PAION

(CDAX, Health Care, PA8 GR)

WARBURG RESEARCH

Buy

EUR 9.20

Price	EUR 5.30
Upside	73.6 %

Value Indicators:	EUR
DCF:	9.18

Warburg ESG Risk Score:	0.9
ESG Score (MSCI based):	2.0
Balance Sheet Score:	0.8
Market Liquidity Score:	0.0

Description:

Speciality Pharma Company

Market Snapshot:	EUR m
Market cap:	37.8
No. of shares (m):	7.1
EV:	71.2
Freefloat MC:	34.9
Ø Trad. Vol. (30d):	15.37 th

Shareholders:	
Freefloat	92.30 %
Cosmo Pharmaceuticals	7.30 %

Key Figures (WRe):	2023e
Beta:	2.3
Equity Ratio:	-27 %

Faster, better, safer with Paion - Initiation with Buy

Paion AG is a speciality pharma company that commercializes drugs in the fields of anaesthesia and critical care: **Byfavo**, one of the first benzodiazepine derivatives with market access that is safer and acts faster than existing competitor products; **Giapreza**, a vasoconstrictor indicated for the treatment of septic shock and **Xerava**, a novel fluorocycline-based broad-spectrum antibiotic.

In recent years, Paion and partners were able to clinically develop Byfavo for procedural sedation (short term) and general anaesthesia (long term) in the US, the EU and important markets across the globe. Following the respective approvals, Byfavo is now marketed in the US, Japan and the EU to name the most important markets. Paion has out-licensed the product to various partners and will profit from their respective sales success with milestone and royalty payments.

For the EU, Paion has partnered with Viatris and Medis, two global pharma players. The European market has been divided between the three partners and Paion will focus on DACH, UK, Scandinavia and others to bring those three intensive-care drugs to doctors in hospitals.

We expect Paion to benefit from Byfavo's superior safety profile which positions the drug as a recommended sedative for elderly patients. In addition, Byfavo displays rapid metabolic reduction rates which make it an ideal sedative for high-throughput colonoscopy screenings in out-patient clinics of the US. The number of **annual colonoscopies totals 19m procedures in the US** – growing by 2.6% in an aging population – which represents a significant market opportunity.

As of its 6M 2023 reporting, Paion had cash and cash equivalents of EUR 4.6m. The company expects additional funds from revenues, potential financing and/or out-licensing to improve the financial situation of the company. According to Paion's annual general meeting presentation, the company has a going concern to fund operations until Q2 2024. The company has stated that it has outstanding financing needs of additional EUR 25m in the medium term until it can achieve break-even.

While Paion's investment case bears risk, the overall value proposition of Byfavo plus the complementary products Giapreza and Xerava is compelling. We choose to reflect the financing-related uncertainties in a beta of 2.3. If Paion is able to secure the remaining financing needs until it can achieve breakeven (WRe 2025e), we will adjust those parameters to reflect the then lower risk of the investment case. **We initiate our coverage of Paion with a Buy rating and a price target of EUR 9.20.**

Rel. Performance vs CDAX:

1 month:	-6.1 %
6 months:	-19.0 %
Year to date:	10.1 %
Trailing 12 months:	-55.2 %

Company events:

15.11.23	Q3

FY End: 31.12. in EUR m	CAGR (22-25e)	2019	2020	2021	2022	2023e	2024e	2025e
Sales	5.8 %	8.0	19.7	7.1	33.2	13.1	19.4	39.4
Change Sales yoy		185.7 %	145.7 %	-63.7 %	366.4 %	-60.6 %	48.1 %	102.7 %
Gross profit margin		*99.9 %*	*99.9 %*	*57.8 %*	*94.1 %*	*16.1 %*	*43.3 %*	*66.2 %*
EBITDA	-22.8 %	-9.3	1.9	-20.3	3.2	-14.4	-11.9	1.5
Margin		*-116.7 %*	*9.6 %*	*-285.1 %*	*9.7 %*	*-109.8 %*	*-61.2 %*	*3.8 %*
EBIT	-	-9.3	1.6	-22.0	1.5	-15.9	-13.9	-0.5
Margin		*-116.7 %*	*8.1 %*	*-308.8 %*	*4.5 %*	*-121.2 %*	*-71.5 %*	*-1.3 %*
Net income	-	-7.2	2.1	-21.8	-0.5	-18.6	-18.6	-5.7
EPS	-	-1.12	0.32	-3.06	-0.07	-2.61	-2.61	-0.80
EPS adj.	-	-1.12	0.32	-3.06	-0.07	-2.61	-2.61	-0.80
DPS	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dividend Yield		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FCFPS		-0.43	0.09	-5.65	0.60	-3.20	-2.69	-1.18
FCF / Market cap		-2.0 %	0.4 %	-29.9 %	6.0 %	-60.5 %	-50.8 %	-22.2 %
EV / Sales		15.6 x	6.7 x	21.2 x	2.5 x	5.4 x	4.7 x	2.5 x
EV / EBITDA		n.a.	70.1 x	n.a.	25.5 x	n.a.	n.a.	67.0 x
EV / EBIT		n.a.	83.4 x	n.a.	54.3 x	n.a.	n.a.	n.a.
P / E		n.a.	70.6 x	n.a.	n.a.	n.a.	n.a.	n.a.
P / E adj.		n.a.	70.6 x	n.a.	n.a.	n.a.	n.a.	n.a.
FCF Potential Yield		-5.7 %	1.7 %	-13.0 %	3.6 %	-20.4 %	-13.3 %	1.3 %
Net Debt		-14.1	-17.5	16.1	10.6	33.4	52.6	61.0
ROCE (NOPAT)		n.a.	n.a.	n.a.	21.5 %	n.a.	n.a.	n.a.
Guidance:		Sales: EUR 13m to 19m, EBITDA EUR -15m to -13m						

Analyst

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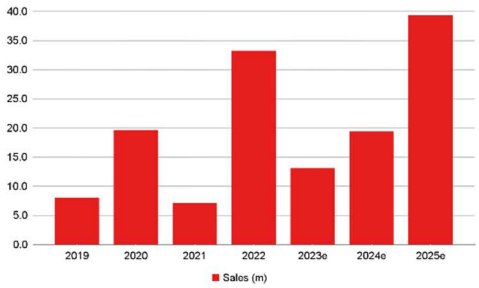
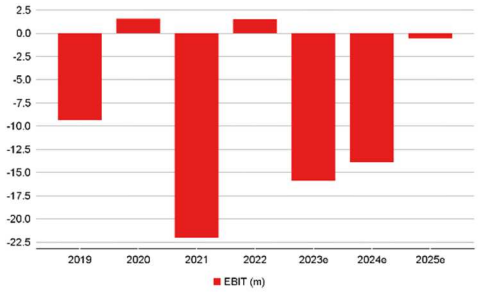
Sales development
in EUR m



Source: Warburg Research

EBIT development
in EUR m



Source: Warburg Research

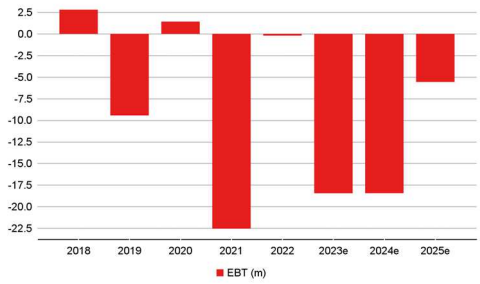
Company Background

- Paion AG is a speciality pharma that develops and commercializes drugs in the fields of anaesthesia and critical care
- Paion developed Byfavo, one of the first benzodiazepine derivative with market access that is both safer and acts faster when compared to existing competition
- Byfavo is out-licensed to various pharma companies across the globe and generates high-margin royalties for Paion
- Paion also in-licensed Giapreza and Xerava, two important tools for physicians in the critical care setting - all three make up a compelling drug portfolio

Competitive Quality

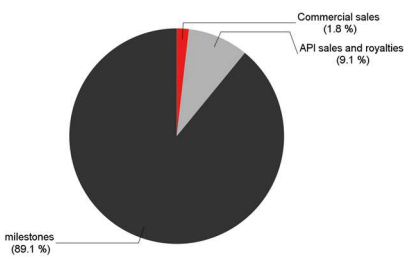
- Byfavo works quickly and is safer for patients with existing comorbidities, making it an ideal sedation and anaesthetic agent for Europe's aging population
- Paion's nascent sales force will have a compelling product portfolio with Byfavo, Giapreza and Xerava
- Paion has an extensive global partner network that distributes Byfavo in lucrative markets such as the USA and Japan. Sales from these regions will generate high-margin royalty payments
- In Europe, Paion will focus its marketing activities on specific regions and will be supported by two major pharmaceutical companies, Viatris and Medis, which will focus on Southern and Eastern Europe

EBT development
in EUR m



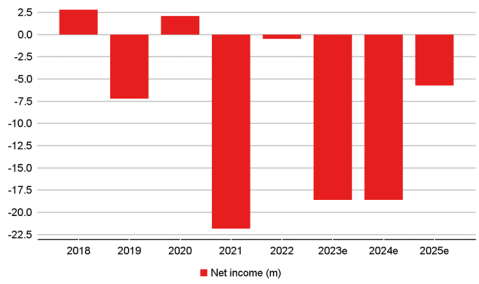
Source: Warburg Research

Sales by segments
2022; in %



Source: Warburg Research

Net income development
in EUR m



Source: Warburg Research

Summary of Investment Case

Investment triggers

- A fully funded company will have the means to expand the sales force and market its superior products across Europe
- A full-scale US marketing campaign will open up the significant US opportunity for Byfavo in procedural sedation and allow Paion's partner to capture the lucrative US colonoscopy market

Valuation

- Fair value of equity: EUR 65.48m or EUR 9.18 per share
- Long-term EBIT margins of 15.9%, affected by the phasing-out of patent protection patent protection
- Largely unsecured financing (additional EUR 25m required) leads to a high beta of 2.3 and a resulting discount factor of 13.16%

Growth

- The US colonoscopy market represents a significant opportunity for Paion's partner Eagle Pharmaceuticals. We estimate, that Paion will generate 22% royalties on partner sales of EUR 48.6m in 2027e, driven by shorter occupancy times under procedural sedation
- In the EU, we expect that Byfavo's superior safety profile will drive market uptake and forecast that Paion will be able to generate sales of EUR 12.0m in 2027e.
- This results in a CAGR of 5.78% from 2022 to 2025e

Competitive quality

- Healthily diversified sales network: with its partners Medis and Viatris, Paion is able to exert pan-European sales reach to market Byfavo, Xerava and Giapreza
- Paion has issued licenses for important markets in the US, Japan and Brazil
- Byfavo is anaesthetic with superior safety profile and an improved metabolic behaviour that makes it very attractive for high-throughput screening (colonoscopy in the US) and sedation of older patients
- Giapreza and Xerava are suitable additions to Paion's sales portfolio, giving the company good traction with medical target groups

