting in better blood-glucose regulation and weight management. By leveraging the body's own regulatory pathways, this novel mechanism targets not only diabetes but a wider range of metabolic disorders.
Product Positioning & Target Patient Population	Lipovexa aims to develop innovative solutions for metabolic disorders by leveraging both GPR119 therapeutic compounds and natural bioactive products derived from agri-food byproducts. The company's approach focuses on glycaemic control, weight regulation, and metabolic balance through targeted mechanisms, combination therapies, and optimized pharmacokinetics for better patient outcomes.
Strategy	Lipovexa aims to develop cutting-edge pharmaceuticals and nutraceuticals to promote metabolic and physiological health. By pairing clinically proven synthetic derivatives of natural compounds with plant-based bioactives, Lipovexa aims to pioneer sustainable, science-driven therapies for obesity, type 2 diabetes, and liver dysfunction. By boosting endogenous GLP-1, Lipovexa's small-molecule strategy breaks from current injectable treatments, which are often hampered by gastrointestinal side effects, pancreatitis risk, and adherence challenges.
Past development	Based on the work of Professor Falasca, Lipovexa was founded on the discovery of oleoyl-LPI as a potent endogenous ligand of the GPR119 receptor, primarily found in pancreatic islets and gastrointestinal endocrine cells. It plays a crucial role in the secretion of glucagon-like peptide-1 (GLP-1), a hormone involved in insulin secretion, appetite regulation, and overall metabolic control. Lipovexa's research demonstrated that oleoyl-LPI significantly stimulates GLP-1 release in both *in vitro* and *ex-vivo*

preparations, and exhibits a higher efficacy compared to previously known ligands such as oleoylethanolamide (OEA).

Lipovexa designed and synthesized 21 oleoyl-LPI analogues, looking to improve compound stability and expand pharmacological utility. The compound PS318 proved the most potent stimulator of GLP-1 secretion, with PS297b and PS321a also showing strong activity. These synthetic mimetics were validated in multiple human enteroendocrine cell lines (GLUTag, NCI-H716, and STC-1).

Lead candidates PS297 and PS318 are now in pre-clinical development, where Lipovexa is refining dose regimens, mapping pharmacokinetic and pharmacodynamic profiles, and conducting comprehensive toxicity studies. Both molecules have already shown compelling efficacy in disease-specific models of obesity and metabolic dysfunction-associated steatotic liver disease (MASLD). Current efforts are aimed at building robust proof-of-concept data while exploring the compounds' underlying molecular mechanisms.

In parallel to its therapeutics program, Lipovexa is advancing a complementary nutraceutical line. Leveraging by-products from the olive-oil, soybean, and rice industries, the team has isolated a portfolio of bioactive ingredients that can be upcycled into metabolic-health supplements.

Development plan

The development plan focuses on gut-targeted GPR119 agonists—synthetic leads PS297 and PS318—alongside select natural compounds aimed at treating metabolic disease. Project workstreams span the entire discovery-to-IND continuum: hit identification and lead optimization followed by pre-clinical packages addressing efficacy, safety, pharmacokinetics, and toxicology.

In parallel, Lipovexa is moving a companion nutraceutical line towards the market. With raw-material suppliers already mapped (current phase), the team will next run extraction trials and perform full physicochemical profiling of candidate ingredients. In-vitro and ex-vivo studies will then aim to elucidate mechanisms of action, while extraction methods are optimized and standardized. Regulatory engagement will follow the EU Novel Food pathway (Reg. 2018/456), beginning with a Member-State consultation. The plan concludes with end-to-end supply-chain integration, positioning the product for a successful commercial launch.