Company Overview

	PAION AG		
Business model & strategy	Paion AG is engaged in the development and commercialization of innovative drugs to be used in out-patient and hospital-based sedation, anaesthesia, and critical-care services. It strives to become a leading speciality pharmaceutical company in these fields within three years.		
Product portfolio	**ByFavo® (Remimazolam)**	**Giapreza® (Angiotensin II)**	**Xerava® (Eravacycline)**
	Remimazolam is an intravenous, ultra-short-acting and controllable benzodiazepine derivative sedative/anaesthetic. Byfavo® has been approved in the U.S., the EU/EEA/UK, China and South Korea for procedural sedation and in the EU/EEA, Japan, South Korea and the Philippines for general anaesthesia. Paion is rolling out Byfavo® in selected European markets and partners it outside of Europe. 	Angiotensin II is a vasoconstrictor indicated for the treatment of refractory hypotension in adults with septic or other distributive shock who remain hypotensive despite other therapeutic measures. Paion markets Giapreza® in selected European countries. 	Eravacycline is a novel fluorocycline antibiotic of the tetracycline class used for the treatment of complicated intra-abdominal infections (cIAI) in adults. Paion markets Xerava® in selected European countries. 
Revenue guidance 2023	EUR 13m to EUR 19m		
EBITDA guidance 2023	EUR -15m to EUR -13m		
Market position	Paion is still a relatively small speciality pharmaceutical company with a focus on anaesthesia, critical care and neurology. In the recent years it has made significant progress in the development and commercialization of ByFavo®, its flagship product.		
Indication areas	Sedation, anaesthesia and critical care		
Competitive advantage	In contrast to its competitors Midazolam and Propofol, Remimazolam offers faster metabolism, improved efficiency and improved cardiorespiratory safety profile, which is especially important as the population is aging. Another advantage over Propofol is that Benzodiazepine derivatives such as Remimazolam offer an antidote.	While other therapeutic options regulate blood pressure through the adrenal or vasopressin system, Giapreza does so by activating the natural blood pressure regulation system, the renin-angiotensin-aldosterone system (RAAS).	Xerava is active against various types of bacteria, including Gram-positive, Gram-negative, and anaerobic strains that are commonly associated with cIAI. With this, it presents an effective therapeutic option for patients with challenging-to-treat infections or those caused by multidrug-resistant bacteria.
Annual sales potential (company estimate)	EUR 90m (EU), 35m (outside EU)	EUR 50m (EU)	EUR 25-35m (EU)
Customers	Anaesthesiologists, gastroenteroligists, specialist nurses, hospital pharmacists, high-level payers		
Competitors	Pfizer, hameln, HEXAL, FRESENIUS KABI, B BRAUN SHARING EXPERTISE, ratiopharm, 1A PHARMA, SANOFI, STADA, AbZ Pharma, SANDOZ		

Source: Company data, Warburg Research

Competitive Quality

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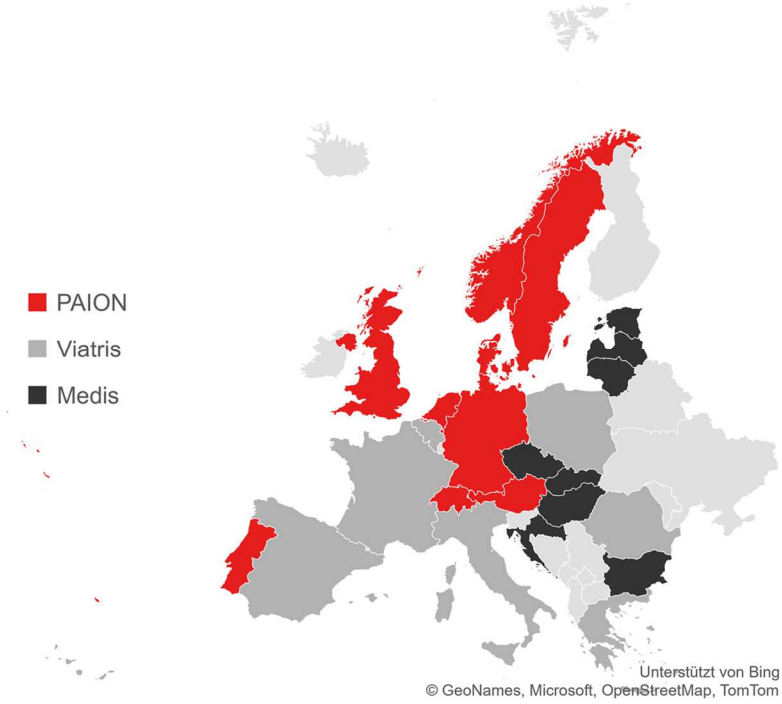
- Giapreza and Xerava are fitting additions to Paion's sales portfolio, giving the company good traction with medical target groups

Sales network

One of the major goals of Paion in the aftermath of the pandemic is the establishment of its own sales force to leverage the revenue potential of Byfavo, Giapreza and Xerava and to generate most value from the distribution of those drugs. Byfavo, in particular, has pharmacological advantages that position it as a serious competitor to entrenched generic products Propofol or Midazolam.

EU sales network and partners



Source: Company data, Microsoft, Warburg Research

To augment its sales offering for clinics, Paion has in-licensed Giapreza and Xerava from La Jolla Pharmaceuticals. For an upfront payment of EUR 22.5m and further potential milestones as well as double-digit royalties, Paion gained the exclusive European rights for both drugs in 2021.

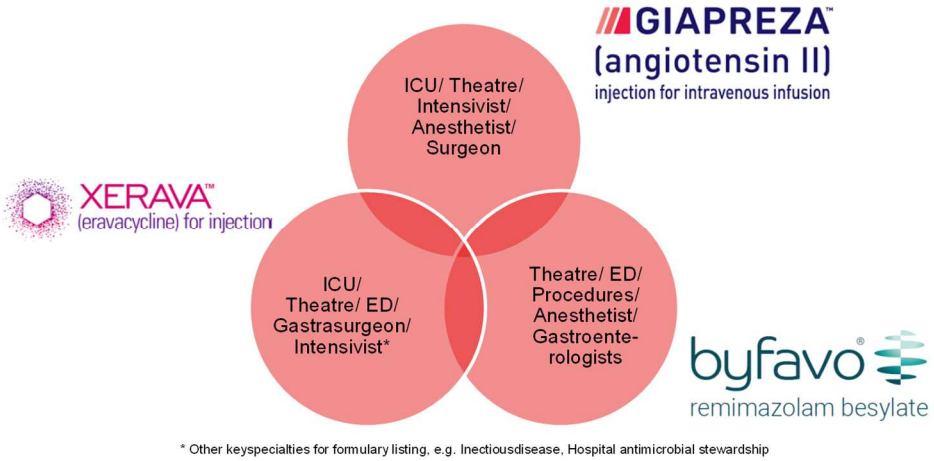
Target countries of Paion's sales partner network

partner	country
Paion	UK, Netherlands, Scandinavia, Germany*, Austria, Switzerland, Portugal
Viatris	Belgium, Poland, France, Romania, Italy, Spain, Greece
Medis	Estonia, Latvia, Lithuania, Czech Republic, Slovakia, Hungary, Croatia, Bulgaria

*Germany launch postponed until additional clinical studies have been conducted;
Source: Company data

With those three drugs in its portfolio, Paion has an attractive offering under its belt. Paion, Viatris and Medis will sell Byfavo, Giapreza and Xerava with a focus on different regions.

Strong overlap in accounts and target groups



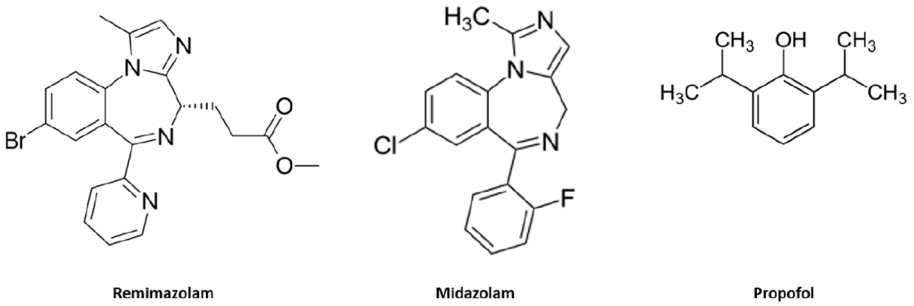
Source: Company data, Microsoft, Warburg Research

Byfavo

Rapid metabolism – opportunities in procedural sedation

Byfavo is one of the first fast-acting benzodiazepine derivatives with market access. It is inactivated by widespread tissue esterase, and it is not metabolised by hepatic cytochrome P450 oxidoreductases in the liver in contrast to its competitors, Propofol and Midazolam. This leads to the benefit of a faster elimination of sedation as the limiting step of liver degradation is circumvented by organ-independent metabolism.

Byfavo (Remimazolam) and competition



Remimazolam | Midazolam | Propofol

Source: Warburg Research

The derivatives of benzodiazepine, like Byfavo and its competitor Midazolam, provide increased activity of the inhibitory neurons by binding to receptors for the neurotransmitter γ-Aminobutyric acid (GABA) in the cell membrane of post-synaptic neurons. Additionally, the clinical safety of the procedure for the practitioner is increased by the possibility of reversing the binding of the sedative effect with commercially available competitive benzodiazepine antagonists such as Flumazenil. This ultimately leads to good controllability of sedation or anaesthesia.

There have been a series of 13 clinical studies on the subject of the use of Byfavo in procedural sedation, including three phase III trials. The primary endpoint (successful completion of colonoscopy) of the first phase III efficacy study in colonoscopy, which was completed in the US in 2016 (n = 461), was achieved in 91.3% of the patients studied. Byfavo showed a significant reduction in the time to start the procedure, a shorter recovery phase for the patient, and a substantial reduction in time for the patient to return to normal consciousness (40% compared to Midazolam).

Endpoints of phase III colonoscopy study (n=461)

	Byfavo	Midazolam	[%]
Time to start the procedure [min]	4	19	-79
Time to wake up [min]	7.2	15.7	-54
Time to normal consciousness [min]	331	553	-40
Successful completion [%]	91.3	25.2	

Source: Company data

A second confirmatory study with a similar design was successfully conducted in sedation during bronchoscopy in the US in 2017 (n = 446). 82.5% of the cases treated with Byfavo were completed successfully. In comparison, only 34.8% were successful with Midazolam. Beyond the primary endpoint of this study, the clinical effect of the faster metabolism of Byfavo compared to the competing drug was clearly demonstrated.

Endpoints of phase III bronchoscopy study (n=446)

	Byfavo	Midazolam	[%]
Time to start the procedure [min]	5	16	-69
Time to wake up [min]	6	12	-50
Time to normal consciousness [min]	404	479	-16
Successful completion [%]	82.5	34.8	

Source: Company data

The focus of the third phase III study was higher cardiovascular safety in high-risk patients. Thus, on patients with a risk profile of the American Society of Anaesthesiologists (ASA) III to IV and the effects of Byfavo on them. Patients in this risk profile have a severe systemic disease, which represents an additional problem for the anaesthetist during the induction of sedation and/or carry an additional risk of showing postoperative complications (increased lethality).

Endpoints of phase III colonoscopy (ASA III-IV) Study (n=79)

	Byfavo	Midazolam	[%]
Time to start the procedure [min]	5	19	-74
Time to wake up [min]	3	7	-57
Successful completion [%]	84.4	12.9	

Source: Company data

This study completed in 2017 reaffirms the good compatibility of Byfavo already evident in this patient group in previous studies (n = 79). Additionally, the superiority in terms of the efficacy profile over Midazolam was re-emphasized.

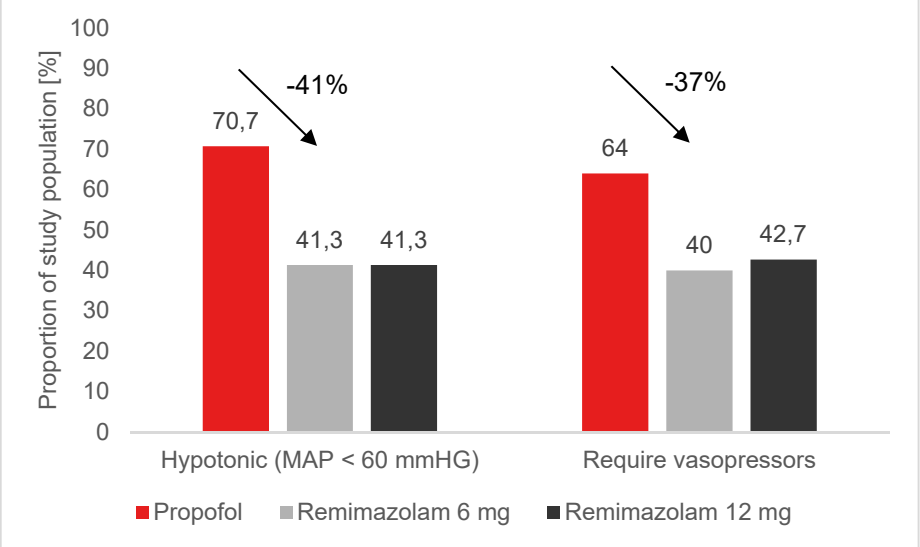
The safer cardiovascular profile: Byfavo in anaesthesia

General anaesthesia

The competing product Propofol carries a side effect of low blood pressure, which is due to a reduced vascular resistance during Propofol-induced anaesthesia. The production of a sedative effect by reducing the rate of dissociation of the neurotransmitter GABA at the α/β subunit of the GABA receptor inhibitory neuron results in a continued influx of chloride ions.

The inhibitory effect of Propofol on the sympathetic nervous system leads to this hemodynamic instability. In people with cardiovascular disease and/or the elderly, this effect is especially evident. Due to the reduced blood pressure during surgery, there is a risk of oxygen deficiency in the heart muscle. That could lead to myocardial injury (MINS). About 10% of all patients with MINS experience death within 30 days.

Cardiovascular profile of Byfavo



Source: Company data; MAP, middle, arterial pressure

A total of 13 clinical phases have been performed with Byfavo in the indication of general anaesthesia, with secondary endpoints focusing in particular on hemodynamic stability during anaesthesia, including three phase II trials and four phase III trials. The secondary goal, in addition to the proof of efficacy, was to showcase the above-mentioned clinical need (MINS) for Byfavo.

During the phase IIb/ III trial with patients with an ASA-Classification I-II (patients without major illness) (conducted by a former Japanese licensee, Ono Pharmaceutical), it became evident that the frequency of a critical drop in blood pressure and the need for counteracting vasopressors is reduced by approximately 40% with the use of Byfavo rather than Propofol.

Reviewing all of Byfavo's properties in terms of rapid metabolism, resulting in a fast initiation and elimination of the sedation, the improved cardiorespiratory safety profile displays Byfavo's superiority over its competitors on the market.

Pharmacological properties

	Propofol	Midazolam	Byfavo
On- and offset of sedation	fast	slowly	fast
Monitoring requirement (Intraoperatively)	high	low	low
Monitoring requirement (Postoperative)	low	high	low
Risk of cardiorespiratory depression	high	low	low
Antidote	not available	available	available

Source: Company data, Warburg Research

Giapreza® (angiotensin II)

Giapreza (angiotensin II) is a vasoconstrictor used to increase blood pressure in adult patients with septic or other distributive shock who have not responded adequately to other therapies. While other therapeutic options regulate blood pressure through the adrenal system (e.g. epinephrine, norepinephrine) or vasopressin system (e.g. ADH, conivaptan), Giapreza does so by activating the natural blood pressure regulation system, the renin-angiotensin-aldosterone system (RAAS).

Sepsis describes a systemic organ failure and occurs when the patient's own immune systems attacks its own organs and tissues.

In septic shock, a critical reduction in tissue perfusion occurs. This can result in acute failure of numerous organ systems, including the lungs, kidneys, and liver. Common causes in immunocompetent patients represent numerous species of Gram-positive and Gram-negative bacteria. In immunocompromised patients, unusual bacterial and fungal species may be a cause. Signs include fever, hypotension, oliguria, and impaired consciousness. Diagnosis is primarily clinical in the context of culture swabs showing infection. Early recognition and treatment are critical. Treatment consists of aggressive volume replacement, antibiotic administration, surgical excision of infected or necrotic tissues and drainage of pus, and supportive measures.

In most cases, septic shock is caused by hospital germs (gram-negative bacteria or gram-positive cocci). Often immunocompromised or chronically ill patients with wasting conditions are affected. Occasionally, Candida or other fungi are found to be causative pathogens. Postoperative infection (deep-seated or superficial) should be considered as a cause of septic shock in patients who have had recent surgery.

Giapreza is not a first-line treatment for hypotension and should only be used in patients who have not responded sufficiently to other therapies. It should also be used with caution in patients with certain pre-existing medical conditions, such as severe aortic or mitral valve stenosis, or in those who are pregnant or breastfeeding.

Giapreza was approved by the European Commission on the basis of the ATHOS-phase 3 trial (n=321) carried out between 2015 and 2017.

In its assessment report, the European Committee for Medicinal Products for Human Use (CHMP) concluded: "Although the restoration of blood pressure is of main clinical relevance, there was uncertainty about whether this restoration conferred a clinical benefit, as there was a lack of improvement of total SOFA score over placebo and lack of significant improvement in the overall mortality at both Day 7 and Day 28 or any other objective assessment that would indicate clinical benefit other than increased blood pressure."

The CHMP granted marketing authorization particularly because of the effectiveness in patients that did not respond well to standard vasopressor treatment. However, CHMP did request a confirmatory post-authorization efficacy study from La Jolla, in order to "confirm the potential clinical benefit imparted via improved haemodynamics." The deadline for submission of this study is 30 June 2024.

Mean arterial pressure at Hour 3 (mITT population): Primary Efficacy Analysis (Logistic Regression)

Analysis	Placebo N = 158	Giapreza N = 163	Total N = 321
Number responding (n)	37	114	151
Percent responding	23.4%	69.9%	47.0%
95% [a]	17.1% - 30.8%	62.3% - 76.9%	41.5% - 52.7%
Primary analysis [b] Independent variable [b]	**Odds Ratio (95% CI)**		**p value**
Treatment, LJPC-501	7.95 (4.76 – 13.3)		2.54E-15
Baseline MAP, < 65mmHG	0.49 (0.28 – 0.86)		0.0122
Baseline APACHE II score	1.00 (0.97 – 1.03)		0.9218
Vasopressin during 6 h prior to randomisation	0.93 (0.53 – 1.62)		0.7938
Average NED in 6 h prior to randomisation	0.60 (0.29 – 1.26)		0.1803

Abbreviations: APACHE = Acute Physiologic Assessment and Chronic Health Evaluation; mITT = modified intent-to-treat; NED = norepinephrine-equivalent dose.

[a] Exact binomial 95%

[b] Chi-square test from logistic regression model including LJPC-501 treatment (compared to placebo) adjusted by baseline MAP (<65 mmHG), baseline APACHE score, vasopressin use six hours prior to randomisation (yes/no) and mean norepinephrine-equivalent dose over the six hours prior to randomisation.

Source: Committee for Medicinal Products for Human Use

Xerava® (Eravacycline)

Xerava is the second drug in-licensed by Paion to market in a clinical/intensive-care setting.

Eravacycline is a novel fluorocycline of the tetracycline class approved by the Food and Drug Administration (FDA) for treatment of complicated intra-abdominal infections (cIAIs) caused by various infections.

The drug was approved in 2018 and acquired by La Jolla in 2020 when it bought out Tetraphase. By 9M 2021, Xerava generated sales of USD 10m in the US.

La Jolla added Xerava to its product portfolio through the July 2020 acquisition of Tetraphase Pharmaceuticals. Tetraphase developed Xerava as an intravenous (IV) antibiotic with the potential to become a first-line empiric monotherapy for the treatment of multidrug-resistant bacterial infections.

As a broad-spectrum antibiotic, the drug will naturally be used as a reserve antibiotic to treat critically ill patients with a life-threatening, systemic infection.

Lengthy patent protection until 2033-36

Business model

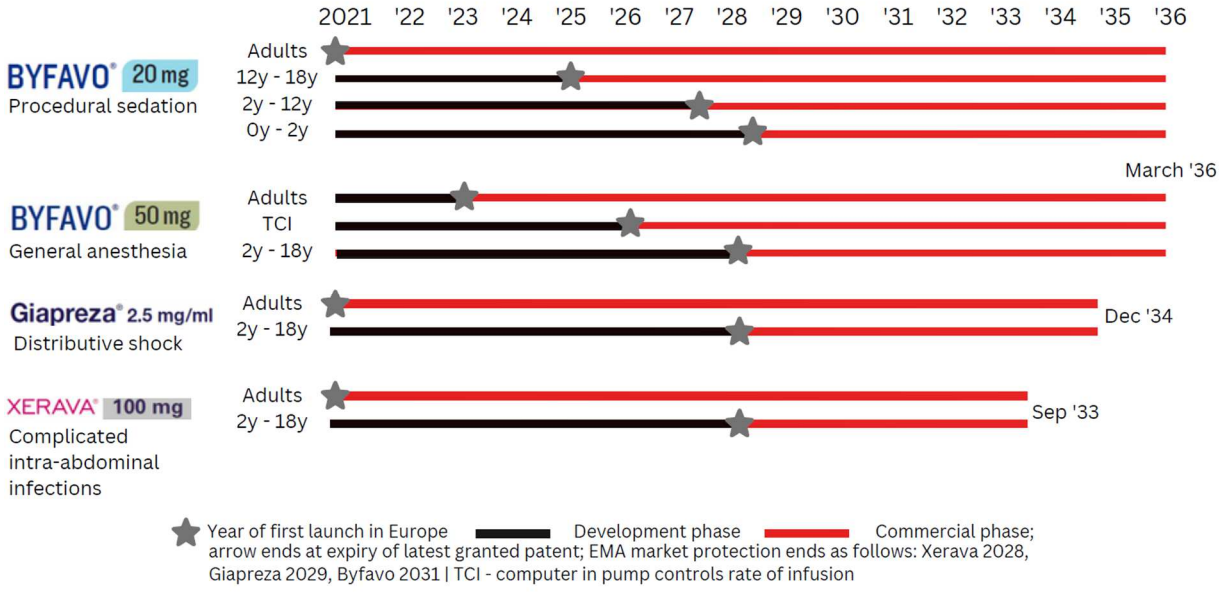
Paion´s performance is closely attached to its self-developed product, the sedative Byfavo and its licencing and successful commercialization. Two generics, Propofol and Midazolam, determine the market for sedation or general anaesthetic in the US, EU, Japan, etc. which have attracted little innovation in recent years. Thus, the market entry of a new sedative or anaesthetic can only be realised with a better safety profile and/or by improved efficacy and elimination times of the respective drug.