Pharmaceutical development plan	Timeline	Costs (m EUR)
Preclinical development	2025-2027	1.36
Phase I	2027-2029	1.00
Phase II	2029-2032	13,000
Phase III	2032-2035	20,000
Regulatory & Market Access	2035-2036	4.50
Market entry	2036	-

Nutraceutical development plan	Timeline	Costs (m EUR)
Idea generation	2025	-
Reg. evaluation, R&D, IP evaluation & filing	2025	0.02
Industrial development	2025-2027	0.03
Preclinical & Food supplement notification	2025-2026	0.01
Market entry	2026	-
Clinical trial	2026-2027	0.10

Patents

Lipovexa's invention, i.e. synthetic derivatives of oleoyl-lysophosphatidylinositol (oleolyl-LPI) and uses thereof, is protected by the following patents:

- 2018326396 – Australia (granted).
- ZL201880070700.4 – China (granted).
- EP18851286.7 – Europe (pending).
- 762161 – New Zealand (pending).
- 16/643,165 – USA (pending).

Including potential patent term extensions, we assume loss of market exclusivity will occur in 2043.

Market size

The global obesity treatment market was valued at USD 15.92 billion in 2024, and is forecast to reach USD 60.53 billion by 2030, growing at a CAGR of 22.31% from 2025 to 2030, according to Grand View Research. This growth is deemed to be mainly driven by the increasing global prevalence of obesity and its associated comorbidities, such as diabetes, cardiovascular diseases and hypertension. According to the World Health Organization (WHO), an estimated 2.5 billion adults were overweight, with 890 million classified as obese, along with 37 million children under the age of five being overweight. Obesity is primarily driven by factors such as poor diet, physical inactivity, and obesogenic environments.

Competitive landscape

This dynamic market is shaped by mergers, acquisitions, and partnerships, along with significant investments in R&D to address unmet medical need and expand treatment options. Established players focus on developing advanced therapies, such as next-generation GLP-1 receptor agonists and oral weight-loss drugs, securing regulatory approvals to expand market reach. Emerging companies, on the other hand, target niche areas including personalized obesity treatments and novel drug delivery mechanisms, to address specific unmet needs.

Some of the key players in the obesity market are:

- Novo Nordisk A/S
- GlaxoSmithKline plc
- VIVUS LLC
- Currax Pharmaceuticals
- Boehringer Ingelheim International GmbH
- Rhythm Pharmaceuticals, Inc.
- Gelesis
- Eli Lilly and Company

VALUATION PS297/PS318 (PHARMACEUTICAL)

Probability of success

Taking into consideration the stage of development and the cumulative success rate of PS297/PS318 in the treatment of obesity, the probability of product launch has been determined to be 7.3%.

Probability of Success

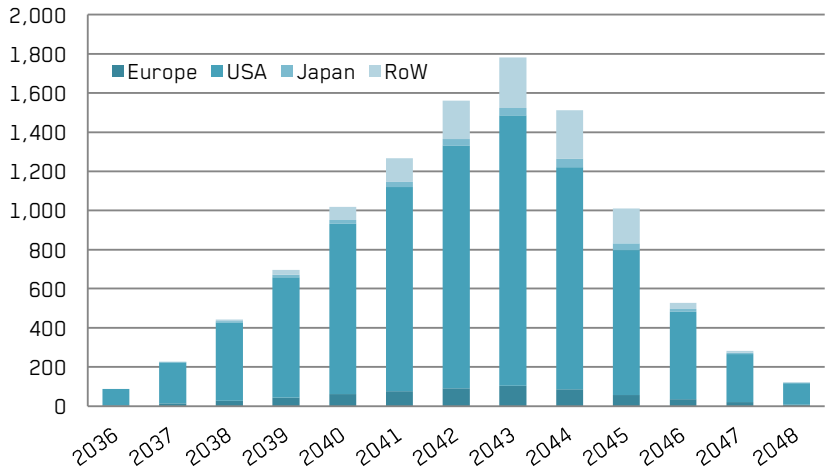
	Success rate				
	Preclinical	Phase I	Phase II	Phase III	Approval
Probability of Success	80%	53%	32%	60%	90%
Cumulative POS	80%	42.4%	13.6%	8.1%	7.3%