The short-acting anaesthetic Byfavo combines the best pharmacological advantages of its competing products. The improved cardiorespiratory safety profile will become clinically important as the population ages.

Paion´s Byfavo can potentially address the innovation backlog in anaesthesia and serves increasing clinical needs as an extremely short-acting sedative combining the advantages of the competing products.

Paion's other additions complete the sales portfolio targeting customers in a clinical setting and will make it much easier to efficiently utilize the nascent sales force of Paion. All three products are patent protected until 2033-2036.

Patent protection of Paion's portfolio



Source: Company data, Warburg Research

Growth

- The US colonoscopy market represents a significant opportunity for Paion's partner Eagle Pharmaceuticals. We estimate, that Paion will generate 22% royalties on partner sales of EUR 48.6m in 2027e, driven by shorter occupancy times under procedural sedation
- In the EU, we expect that Byfavo's superior safety profile will drive market uptake and forecast that Paion will be able to generate sales of EUR 12.0m in 2027e.
- This results in a CAGR of 5.78% from 2022 to 2025e

Market environment

The two generic drugs Propofol and Midazolam are dominating the worldwide sedation and anaesthesia market, despite their major disadvantages in specific pharmacokinetic properties. In addition, there is growing economic pressure and an increase in risk patients with sedation needs. Taking the market's development and its future needs into account, those two preparations do not meet the emerging clinical needs. Byfavo's addressing of safety and economic concerns allows access to the market.

Paion's partner network

U.S. – Eagle Pharma • **Lead indication: procedural sedation** • BYFAVO™ launched in 2021 • Royalties 20-25%	**Japan - Mundipharma** • **Lead indication: general anesthesia** • Mundipharma launched Anerem(R) in 2020 • Current royalties: 15.5%	**Taiwan – TTY BIOPHARM** • License agreement signed in 2021 • Approval received 2022 • Supply of medicinal products at a percentage of the net selling price
Christália (Latin America) • Exclusive license agreement signed with Christália in 2022 • Market approval expected in 2024 • Royalties 20%	**South Korea + South Asia – Hana Pharm** • **Lead indication: general anesthesia** • Market launch in 2021 in SK • Expansion of the license area to include Southeast Asia in 2020 • License fee: Low double digits	**Eastern Europe – Medis** • Exclusive cooperation agreement signed with Medis in 2022 • Supply, distribution, marketing and sales of remimazolam, angiotensin II and eravacycline • Medis pays PAION a transfer price for the finished products
Viatris • **Exclusive cooperation agreement** with Viatris signed in 2022 • Viatris is responsible for the launch, marketing and commercial distribution of PAION's products in a total of 7 European markets, particularly in Southern Europe		

Source: Company data, Warburg Research

Paion's newest additions to its portfolio are logical add-on products to be sold alongside Byfavo. For Byfavo, Paion has seven sales partners located in various regions around the globe. To remain concise, we have summarized our single region forecasts in one revenue overview (in the valuation segment) and subsequently show exemplary sales estimates for procedural sedation in the US by the partner Eagle Pharma and Paion's own EU sales.

Byfavo: faster and safer than the competition

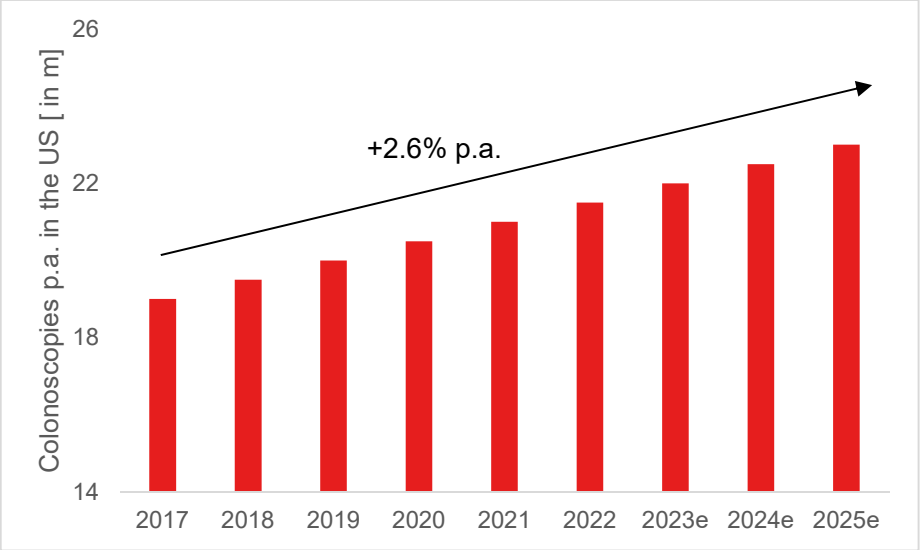
Byfavo

Procedural sedation: shorter occupancy times, increased capacity

The primary use of procedural sedation is in endoscopic examinations of the intestine, the stomach, or the lungs, and particularly to ease and calm a patient during potentially unpleasant procedures. These endoscopic procedures are mainly used in the early prevention and detection of various kinds of cancer but also to clarify unexplained symptoms.

The increase in preventive screening for the detection of colorectal cancer is evident in the growth of the US and European markets for procedural sedation. These preventive screenings are recommended every 10 years starting at age 50, and various private and state health insurance plans in the US cover those procedures. Four million US citizens reach the age of 50.

Development of annual colonoscopies in the US



Source: iDATA Research, Warburg Research

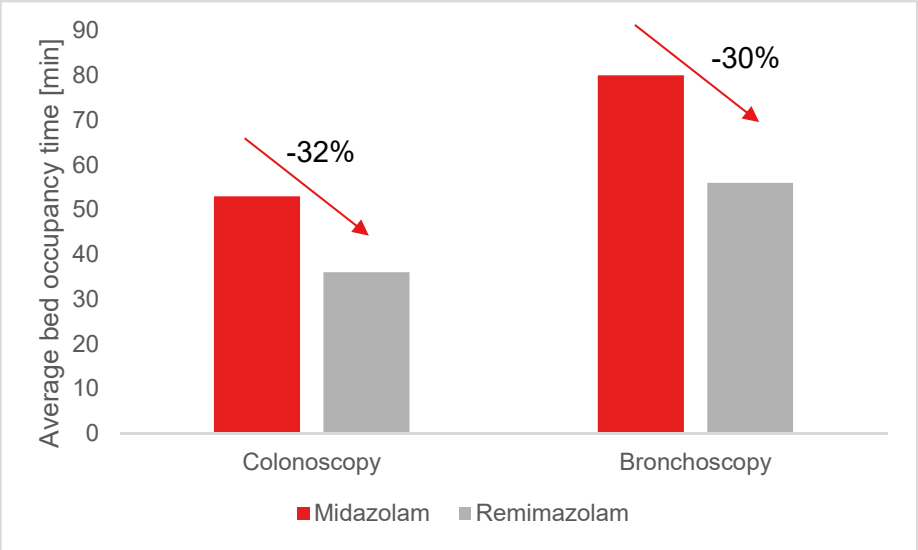
The US procedural sedation market in 2015 was 43 million procedures per year, according to research conducted in 2015 by Paion. According to iDATA Research (2017), the annual colonoscopies total 19 million. 75% of these annual colonoscopies are outpatient in the US, according to Paion. These outpatient endoscopic procedures are the target market for Paion.

In the lucrative US market alone, we expect an annual patient growth rate of 2.6% (from 2023–2025) based on the increasing efforts of the United States Centers for Disease Control (CDC) for colorectal cancer prevention, in view of the aging demographics and growth rates of iDATA.

Outpatient centres that treat a large number of patients on average have up to 30% lower nonclinical care costs per patient, than centres with lower patient numbers (average cost per patient and colonoscopy USD 3,153). This was shown in a study by the CDC of the Colorectal Cancer Control Program (CRCCP) on colorectal cancer prevention in 2010. This indicates the advantage of clinical scale economies.

The widespread need for increased efficiency in the healthcare system in the US, Europe, and Japan has led to a significant incentive to increase throughput rates in outpatient clinics. This opens up the market and gives Byfavo the opportunity to become established as a superior sedation alternative with its improved efficiency profile, if the FDA grants approval and provides Byfavo with a generic label comparable to Midazolam.

Reduced bed occupancy in procedural sedation



Source: Company data, Warburg Research

The average duration of a colonoscopy is 25 minutes and a bronchoscopy, 45 minutes. By using Remimazolan the total average bedtime per person can be reduced by 32%, due to the increased metabolism of the preparation and the consequential shortening of the on- and offset phase of sedation. This represents a 30% increase in the turnover rate, because healthcare providers would be able to increase their average patient capacity rate from nine to 13 per day.

In early 2021, CHMP recommended the use of Byfavo in procedural sedation and Paion received the respective approval for Byfavo in March 2021.

Market forecast

USA

The strategic partner of Paion in by far the most important sales market in the USA is Eagle Pharmaceuticals. Eagle is a fully integrated pharmaceutical company with research and development, clinical, manufacturing and commercial expertise. Eagle's commercialized products include vasopressin, PEMFEXY®, RYANODEX®, BENDEKA®, BELRAPZO®, TREAKISYM® (Japan), and Byfavo® and Barhemsys® through its wholly owned subsidiary Acacia Pharma Inc. The company was founded in 2007 and generated 2022 sales of USD 317m and an EBITDA result of USD 132m.

In the US, we expect peak sales of EUR 138.2m in the procedural sedation sector, significantly defined by the growth of the outpatient colonoscopy market (2.6% growth p.a., iDATA Research), in the period to 2032e.This would correspond to peak royalties of EUR 30.4m for Paion under a royalty rate of 22%. This is based on the number of endoscopies performed in the US and a maximum market share of 20%.