Sales forecast

The sales curve for PS297/PS318 has been forecasted from its anticipated launch in 2036 up until 2048, past the expected loss of exclusivity in 2043. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share of obesity market	1%	Venture Valuation estimate
Peak sales (2043)	EUR 1,782m	Model estimate
Total sales (2036-2048)	EUR 10,533m	Model estimate
Launch date	2036	Cube Labs
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	25%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	0%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for PS297/PS318 (in m EUR)



Product valuation between EUR 4.1m and EUR 8.8m

We determine the total product value of PS297/PS318 for the treatment of obesity to range between EUR 4.1m and EUR 8.8m. Using a discount rate of 22%, the average value is EUR 6.0m.

Product Valuation	Discount rate				
in EUR 000s	24%	23%	22%	21%	20%
rNPV Total product value	4,059	4,974	6,048	7,309	8,793

References Lipovexa:

- https://www.imperial.ac.uk/news/251798/more-than-billion-people-living-with/
- Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults Phelps, Nowell H et al. The Lancet, Volume 403, Issue 10431, 1027 - 1050
- https://www.grandviewresearch.com/industry-analysis/obesity-treatment-devices-and-therapeutics-market
- https://www.va.gov/opal/nac/fss/pharmprices.asp

VALUATION OLEOYL-LPI (NUTRACEUTICAL)

Probability of success

We have assigned a probability of success of 75%, considering that the company would have to get a CE mark after going through the development stages detailed in the above section.

Probability of Success

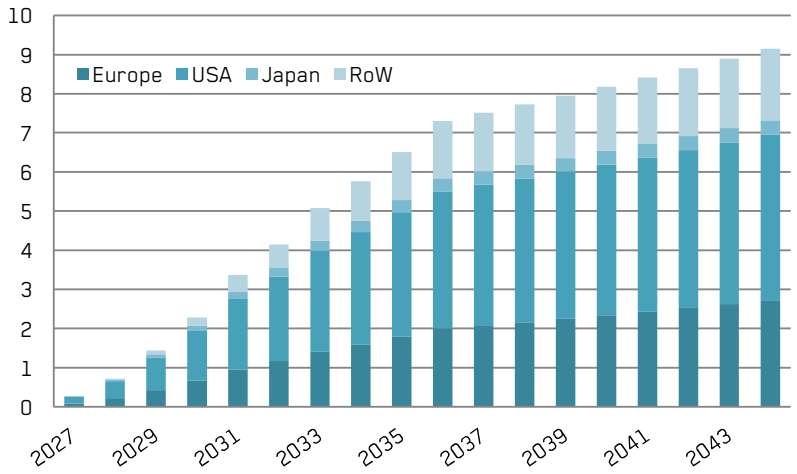
	Success rate
	Approval
Probability of Success (PoS)	75%
Cumulative PoS	75%

Sales forecast

The sales curve for oleoyl-LPI has been forecasted from its anticipated launch in 2027 up until 2044. Additional key assumptions for the valuation can be found below:

Criteria	**Value**	**Reference**
Market share of obesity market	1%	Venture Valuation estimate
Peak sales (2044)	EUR 9.2m	Model estimate
Total sales (2027-2044)	EUR 103m	Model estimate
Launch date	2027	Cube Labs
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	35%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	0%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for oleoyl-LPI (in m EUR)



Product valuation between EUR 2.0m and EUR 2.9m

We determine the total product value of oleoyl-LPI to be between EUR 2.0m and EUR 2.9m. Using a discount rate of 22%, the average value is EUR 2.4m.

Product Valuation	Discount rate				
in EUR 000s	24%	23%	22%	21%	20%
rNPV Total product value	1,952	2,141	2,353	2,593	2,863

References Lipovexa:

- https://www.imperial.ac.uk/news/251798/more-than-billion-people-living-with/
- Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults Phelps, Nowell H et al. The Lancet, Volume 403, Issue 10431, 1027 - 1050
- https://www.grandviewresearch.com/industry-analysis/obesity-treatment-devices-and-therapeutics-market
- https://www.va.gov/opal/nac/fss/pharmprices.asp

SPRAY PATCH (CHROMAPATCH)

Introduction	The medtech startup ChromaPatch is developing a medical spray device capable of detecting superficial bacterial infections at an early stage through a visible colorimetric reaction.
Equity Share & Financing to date	Cube Labs currently owns 60% of the shares of ChromaPatch, while 35% are owned by inventor partners, and the remaining 5% are held by INBB.
Technology & key differentiating factors	Chroma Patch is a spray-on medical device that instantly forms a protective polymer film over a wound, combining three roles: shielding the lesion, supporting healing, and visually signaling possible infection. The film leverages a physiological shift in skin pH that accompanies infection, from mildly acidic (5-6) toward alkaline (up to 10), to trigger a built-in indicator. Plant-derived anthocyanins (e.g. from red cabbage) change colour from pink to blue/green as pH rises, providing an immediate, visible cue that enables earlier, more targeted intervention and helps curb empirical antibiotic use. Beyond diagnostics, these anthocyanins contribute antimicrobial and anti-inflammatory activity, reducing bioburden and local inflammation to foster tissue repair. Ethylcellulose in the formulation confers strong resistance to water, humidity, and external irritants, creating a durable barrier that limits friction and contamination while maintaining optimal conditions for regeneration. Most available products are pre-formed dressings or bandages with pH indicators embedded in hydrogels, fibers, or microspheres. They work on flat skin but are difficult to apply on joints and other contoured areas, and their readout is often unreliable due to dye dispersion. Film-forming sprays exist that protect, absorb, and offer antibacterial action, but they lack diagnostic capability. Other options, imaging or fluorescence systems, are costly, require trained staff, and are essentially hospital-only. Chroma Patch intends to depart from this status quo. In a single sprayable device, it aims to deliver immediate on-wound diagnosis alongside antibacterial, protective, and moisture-managing functions, with easy application even on hard-to-reach sites. The formulation is claimed to be biodegradable, biocompatible, and suitable for use by non-medical personnel.
Therapeutic Induction	ChromaPatch targets two main usages: • Treatment of superficial, non-bleeding wounds, such as abrasions, small stab wounds, scrapes, bed sores and non-bed sores • Treatment of complex wounds, such as lacerations, burns, chronic wounds, diabetic wounds and acute wounds. Potential applications of the product include reconstructive and plastic surgery, traumatology, burns, emergency medicine, or diabetic foot.
Unmet need	Europe bears a substantial burden of superficial wounds–affecting roughly 10 million people each year–with infection complicating about 22% of chronic, superficial cases. Early bacterial involvement is rarely discernible to the naked eye and typically requires at least 24 hours for laboratory confirmation, prompting precautionary antibiotic use that is often unwarranted and accelerates resistance. Current pH-sensing solutions are largely pre-formed patches and bandages that are expensive and difficult to place on anatomically awkward sites. Collectively, these constraints underscore a clear clinical gap: a real-time, on-wound diagnostic capable of detecting bacterial infection at the point of care and enabling timely, targeted intervention.
Strategy	The business model uses an integrated go-to-market approach across physical and digital channels (sales reps, website, social media). It pursues two goals: broad product awareness and hands-on demonstrations in pharmacies, doctors' offices, and private clinics. Distribution runs on two tracks: a B2B2C path via distributors, pharmacies/parapharmacies with healthcare professionals as influencers to reach end users, and a B2B path of direct sales by medical reps to private clinics.

Development plan

The project is now in a validation stage with potential customers and experts. Crucial next steps include characterization and clinical testing, CE mark obtention and pilot batch production. Total remaining development cost is estimated at EUR 365,000.

	Timeline	Costs (m EUR)*
R&D batch production, testing & regulatory	2025-2026	0.140
Clinical trials (incl. batch production)	2026-2027	0.125
CE mark	2027-2028	0.050
Manufacturing & market launch	2028	0.050

* ChromaPatch estimates

Manufacturing

No particular hurdles are expected in terms of manufacturing, either in terms of the formulation, or the delivery device (spray bottle). The company is leveraging its experience with other projects (i.e. DTech) and is in contact with potential partners.