Sales estimates Byfavo procedural sedation USA (Eagle Pharmaceuticals)

PS USA (royalties) Eagle Pharmaceutical	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Remimazolam										
colonoscopys each year	22.2	22.7	23.3	23.9	24.6	25.2	25.9	26.5	27.2	27.9
adjustments	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
total target population	16.6	17.1	17.5	18.0	18.4	18.9	19.4	19.9	20.4	20.9
patient population Other	16.5	16.9	17.1	17.2	16.9	15.9	15.9	15.9	16.3	16.8
market share in %	100%	99%	98%	96%	92%	84%	82%	80%	80%	80%
patient population Byfavo	0.1	0.1	0.3	0.7	1.5	3.0	3.5	4.0	4.1	4.2
market share in %	0.5%	0.7%	2.0%	4.0%	8.0%	16.0%	18.0%	20.0%	20.0%	20.0%
price per treatment Byfavo (EUR)	33	33	33	33	33	33	33	33	33	33
Sales Partner (EUR)	2.7	3.9	11.5	23.7	48.6	99.8	115.2	131.3	134.7	138.2
royalties as % of sales	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Royalties Paion (EUR)	0.6	0.9	2.5	5.2	10.7	22.0	25.3	28.9	29.6	30.4

Source: Warburg Research

General anaesthesia: increased safety for high-risk patients

EU

A patient spends an average of four hours in any surgical procedure under anaesthetic usually induced by Propofol. With the increasing progression of population aging, the number of high-risk patients with existing comorbidities will continue to increase, increasing the need for safer anaesthetic agents such as Byfavo.

The clinical need for anaesthetics with improved safety profiles, e.g., without cardiorespiratory depression, such as in Propofol among others, will continue to increase to reduce the incidence of MINS syndromes.

Annually, 21m general anaesthesia procedures are performed in Germany, the UK and France. Based on the sum of those countries' populations, this corresponds to 9.7% procedure/population rate. If we extrapolate that ratio to the population of Paion's own commercial target markets: AT, CH, NL, UK, SE, NO, POR and DK, this amounts to 13.7m procedures each year. We further assume, that around 75% of those patients have comorbidities that make the use of Byfavo rather than Propofol or Midazolam more likely. Thus, we estimate the total target population of Paion's European region at 10.3m.

Paion expects that Byfavo will need additional clinical studies to proof an added value of Byfavo compared to existing competition products such as Propofol or Midazolam. Hence, Paion will postpone a market launch of Byfavo in Germany until those studies have been conducted. Until such time, we have excluded the German market from our revenue models.

Based on this, we estimate that Paion will be able to generate peak sales of EUR 26.6m in 2032 based on a terminal market share of 4.0%.

Sales estimates Byfavo in the EU

GA EU (commercial sales) Paion	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Remimazolam										
total target population	10.3	10.5	10.7	10.9	11.1	11.4	11.6	11.8	12.1	12.3
patient population Other	10.3	10.5	10.6	10.8	10.9	11.0	11.1	11.4	11.6	11.8
market share in %	100%	100%	99%	99%	98%	97%	96%	96%	96%	96%
patient population Byfavo	0.03	0.05	0.09	0.11	0.22	0.34	0.46	0.47	0.48	0.49
market share in %	0.3%	0.5%	0.8%	1.0%	2.0%	3.0%	4.0%	4.0%	4.0%	4.0%
price per treatment Byfavo (EUR)	54	54	54	54	54	54	54	54	54	54
Sales Paion (EUR)	1.7	2.8	4.6	5.9	12.0	18.4	25.1	25.6	26.1	26.6
COGS (EUR)	-0.5	-0.9	-1.4	-1.8	-3.6	-5.5	-7.5	-7.7	-7.8	-8.0
as % of sales	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Gross profit Paion (EUR)	1.2	2.0	3.2	4.1	8.4	12.9	17.5	17.9	18.2	18.6

Source: Warburg Research

Giapreza

Septic/distributive shock

In Germany, the incidence rate of sepsis in 2021 was 158 cases per 100k inhabitants ([Sepsis incidence in Germany and worldwide: Current knowledge and limitations of research using health claims data]. Med Klin Intensivmed Notfmed. 2022 May;117(4):264-268.). Extrapolated to the European population, we estimate that around 0.8m people in Europe go into septic shock. Of those 0.8m, around 66% of patients can be satisfactorily treated with either norephinedrine, can be saved by administering vasopressors or already respond well to fluid replacement. This leaves us with a total target population of 0.26m people annually.

Sales estimates Giapreza EU

DS EU (various) Paion + Medis + Viatris	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Giapreza										
total target population	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27
patient population Other	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
market share in %	100%	100%	98%	96%	94%	92%	90%	90%	90%	90%
patient population Giapreza	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.03
market share in %	0.0%	0.1%	2.0%	4.0%	6.0%	8.0%	10.0%	10.0%	10.0%	10.0%
price per treatment Giapreza (EUR)	1,413	1,413	1,413	1,413	1,413	1,413	1,413	1,413	1,413	1,413
Sales Paion + Medis + Viatris (EUR)	0.0	0.4	7.4	15.0	22.6	30.2	38.0	38.2	38.4	38.6
COGS (EUR)	0.0	-0.1	-2.6	-5.2	-7.9	-10.6	-13.3	-13.4	-13.4	-13.5
as % of sales	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Gross profit Paion (EUR)	0.0	0.2	4.8	9.7	14.7	19.7	24.7	24.8	24.9	25.1

Source: Warburg Research

Based on these population figures and a terminal market share of 10.0%, we estimate that Giapreza can roll in EUR 38.6m in sales in 2032. We also expect that Paion will have to pay 10% in royalties on net sales to La Jolla, which we have included in our COGS figure.

Xerava

cIAI

Given that Xerava is a broad-spectrum antibiotic and should be used as a reserve antibiotic in a clinical setting, the overall market size is very specialized. We estimate, that around 0.6m cases with complicated intra-abdominal infections (cIAI) in the EU and UK arise annually and the use of such novel antibiotics will be very restrictive in the future to avoid the rise of additional antibiotic resistances in bacterial pathogens.

Sales estimates Xerava EU

cIAI EU (various) Paion + Medis + Viatris	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Xerava										
total target population	0.61	0.61	0.61	0.62	0.62	0.62	0.62	0.63	0.63	0.63
patient population Other	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
market share in %	100%	99%	98%	97%	94%	92%	90%	90%	90%	90%
patient population Giapreza	0.00	0.00	0.02	0.02	0.04	0.05	0.06	0.06	0.06	0.06
market share in %	0.0%	0.8%	2.5%	3.5%	6.0%	8.0%	10.0%	10.0%	10.0%	10.0%
price per treatment Giapreza (EUR)	464	464	464	464	464	464	464	464	464	464
Sales Paion + Medis + Viatris (EUR)	0.0	2.3	7.1	10.0	17.2	23.1	29.0	29.1	29.3	29.4
COGS (EUR)	0.0	-0.8	-2.5	-3.5	-6.0	-8.1	-10.1	-10.2	-10.2	-10.3
as % of sales	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Gross profit Paion (EUR)	0.0	1.5	4.6	6.5	11.2	15.0	18.8	18.9	19.0	19.1

Source: Warburg Research

With this, we estimate that Paion and its partners will reach peak sales of EUR 29.4m in 2032 with a terminal market share of 10.0%. We also expect that Paion will have to pay 10% in royalties on net sales to La Jolla, which we have included in our COGS figure.

Financial situation

Cash position and going concern

As of its 6M 2023 reporting, Paion had cash and cash equivalents of EUR 4.6m. According to Paion's annual general meeting presentation, the company has a going concern to fund operations until Q2 2024.

The company expects additional funds from revenues, potential financing and/or out-licensing to improve the financial situation of the company. In June 2023, Paion has received a new bank credit line of EUR 5m.

The company requires additional funds in 2023, including expected payments from revenues, potential financing and/or out-licensing.

The company plans to execute additional financing rounds according to the following split:

- New product partnerships (40-50%)
- Equity raises (35-40%)
- Debt instruments (15-20%)

Based on cash on-hand, expected payments from revenue and potential financing and/or out-licensing, Paion expects to have sufficient cash and cash equivalents for the next 12 months, considering current planning.

The company has stated that it has outstanding financing needs of EUR 25m in the medium term. In our model, EBITDA breakeven is achieved in 2025e. It is our assumption, that Paion will be able to secure the required funding with a mixture of debt, equity and partnership deals. As a baseline, we choose to model for an inflow of EUR 30m in debt in 2023.

6M 2023 report

On 30.8.2023, Paion released its preliminary set of 6M 2023 figures. The company reported sales of EUR 6.8m and an EBIT of EUR -8.0m, which is in line with our FY 2023 estimates.

Licensees generated product sales of EUR 4.4m in the first six months of 2023 (H1 2022: EUR 2.7m), resulting in royalties for Paion of EUR 0.5m (H1 2022: EUR 0.3m).

Overall, revenues amounted to EUR 6.8m in 6M 2023, including EUR 1.0m in milestone payments and EUR 4.7m in remimazolam active ingredient sales to licensees (6M 2022: EUR 1.1 million), EUR 0.5m in royalties (6M 2022: EUR 0.3m) and EUR 0.6m (6M 2022 EUR 0.1m) in commercial product sales to wholesalers and hospitals in selected European markets.

Cash and cash equivalents stood at EUR 4.6m.

Valuation

- Fair value of equity: EUR 65.48m or EUR 9.18 per share
- Long-term EBIT margins of 15.9%, affected by the start of the loss of patent protection
- Largely unsecured financing (EUR 25m required) leads to a high beta of 2.30 and a resulting discount factor of 13.16%

We have modelled the potential sales of Paion and its partners in the respective regions in which they are active. Paion generates revenue streams from a mix of its own commercial sales, sales of product and milestone payments. For detailed sales estimates please refer back to the previous chapter (Growth).

In the following table, we have summarized our estimates of the different revenue streams of Paion:

Summary sales forecast Paion

	2021	2022	2023e	2024e	2025e
Revenues	7.1	33.2	13.1	19.4	39.4
- yoy	*-64%*	*366%*	*-61%*	*48%*	*103%*
- commercial sales	0.0	0.6	1.7	3.8	9.7
- yoy	*nm*	*1270%*	*179%*	*125%*	*158%*
- API sales and royalties	4.5	3.0	11.4	15.6	29.6
- yoy	*91%*	*-32%*	*276%*	*37%*	*89%*
- milestones	2.6	29.6	0.0	0.0	0.0
- yoy	*-86%*	*1039%*	*nm*	*nm*	*nm*

Source: Company data, Warburg Research

Paion is currently in the process of expanding its sales force. The company intends to sell Byfavo, Giapreza and Xerava in certain European regions using its own sales network (AT, CH, NL, UK, SE, NO, POR and DK).

Based on our detailed models, we forecast Paion will generate sales of EUR 39.4m in 2025e, split into EUR 9.7m from commercial sales and EUR 29.6m from sales of product or royalty payments from partners such as Eagle Pharma or Mundi Pharma.