Patents

Chroma Patch is covered by an Italian industrial patent filed in December 2022 (application no. 2022000024417), titled "Composizione di cerotto spray, procedimento per la sua produzione e kit." The patent broadly protects the spray patch's chemical formulation, the manufacturing process, and its diagnostic uses. In 2024, the patent was published and became eligible for international extension. It is now under review for entry into the PCT, the step that precedes launching national and regional filings.

Market size

The European acute wound market was valued at USD 6.52 billion in 2024 and is forecast to grow at a 3.8% CAGR from 2025 to 2035. The market for topical wound therapies is expanding, driven by the rising prevalence of chronic wounds, particularly diabetic foot and pressure ulcers, and an aging population that is more susceptible to them. Growth is further supported by increasing diabetes rates, advances in wound-care technologies, and a stronger emphasis on infection prevention.

Competitive landscape

Wound care is a mature, consolidated market split between traditional dressings and higher-margin "advanced" products (foam, hydrocolloid, hydrofiber, antimicrobial, NPWT, contact layers). Global share is concentrated among a handful of diversified medtechs with broad hospital contracts, strong distribution, and deep formularies, while mid-size European specialists remain very competitive in dressings. Growth is driven by chronic wounds and surgical volumes; advanced segments (dressings, NPWT, devices) outpace traditional gauze and tapes. Procurement is sticky (formularies/tenders), so new entrants typically wedge in via niche indications (infection-sensing, bioactive/hemostatic, film-forming sprays) or health-economic wins in outpatient/home care.

Key players (global/Europe):

- 3M (incl. legacy KCI/Acelity NPWT)
- Smith & Nephew
- Mölnlycke Health Care
- ConvaTec
- Coloplast
- Paul Hartmann
- B. Braun
- Cardinal Health (distribution + private-label dressings)
- Essity/BSN medical (Cutimed, Leukoplast)
- Medtronic (advanced therapies adjacencies)

Pricing

Early analysis conducted by the company points toward a directional price per unit of EUR 21.43.

VALUATION CHROMAPATCH SPRAY PATCH

Probability of success

For the preclinical phase, which includes characterization testing and regulatory partner engagement, we have assigned a probability of success of 85%, considering the company has already developed a working prototype. We estimate the probability of success of the clinical trial at 80%, and regarding CE mark obtention, we deem the probability of success to be 90.0%. The cumulative PoS is therefore 61.2%.

Probability of Success

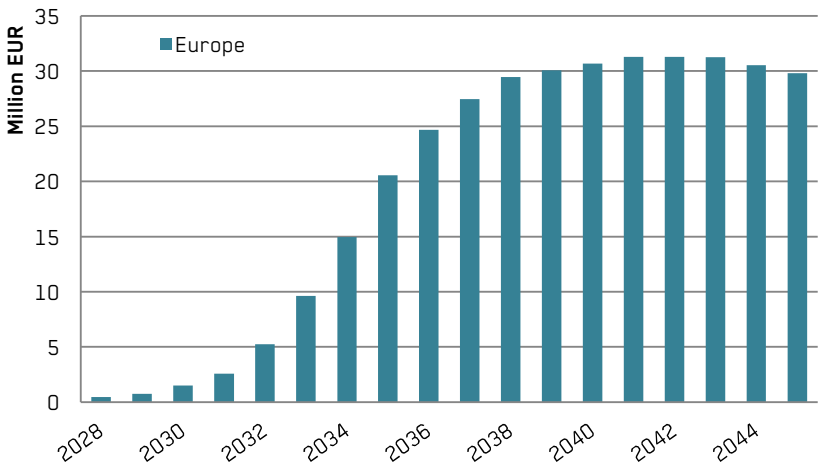
	Success rate		
	Preclinical	Clinical trial	CE Mark
Probability of Success (PoS)	85.0%	80.0%	90.0%
Cumulative PoS	85.0%	68.0%	61.2%

Sales forecast

The sales curve for the ChromaPatch spray patch has been forecasted from its forecasted launch in 2028 to 2045, past the expected patent expiry in 2042. Additional key assumptions for the valuation can be found below:

Criteria	Value	Reference
Market share hydrogel drug delivery for oral cavity	20% (European)	Venture Valuation estimate
Peak sales (2041)	EUR 31m	Model estimate
Total sales (2028-2045)	EUR 352m	Model estimate
Launch date	2028	Cube Labs
Discount rate	22%	Venture Valuation estimate
COGS (% of revenue)	10%	Venture Valuation estimate
Sales & Marketing (% of revenue)	35%	Venture Valuation estimate
Discounts, Returns and Allowances (% of revenue)	5%	Venture Valuation estimate
G&A rate (% of revenue)	5%	Venture Valuation estimate
Tax rate	23.5%	OECD average

Sales forecast for ChromaPatch Spray patch (in m EUR)



Product valuation between EUR 1.3 and EUR 3.2m

We determine the total product value of ChromaPatch Spray patch to be between EUR 1.3 and EUR 3.2m. Using a discount rate of 22%, the average value is EUR 2.1m.

Product Valuation	Discount rate				
in EUR 000's	24%	23%	22%	21%	20%
rNPV Total product value	1,265	1,643	2,079	2,582	3,164

References ChromaPatch spray patch:

- https://www.gminsights.com/industry-analysis/wound-care-market
- https://www.mordorintelligence.com/industry-reports/europe-advanced-wound-care-management-market-industry
- https://www.businesswire.com/news/home/20250115829598/en/Wound-Care-Market-Focused-Insights-2024-2029-with-Competitive-Analysis-of-Key-Vendors-3M-B.-Braun-Cardinal-Health-Convatec-Medtronic-Molnlycke-Health-Care-Smith-Nephew-Coloplast-More---ResearchAndMarkets.com

SUMMARY

Value between EUR 37.6m to EUR 68.6m

The asset value calculation was done on the basis for rNPV or DCF calculations for all 17 assets. Depending on the strategy (out-licensing or M&A), each company might typically not retain the full value of each asset. We assume each company will out-license the product to a third party and will not be able to retain the full value of each product. Typically, we assume a value to the licensee of between 30% to 50% depending on the time of the out-licensing and the type of partner. This share has not been included yet in the calculation as requested by Cube Labs to have a consistent picture with previous valuation model. However, we have applied the share of Cube Labs in each of the company/assets in the overall calculation.

We note that currently only preliminary business plans or strategic plans for each asset or product are available. The current valuation has been performed based on assumptions regarding timelines, costs and risk without in-depth information or business plans. We see certainly an up-side of the value with more detailed business plans and clear strategic development plans.

The resulting value for all the assets combined is between EUR 58.7m and EUR 106.2m. Applying the share of Cube Labs (direct and indirect holding via the trust) results in a value range of EUR 37.6m to EUR 68.6m. The values are calculated based on an average discount rate of 22%, which is a decrease compared to the last valuation (31.12.2023) where we used 23%.