P&L forecast

	2021	2022	2023e	2024e	2025e
Revenues	7.1	33.2	13.1	19.4	39.4
- yoy	*-64%*	*366%*	*-61%*	*48%*	*103%*
- commercial sales	0.0	0.6	1.7	3.8	9.7
- yoy	*nm*	*1270%*	*179%*	*125%*	*158%*
- API sales and royalties	4.5	3.0	11.4	15.6	29.6
- yoy	*91%*	*-32%*	*276%*	*37%*	*89%*
- milestones	2.6	29.6	0.0	0.0	0.0
- yoy	*-86%*	*1039%*	*nm*	*nm*	*nm*
COGS	-3.0	-2.0	-11.0	-11.0	-13.3
- in %	*42%*	*6%*	*84%*	*57%*	*34%*
Gross profit	4.1	31.3	2.1	8.4	26.0
- margin	*58%*	*94%*	*16%*	*43%*	*66%*
R&D	-5.2	-6.5	-4.0	-5.3	-5.6
- in % sales	*73.6%*	*19.5%*	*30.5%*	*27.3%*	*14.1%*
SG&A	-19.8	-21.2	-13.0	-15.0	-19.0
- in % sales	*278.2%*	*63.8%*	*99.2%*	*77.3%*	*48.3%*
other income (net)	-1.1	-2.1	-1.0	-2.0	-2.0
- in % sales	*14.8%*	*6.3%*	*7.6%*	*10.3%*	*5.1%*
EBITDA	-20.3	3.2	-14.4	-11.9	1.5
- margin	*-284.9%*	*9.7%*	*-109.8%*	*-61.2%*	*3.8%*
D&A	1.7	1.7	1.5	2.0	2.0
- in % sales	*23.7%*	*5.1%*	*11.4%*	*10.3%*	*5.1%*
EBIT	-22.0	1.5	-15.9	-13.9	-0.5
- margin	*-308.6%*	*4.5%*	*-121.2%*	*-71.5%*	*-1.3%*

Source: Company data, Warburg Research

Based on the favourable mix of revenue streams, we estimate that Paion will generate a gross profit margin of 66% in 2025e. Paion will also have to conduct small-scale clinical trials to test Byfavo in young adults and children. Based on this, we assume that Paion will have R&D expenses of 14.1% of sales in 2025e and 10% of sales going forward.

The expansion of Paion's sales team will be cost intensive but will enable the company to avail of the value of Byfavo, Giapreza and Xerava through its own sales network. As a result, we estimate that Paion will have SG&A expenditure of 35.0% of sales after 2025e.

Taken together, we expect Paion to achieve EBITDA breakeven in 2025e.

While Paion's investment case bears risk, the overall value proposition of Byfavo plus the complementary products Giapreza and Xerava is compelling. We choose to reflect the financing-related uncertainties with a beta of 2.34, resulting in a discount factor of 13.27%. If Paion is able to secure the required financing needs until it can achieve breakeven (WRe 2025e), we will adjust those parameters to reflect the lower risk of the investment case at that stage.

DCF valuation

For fundamental valuation purposes, we use a DCF model with the following assumptions:

- WACC: 13.16%, equity ratio: 20.00%; cost of debt: 6.00%; market rate: 8.25%, risk free return: 2.75%
- Beta of 2.3 to account for company-specific parameters and the financing situation of Paion

Our DCF analysis yields a fair value of EUR 9.18 per share

DCF model

	Detailed forecast period			Transitional period										Term. Value
Figures in EUR m	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	2032e	2033e	2034e	2035e	
Sales	13.1	19.4	39.4	58.5	92.1	131.2	156.1	161.9	164.9	167.3	169.8	172.3	174.9	
Sales change	*-60.6 %*	*48.1 %*	*102.7 %*	*48.6 %*	*57.6 %*	*42.4 %*	*19.0 %*	*3.7 %*	*1.9 %*	*1.5 %*	*1.5 %*	*1.5 %*	*1.5 %*	*1.5 %*
EBIT	-15.9	-13.9	-0.5	11.7	14.5	22.9	27.6	29.6	30.3	30.8	27.0	27.4	27.8	
EBIT-margin	*-121.2 %*	*-71.5 %*	*-1.3 %*	*20.0 %*	*15.8 %*	*17.4 %*	*17.7 %*	*18.3 %*	*18.4 %*	*18.4 %*	*15.9 %*	*15.9 %*	*15.9 %*	
Tax rate (EBT)	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*30.0 %*	
NOPAT	-15.9	-13.9	-0.5	11.7	14.5	22.9	27.6	29.6	30.3	30.8	27.0	27.4	19.5	
Depreciation	1.5	2.0	2.0	2.9	4.6	6.6	7.8	8.1	8.2	8.4	5.1	6.9	1.7	
in % of Sales	*11.4 %*	*10.3 %*	*5.1 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*3.0 %*	*4.0 %*	*1.0 %*	
Changes in provisions	0.0	0.0	0.0	0.3	0.7	0.8	0.5	0.1	0.1	0.0	0.1	0.1	0.1	
Change in Liquidity from														
- Working Capital	4.2	1.0	3.1	4.0	6.4	8.3	6.3	2.8	0.6	0.5	0.5	0.5	0.5	
- Capex	1.6	1.6	1.6	1.8	3.7	6.6	7.8	8.1	8.2	8.4	5.1	6.9	1.7	
Capex in % of Sales	*12.2 %*	*8.2 %*	*4.1 %*	*3.0 %*	*4.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*3.0 %*	*4.0 %*	*1.0 %*	
- Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC Model)	-20.1	-14.5	-3.2	9.2	9.8	15.3	21.8	26.9	29.7	30.4	26.6	27.0	19.0	19
PV of FCF	-18.2	-11.5	-2.3	5.7	5.4	7.4	9.4	10.2	10.0	9.0	7.0	6.2	3.9	34
share of PVs	**-42.07 %**			**97.56 %**										**44.51 %**

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	20.00 %	Financial Strength	3.00
Cost of debt (after tax)	4.2 %	Liquidity (share)	2.50
Market return	8.25 %	Cyclicality	1.20
Risk free rate	2.75 %	Transparency	2.00
		Others	2.80
WACC	**13.16 %**	**Beta**	**2.30**

Valuation (m)

Present values 2035e	42		
Terminal Value	34		
Financial liabilities	20		
Pension liabilities	1		
Hybrid capital	0		
Minority interest	0		
Market val. of investments	0		
Liquidity	11	No. of shares (m)	7.1
Equity Value	**65**	**Value per share (EUR)**	**9.18**

Sensitivity Value per Share (EUR)

		Terminal Growth						
Beta	WACC	0.75 %	1.00 %	1.25 %	**1.50 %**	1.75 %	2.00 %	2.25 %
2.53	14.2 %	7.45	7.52	7.59	7.66	7.74	7.83	7.91
2.41	13.7 %	8.14	8.22	8.30	8.39	8.48	8.57	8.67
2.36	13.4 %	8.51	8.59	8.68	8.78	8.87	8.97	9.08
2.30	13.2 %	8.89	8.98	9.08	**9.18**	9.28	9.39	9.50
2.24	12.9 %	9.29	9.39	9.49	9.60	9.71	9.83	9.95
2.19	12.7 %	9.71	9.82	9.93	10.04	10.16	10.29	10.42
2.07	12.2 %	10.61	10.73	10.85	10.99	11.13	11.27	11.43

		Delta EBIT-margin						
Beta	WACC	-1.5 pp	-1.0 pp	-0.5 pp	**+0.0 pp**	+0.5 pp	+1.0 pp	+1.5 pp
2.53	14.2 %	6.21	6.69	7.18	7.66	8.15	8.64	9.12
2.41	13.7 %	6.86	7.37	7.88	8.39	8.90	9.41	9.92
2.36	13.4 %	7.20	7.73	8.25	8.78	9.30	9.82	10.35
2.30	13.2 %	7.57	8.10	8.64	**9.18**	9.72	10.25	10.79
2.24	12.9 %	7.95	8.50	9.05	9.60	10.15	10.70	11.26
2.19	12.7 %	8.34	8.91	9.47	10.04	10.61	11.17	11.74
2.07	12.2 %	9.19	9.79	10.39	10.99	11.59	12.18	12.78

- Paion has considerable loss carry forward - no tax payment modelling until we reach terminal value

Company & Products

Paion is a pharmaceutical company that focuses on the development and commercialization of innovative drugs for use in sedation, anaesthesia and critical care. The company's flagship product is ByFavo® (Byfavo). Further products, Giapreza® (Angiotensin II) and Xerava® (Eravacycline) were added to Paion's product portfolio in 2021.

ByFavo® (Byfavo)

Byfavo is an intravenous, ultra-short-acting and controllable benzodiazepine derivative sedative/anaesthetic. While the worldwide sedation and anaesthesia market is dominated by the generic drugs Propofol and Midazolam, both preparations have disadvantages. Byfavo combines the best pharmacological properties of each, leading to a faster metabolism, improved efficiency and improved cardiorespiratory safety profile. Thus, Byfavo is superior to its competitors.

One advantage over Propofol is that benzodiazepine derivatives, such as Byfavo and Midazolam, can be reversed by benzodiazepine antagonists such as Flumazenil, leading to a better controllability of sedation/anaesthesia and thus increasing the clinical safety of the procedure for the practitioner.

In contrast to Propofol and Midazolam, Byfavo is not metabolized by hepatic cytochrome P450 oxidoreductases in the liver, but inactivated by widespread tissue esterase. The organ-independent metabolism leads to a faster elimination of sedation by bypassing the limiting step of liver degradation.

Clinical trials in procedural sedation for colonoscopy and bronchoscopy show that Byfavo significantly reduces the time to the beginning of the procedure, the recovery phase and the time it takes the subject to return to normal consciousness compared to Midazolam. Additionally, the rate of successful completion with Byfavo was higher for each procedure than with Midazolam. Further studies also show that Byfavo provides higher cardiovascular safety in high-risk patients (patients with a risk profile of the American Society of Anaesthesiologists (ASA) III to IV), and thus serves the increasing clinical needs connected to the aging population.

In general anaesthesia, Byfavo competes with Propofol, which often leads to low blood pressure during surgery. This might ultimately result in oxygen deficiency of the heart muscle and lead to myocardial injury (MINS). Around 10% of the subjects experiencing MINS experience death within 30 days. Clinical studies in patients with ASA classification I-II in general anaesthesia show, next to efficacy, that Byfavo produces more stable blood pressure during surgery and reduces the frequency of a critical drop in blood pressure and the need to use blood pressure-enhancing Vasopressors by 40%.

Giapreza® (Angiotensin II)

Giapreza (angiotensin II) is a vasoconstrictor used to increase blood pressure in adult patients with septic or other distributive shock who have not responded adequately to other therapies. While other therapeutic options regulate blood pressure through the adrenal system (e.g. epinephrine, norepinephrine) or vasopressin system (e.g. ADH, conivaptan), Giapreza does so by activating the natural blood pressure regulation system, the renin-angiotensin-aldosterone system (RAAS). Giopreza's active substance angiotensin II mimics the effects of the natural hormone angiotensin II, which is central to the RAAS and regulates the blood pressure by constricting blood vessels and increasing blood flow to the vital organs.