Portfolio Valuation

Asset	**Company**	**Full Asset Value Range***			Cube Labs &	**Cube Labs share on full Asset Value Range***		
in EUR m		Low	Mean	High	Trust %	Low	Mean	High
Regen anti-aging (Longevity)	Cartilago	4,870	5,821	7,016	63%	3,068	3,667	4,420
Regen NAPA osteoarthritis (OA)	Cartilago	8,807	11,906	16,017	63%	5,548	7,501	10,091
C19-SMSSC (systemic sclerosis)	Orpha Biotech	2,746	4,305	6,355	95%	2,609	4,090	6,037
MRC Diabetic Neuropathy (DN)	MRC	2,804	4,374	6,489	65%	1,823	2,843	4,218
MRC Alzheimer	MRC	780	2,740	5,529	65%	507	1,781	3,594
Theakine Pros + IBS-C	Adamas	2,920	3,709	4,718	55%	1,606	2,040	2,595
Bio-clay	Biodiapers	5,765	7,127	8,870	85%	4,900	6,058	7,540
Neu Retina Kit (early AD diagnostic)	Bioaurum	4,962	6,124	7,617	60%	2,977	3,674	4,570
PON2 (portable assay device)	Lumina	3,701	4,513	5,530	55%	2,036	2,482	3,042
Nuvagel	DTech	3,260	3,960	4,840	60%	1,956	2,376	2,904
Biogel Spray (Covid-19 prop)	DTech	35	285	621	60%	21	171	373
Biospray for Pollutants & Allergens	DTech	892	1,146	1,487	60%	535	688	892
Thermal Matrix	Skin Plastic	2,921	3,707	4,722	55%	1,607	2,039	2,597
HiTrace	Hiperforming	4,016	5,152	6,597	60%	2,410	3,091	3,958
Hybrid scalpel	Rescue Code	1,295	1,697	2,220	60%	777	1,018	1,332
ROSES	CRV	1,602	2,119	2,791	55%	881	1,165	1,535
Oleoyl-LPI (pharmaceutical)	Lipovexa	4,059	6,048	8,793	60%	2,435	3,629	5,276
Oleoyl-LPI (nutraceutical)	Lipovexa	1,952	2,353	2,863	60%	1,171	1,412	1,718
Spray patch	ChromaPatch	1,265	2,079	3,164	60%	759	1,247	1,898
Value Range		**58,652**	**79,165**	**106,239**		**37,626**	**50,973**	**68,589**

* Depending on the strategy (out-licensing or M&A), each company might typically not retain the full value of each asset.

REFERENCES

Documents provided/considered:

- Teaser Fact-sheet of each company / asset
- Powerpoint presentation of each company or asset
- Patent information overview
- Budget for each asset for 3-5 years

Databases, Reports:

- Internal Company, Product and Deal database: Biotechgate
- External proprietary database: Biomedtracker, Evaluate, Pitchbook
- External public database: SEER, Globocan 2018, Federal Supply Schedule (FSS) pricing data
- Annual reports for market comparable companies
- BIO Clinical Development Success Rates 2011-2020 Report

Articles/Books:

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- Wise J. Prostate cancer: only one in four men with metastatic disease gets recommended chemotherapy. BMJ (2020) 368:m120.

Probability of success

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- Wong CH, Siah KW, Lo AW. Estimation of clinical trial success rates and related parameters [published correction appears in Biostatistics. 2019 Apr 1;20(2):366]. Biostatistics. 2019;20(2):273-286. doi:10.1093/biostatistics/kxx069

Clinical/Regulatory costs:

- www.fda.gov/industry/fda-user-fee-programs/prescription-drug-user-fee-amendments
- www.ema.europa.eu/en/documents/regulatory-procedural-guideline/explanatory-note-general-fees-payable-european-medicines-agency-19-june-2020_en.pdf
- Moore TJ, Zhang H, Anderson G, Alexander GC. Estimated Costs of Pivotal Trials for Novel Therapeutic Agents Approved by the US Food and Drug Administration, 2015-2016. JAMA Intern Med. 2018;178(11):1451–1457. doi:10.1001/jamainternmed.2018.3931.
- Sertkaya A, Wong HH, Jessup A, Beleche T. Key cost drivers of pharmaceutical clinical trials in the United States. Clin Trials. 2016;13(2):117-126. doi:10.1177/1740774515625964

Previous Reports:

- Original version Assets: Asset Valuation Report Cube Labs 3.17 (Apr2022)
- Original version Company: Company Valuation Report Cube Labs 2.04 (May2022)
- Up-date of shareholding in Oct 2022: Cube Labs Asset Valuation Report 4.19 incl. Shareholding up-date and Company Valuation Report Cube Labs 3.05 (May2022) incl. Trust shareholding
- Up-date of R&D investment timeline (no changes to valuation) in Jan 2023: Cube Labs Asset Valuation Report 4.20 incl. Shareholding up-date and time up-date

URLs:

- www.alz.org/alzheimers-dementia/facts-figures
- www.bestpractice.bmj.com
- www.cdc.gov
- www.census.gov/data/data-tools.html
- www.clinicaltrials.gov
- www.drugs.com
- www.fda.gov
- www.markets.ft.com/data/bonds
- www.nasdaq.com
- www.ncbi.nlm.nih.gov
- www.patents.google.com
- www.sec.gov

APPENDIX I

Value ranging from EUR 52.8m to EUR 95.3m

Below we provide the valuation of Cube Labs' portfolio as of 31.12.2024 with a mean discount rate of 20% (high-low range of 18% and 22% respectively), which is 2.26% lower than our currently determined discount rate range.

Portfolio Valuation (20% mean discount rate)

in EUR m

Asset	**Company**	**Full Asset Value Range***			Cube Labs &	**Cube Labs share on full Asset Value Range***		
		Low (22%)	Mean (20%)	High (18%)	Trust %	Low (22%)	Mean (20%)	High (18%)
Regen anti-aging (Longevity)	Cartilago	6.0	7.2	8.8	63%	3.8	4.5	5.5
Regen NAPA osteoarthritis (OA)	Cartilago	12.4	16.6	22.3	63%	7.8	10.5	14.1
C19-SMSSC (systemic sclerosis)	Orpha Biotech	4.5	6.7	9.5	95%	4.3	6.3	9.0
MRC Diabetic Neuropathy (DN)	MRC	4.6	6.8	9.8	65%	3.0	4.4	6.4
MRC Alzheimer	MRC	3.0	6.0	10.1	65%	2.0	3.9	6.6
Theakine Pros + IBS-C	Adamas	3.5	4.5	5.7	55%	1.9	2.5	3.1
Bio-clay	Biodiapers	7.3	9.1	11.5	85%	6.2	7.8	9.7
Neu Retina Kit (early AD diagnostic)	Bioaurum	6.3	7.8	9.8	60%	3.8	4.7	5.9
PON2 (portable assay device)	Lumina	4.6	5.7	7.0	55%	2.6	3.1	3.9
Nuvagel	DTech	4.1	5.0	6.1	60%	2.4	3.0	3.7
Biogel Spray (Covid-19 prop)	DTech	0.3	0.7	1.1	60%	0.2	0.4	0.7
Biospray for Pollutants & Allergens	DTech	1.2	1.5	2.0	60%	0.7	0.9	1.2
Thermal Matrix	Skin Plastic	3.8	4.9	6.2	55%	2.1	2.7	3.4
HiTrace	Hiperforming	5.3	6.8	8.7	60%	3.2	4.1	5.2
Hybrid scalpel	Rescue Code	1.8	2.3	3.0	60%	1.1	1.4	1.8
ROSES	CRV	2.2	2.9	3.8	55%	1.2	1.6	2.1
Oleoyl-LPI (pharmaceutical)	Lipovexa	6.4	9.2	13.2	60%	3.8	5.5	7.9
Oleoyl-LPI (nutraceutical)	Lipovexa	2.4	2.9	3.6	60%	1.4	1.8	2.2
Spray patch	ChromaPatch	2.2	3.3	4.8	60%	1.3	2.0	2.9
Value Range		**82.0**	**109.9**	**147.2**		**52.8**	**71.0**	**95.3**

* Depending on the strategy (out-licensing or M&A), each company might typically not retain the full value of each asset.

VENTURE VALUATION

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Besides valuation services, Venture Valuation offers high quality, focused information services based on the company's unique positioning in the industry. Through focus and unique position, Venture Valuation strives to fulfil and surpass customers' needs and add value in the partnership. Clients include investors, companies and development agencies.

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