Giapreza is not a first-line treatment for hypotension and should only be used in patients who have not responded sufficiently to other therapies. It should also be used with caution in patients with certain pre-existing medical conditions, such as severe aortic or mitral valve stenosis, or in those who are pregnant or breastfeeding. It is given as a continuous intravenous infusion and should be titrated to achieve a target MAP of at least 65 mmHg. The initial recommended dose of Giapreza is 20 ng/kg/min administered as a continuous intravenous infusion. The dose can be increased by increments of up to 15 ng/kg/min every five minutes, up to a maximum dose of 80 ng/kg/min during the first three hours, as needed to achieve the target blood pressure. The maintenance dose should not exceed 40 ng/kg/min.

Xerava® (Eravacycline)

Xerava is an antibiotic used to treat complicated intra-abdominal infections (cIAI) caused by susceptible microorganisms in adults. CIAI are associated with inflammation or perforation of the gastrointestinal tract, e.g. infections such as appendicitis, diverticulitis, and peritonitis. Xerava contains the active substance eravacycline, a fully synthetic fluorocycline antibiotic of the tetracycline class that works by disrupting the critical process of bacterial protein synthesis, ultimately leading to the death of the bacteria. Precisely, eravacycline binds to the 30S ribosomal subunit, preventing the incorporation of amino acid residues into elongating peptide chains. A distinguishing feature of eravacycline is its broad-spectrum activity against various types of bacteria, including Gram-positive, Gram-negative, and anaerobic strains that are commonly associated with cIAI (e.g. Staphylococcus aurelius and Escherichia coli). Thus, it presents an effective therapeutic option for patients afflicted with challenging-to-treat infections or those caused by multidrug-resistant bacteria.

Xerava is given by intravenous infusion over one hour every 12 hours for a total of four to 14 days, depending on the severity of the infection and the patient's response to the treatment. To maintain the effectiveness of Xerava and reduce the development of drug-resistant bacteria, it should only be used as a second-line treatment option for cIAI when other antibiotics are not effective or suitable for the patient.

History

Paion was founded by Dr. Wolfgang Söhngen and Dr. Mariola Söhngen in January 2000 and is headquartered in Aachen, Germany. It focuses on the clinical development of CNS compounds. Throughout its history, Paion underwent the following stages and reached the following milestones:

- **2000:** Paion is founded in Aachen, Germany, and in-licenses Desmoteplase from Schering AG.
- **2005:** Paion goes public and licenses Desmoteplase to Lundbeck.
- **2008:** Acquisition of CeNeS Pharmaceuticals with Byfavo, M6G, GGF2.
- **2012:** Sale of all Desmoteplase rights to Lundbeck for EUR 20m, allowing Paion to accelerate the development of Byfavo.
- **2013:** Paion successfully completes phase III programme with Byfavo in Japan.
- **2014:** Foundation of Paion, Inc. in the US. Funding activities (EUR 61m) secured for Byfavo phase III programmes.
- **2015:** Start of Byfavo phase III programme in procedural sedation in the US and general anaesthesia in the EU.
- **2016:** Cosmo Pharmaceuticals becomes partner of Byfavo in the US. Completion of US phase III colonoscopy trial.
- **2017:** Completion of the Byfavo phase III development programme in the US in procedural sedation.
- **2018:** First filings for general anaesthesia in Japan and procedural sedation in China. Start of phase III trial in the EU in general anaesthesia.
- **2019:** First own filing in procedural sedation in the EU and submission of a new drug application for Byfavo by Cosmo Pharmaceuticals in the US.
- **2020:** First market approval in Japan for general anaesthesia, followed by the US for procedural sedation and China for general anaesthesia.
- **2021:** Market approval for Byfavo in South Korea and the EU/EEA. Addition of Angiotensin II (GIAPREZA™) and Eravacycline (XERAVA™) to Paion's portfolio through a licensing agreement with La Jolla for Europe.
- **2022:** Paion enters a partnership for Byfavo with Viatris in Europe, Cristalia in Latin America and sells patent rights to Humanwell in China.
- **2023:** Paion receives European Commission approval of remimazolam for the induction and maintenance of general anaesthesia in adults

Management

Gregor Siebert (CEO)

Gregor Siebert was appointed CEO of Paion in December 2022 and will be CEO of Paion until 31.8.2023, when he will return to Paion's Supervisory Board. In 1985, he started his career in the pharmaceutical industry with a focus on commercialization and marketing in the hospital and injectables business. Since then, he has held various sales and marketing management positions at Abbott, Hikma, Pfizer, GL-Pharma, and Curasan. During his nearly two decades at Abbott, he was responsible for launching numerous critical pharmaceutical products for anaesthesia and sedation in Germany and other European markets. Siebert's expertise is primarily focused on developing and executing targeted marketing and sales strategies for the hospital and injectable markets. He holds an Agricultural Science Engineering Diploma from the University of Bonn.

Tilmann Bur (designated CEO)

Tilmann Bur will join Paion as CEO on 1.9.23. Mr. Bur has 20 years of international management experience with a focus on sales and marketing. Tilmann Bur has extensive experience in professional relationship management with decision makers in clinics as well as in building and leading national and international sales organizations and dealer networks. He knows the purchasing structures in the European hospital market and is well-versed in KOL management and clinical marketing. Among others, Mr. Bur was a member of the executive board at R-Biopharm, Biosafe and managing director at Haemonetics. Since June 2019, Mr. Bur has been a member of the Executive Board and most recently CEO of CO.DON AG, during which time he has played a key role in securing CO.DON's continued business operations.

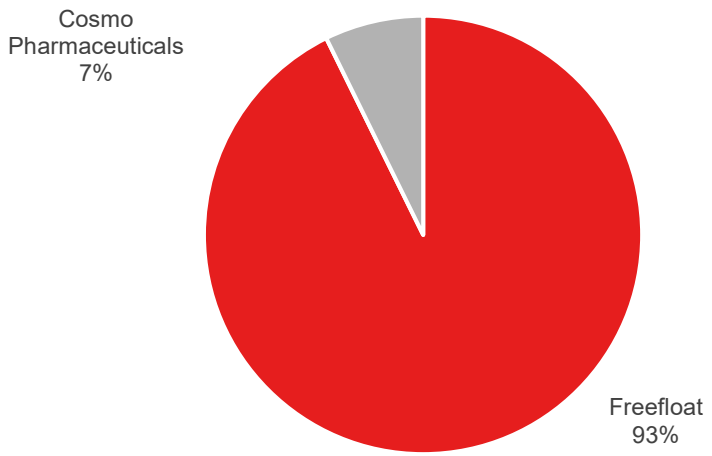
Sebastian Werner (CFO)

Sebastian Werner has been CFO of Paion since June 2022. He has more than two decades of experience in finance, having held several senior positions in the pharmaceutical and life science industry. He started his international career at Hoffmann La Roche, where he held the position of CFO for the Corporate Operations Division for six years. He then joined Zimmer Biomet Deutschland GmbH as CFO and Managing Director for Central Europe for nine years. Werner holds a degree in human medicine from the University of Erlangen and a degree in business administration (MBA, Finance and Controlling) from Duale Hochschule Lörrach.

Shareholder structure

Paion's share structure is characterised by a very high free float of 92.7%. The remaining 7.3% is owned by Cosmo Pharmaceuticals N.V., a Dutch pharmaceutical company with a focus on gastroenterology and dermatology. The authorized share capital currently amounts to EUR 7.1m shares.

Paion shareholder structure



Source: Paion, Warburg Research

DCF model

	Detailed forecast period			Transitional period										Term. Value
Figures in EUR m	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	2032e	2033e	2034e	2035e	
Sales	13.1	19.4	39.4	58.5	92.1	131.2	156.1	161.9	164.9	167.3	169.8	172.3	174.9	
Sales change	*-60.6 %*	*48.1 %*	*102.7 %*	*48.6 %*	*57.6 %*	*42.4 %*	*19.0 %*	*3.7 %*	*1.9 %*	*1.5 %*	*1.5 %*	*1.5 %*	*1.5 %*	*1.5 %*
EBIT	-15.9	-13.9	-0.5	11.7	14.5	22.9	27.6	29.6	30.3	30.8	27.0	27.4	27.8	
EBIT-margin	*-121.2 %*	*-71.5 %*	*-1.3 %*	*20.0 %*	*15.8 %*	*17.4 %*	*17.7 %*	*18.3 %*	*18.4 %*	*18.4 %*	*15.9 %*	*15.9 %*	*15.9 %*	
Tax rate (EBT)	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*0.0 %*	*30.0 %*	
NOPAT	-15.9	-13.9	-0.5	11.7	14.5	22.9	27.6	29.6	30.3	30.8	27.0	27.4	19.5	
Depreciation	1.5	2.0	2.0	2.9	4.6	6.6	7.8	8.1	8.2	8.4	5.1	6.9	1.7	
in % of Sales	*11.4 %*	*10.3 %*	*5.1 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*3.0 %*	*4.0 %*	*1.0 %*	
Changes in provisions	0.0	0.0	0.0	0.3	0.7	0.8	0.5	0.1	0.1	0.0	0.1	0.1	0.1	
Change in Liquidity from														
- Working Capital	4.2	1.0	3.1	4.0	6.4	8.3	6.3	2.8	0.6	0.5	0.5	0.5	0.5	
- Capex	1.6	1.6	1.6	1.8	3.7	6.6	7.8	8.1	8.2	8.4	5.1	6.9	1.7	
Capex in % of Sales	*12.2 %*	*8.2 %*	*4.1 %*	*3.0 %*	*4.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*3.0 %*	*4.0 %*	*1.0 %*	
- Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC Model)	-20.1	-14.5	-3.2	9.2	9.8	15.3	21.8	26.9	29.7	30.4	26.6	27.0	19.0	19
PV of FCF	-18.2	-11.5	-2.3	5.7	5.4	7.4	9.4	10.2	10.0	9.0	7.0	6.2	3.9	34
share of PVs	**-42.07 %**			**97.56 %**										**44.51 %**

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	20.00 %	Financial Strength	3.00
Cost of debt (after tax)	4.2 %	Liquidity (share)	2.50
Market return	8.25 %	Cyclicality	1.20
Risk free rate	2.75 %	Transparency	2.00
		Others	2.80
WACC	**13.16 %**	**Beta**	**2.30**

Valuation (m)

Present values 2035e	42		
Terminal Value	34		
Financial liabilities	20		
Pension liabilities	1		
Hybrid capital	0		
Minority interest	0		
Market val. of investments	0		
Liquidity	11	No. of shares (m)	7.1
Equity Value	**65**	**Value per share (EUR)**	**9.18**

Sensitivity Value per Share (EUR)

		Terminal Growth						
Beta	WACC	0.75 %	1.00 %	1.25 %	**1.50 %**	1.75 %	2.00 %	2.25 %
2.53	14.2 %	7.45	7.52	7.59	7.66	7.74	7.83	7.91
2.41	13.7 %	8.14	8.22	8.30	8.39	8.48	8.57	8.67
2.36	13.4 %	8.51	8.59	8.68	8.78	8.87	8.97	9.08
2.30	13.2 %	8.89	8.98	9.08	**9.18**	9.28	9.39	9.50
2.24	12.9 %	9.29	9.39	9.49	9.60	9.71	9.83	9.95
2.19	12.7 %	9.71	9.82	9.93	10.04	10.16	10.29	10.42
2.07	12.2 %	10.61	10.73	10.85	10.99	11.13	11.27	11.43

		Delta EBIT-margin						
Beta	WACC	-1.5 pp	-1.0 pp	-0.5 pp	**+0.0 pp**	+0.5 pp	+1.0 pp	+1.5 pp
2.53	14.2 %	6.21	6.69	7.18	7.66	8.15	8.64	9.12
2.41	13.7 %	6.86	7.37	7.88	8.39	8.90	9.41	9.92
2.36	13.4 %	7.20	7.73	8.25	8.78	9.30	9.82	10.35
2.30	13.2 %	7.57	8.10	8.64	**9.18**	9.72	10.25	10.79
2.24	12.9 %	7.95	8.50	9.05	9.60	10.15	10.70	11.26
2.19	12.7 %	8.34	8.91	9.47	10.04	10.61	11.17	11.74
2.07	12.2 %	9.19	9.79	10.39	10.99	11.59	12.18	12.78

- Paion has considerable loss carry forward - no tax payment modelling until we reach terminal value

Valuation

	2019	2020	2021	2022	2023e	2024e	2025e
Price / Book	9.4 x	7.0 x	19.3 x	10.8 x	n.a.	n.a.	n.a.
Book value per share ex intangibles	1.96	2.94	-1.77	-1.82	-4.43	-6.96	-7.70
EV / Sales	15.6 x	6.7 x	21.2 x	2.5 x	5.4 x	4.7 x	2.5 x
EV / EBITDA	n.a.	70.1 x	n.a.	25.5 x	n.a.	n.a.	67.0 x
EV / EBIT	n.a.	83.4 x	n.a.	54.3 x	n.a.	n.a.	n.a.
EV / EBIT adj.*	n.a.	83.4 x	n.a.	54.3 x	n.a.	n.a.	n.a.
P / FCF	n.a.	239.8 x	n.a.	16.6 x	n.a.	n.a.	n.a.
P / E	n.a.	70.6 x	n.a.	n.a.	n.a.	n.a.	n.a.
P / E adj.*	n.a.	70.6 x	n.a.	n.a.	n.a.	n.a.	n.a.
Dividend Yield	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FCF Potential Yield (on market EV)	-5.7 %	1.7 %	-13.0 %	3.6 %	-20.4 %	-13.3 %	1.3 %

*Adjustments made for: -

Consolidated profit and loss

In EUR m	2019	2020	2021	2022	2023e	2024e	2025e
Sales	**8.0**	**19.7**	**7.1**	**33.2**	**13.1**	**19.4**	**39.4**
Change Sales yoy	185.7 %	145.7 %	-63.7 %	366.4 %	-60.6 %	48.1 %	102.7 %
COGS	0.0	0.0	3.0	2.0	11.0	11.0	13.3
Gross profit	**8.0**	**19.6**	**4.1**	**31.3**	**2.1**	**8.4**	**26.0**
Gross margin	*99.9 %*	*99.9 %*	*57.8 %*	*94.1 %*	*16.1 %*	*43.3 %*	*66.2 %*
Research and development	13.1	10.3	5.2	6.5	4.0	5.3	5.6
Sales and marketing	5.0	7.5	19.8	21.2	13.0	15.0	19.0
Administration expenses	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other operating expenses	0.0	0.3	1.1	2.1	1.0	2.0	2.0
Other operating income	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Unfrequent items	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBITDA	**-9.3**	**1.9**	**-20.3**	**3.2**	**-14.4**	**-11.9**	**1.5**
Margin	*-116.7 %*	*9.6 %*	*-285.1 %*	*9.7 %*	*-109.8 %*	*-61.2 %*	*3.8 %*
Depreciation of fixed assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBITA	**-9.3**	**1.9**	**-20.3**	**3.2**	**-14.4**	**-11.9**	**1.5**
Amortisation of intangible assets	0.0	0.3	1.7	1.7	1.5	2.0	2.0
Goodwill amortisation	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBIT	**-9.3**	**1.6**	**-22.0**	**1.5**	**-15.9**	**-13.9**	**-0.5**
Margin	*-116.7 %*	*8.1 %*	*-308.8 %*	*4.5 %*	*-121.2 %*	*-71.5 %*	*-1.3 %*
EBIT adj.	**-9.3**	**1.6**	**-22.0**	**1.5**	**-15.9**	**-13.9**	**-0.5**
Interest income	0.0	0.0	1.6	1.1	1.0	1.0	1.0
Interest expenses	0.1	0.2	2.1	2.8	3.5	5.5	6.0
Other financial income (loss)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBT	**-9.4**	**1.4**	**-22.5**	**-0.2**	**-18.4**	**-18.4**	**-5.6**
Margin	*-117.9 %*	*7.2 %*	*-315.8 %*	*-0.6 %*	*-140.6 %*	*-94.9 %*	*-14.1 %*
Total taxes	-2.4	-0.8	-0.8	0.4	0.0	0.0	0.0
Net income from continuing operations	**-7.0**	**2.2**	**-21.7**	**-0.6**	**-18.4**	**-18.4**	**-5.6**
Income from discontinued operations (net of tax)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net income before minorities	**-7.2**	**2.1**	**-21.8**	**-0.5**	**-18.6**	**-18.6**	**-5.7**
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net income	**-7.2**	**2.1**	**-21.8**	**-0.5**	**-18.6**	**-18.6**	**-5.7**
Margin	*-90.1 %*	*10.6 %*	*-306.2 %*	*-1.4 %*	*-141.9 %*	*-95.8 %*	*-14.6 %*
Number of shares, average	6.4	6.6	7.1	7.1	7.1	7.1	7.1
EPS	**-1.12**	**0.32**	**-3.06**	**-0.07**	**-2.61**	**-2.61**	**-0.80**
EPS adj.	-1.12	0.32	-3.06	-0.07	-2.61	-2.61	-0.80

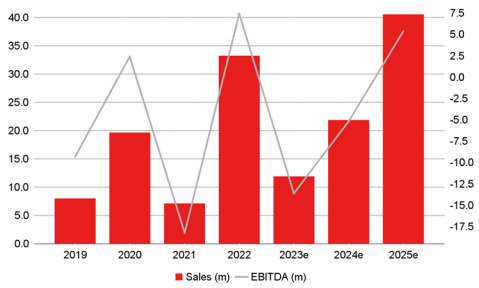
*Adjustments made for:

Guidance: Sales: EUR 13m to 19m, EBITDA EUR -15m to -13m

Financial Ratios

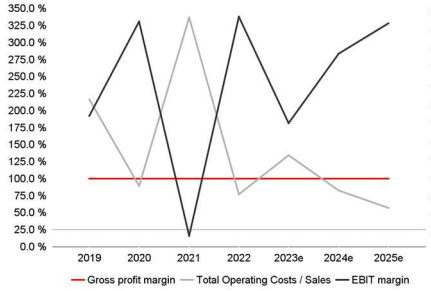
	2019	2020	2021	2022	2023e	2024e	2025e
Total Operating Costs / Sales	216.5 %	91.9 %	366.6 %	89.6 %	137.3 %	114.9 %	67.5 %
Operating Leverage	n.a.	n.a.	n.a.	n.a.	n.a.	-0.3 x	-0.9 x
EBITDA / Interest expenses	n.m.	11.6 x	n.m.	1.1 x	n.m.	n.m.	0.2 x
Tax rate (EBT)	25.4 %	-55.6 %	3.5 %	-188.1 %	0.0 %	0.0 %	0.0 %
Dividend Payout Ratio	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Sales per Employee	181,818	457,093	139,765	527,746	192,777	265,935	504,547

Sales, EBITDA
in EUR m



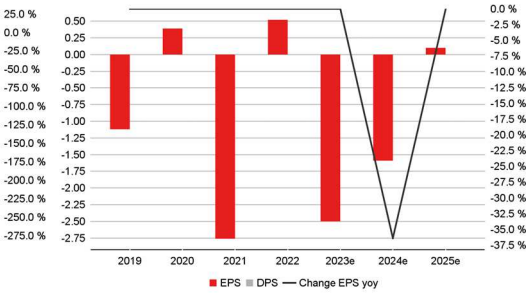
Source: Warburg Research

Operating Performance
in %



Source: Warburg Research

Performance per Share



Source: Warburg Research

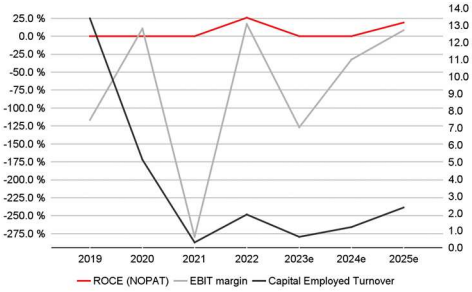
Consolidated balance sheet

In EUR m	2019	2020	2021	2022	2023e	2024e	2025e
Assets							
Goodwill and other intangible assets	2.1	1.8	19.7	19.6	19.6	19.1	18.6
thereof other intangible assets	2.1	1.8	19.7	19.6	19.6	19.1	18.6
thereof Goodwill	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property, plant and equipment	0.0	0.0	0.2	0.2	0.3	0.4	0.5
Financial assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other long-term assets	0.1	0.0	0.7	0.6	0.6	0.6	0.6
Fixed assets	**2.3**	**1.9**	**20.5**	**20.3**	**20.4**	**20.0**	**19.6**
Inventories	0.0	1.8	4.8	3.7	4.4	6.5	13.1
Accounts receivable	0.5	0.5	1.7	2.2	0.9	1.3	2.6
Liquid assets	18.8	19.7	6.4	10.6	17.8	8.6	0.2
Other short-term assets	3.4	4.3	3.3	1.3	1.3	1.3	1.3
Current assets	**22.6**	**26.3**	**16.2**	**17.8**	**24.3**	**17.6**	**17.1**
Total Assets	**24.9**	**28.1**	**36.8**	**38.2**	**44.8**	**37.7**	**36.8**
Liabilities and shareholders' equity							
Subscribed capital	64.3	66.2	71.3	71.3	7.1	7.1	7.1
Capital reserve	139.4	141.9	144.4	144.5	144.5	144.5	144.5
Retained earnings	-181.1	-188.1	-185.8	-207.6	-162.0	-180.6	-186.4
Other equity components	-7.9	1.2	-22.9	-1.6	-1.6	-1.6	-1.6
Shareholders' equity	14.7	21.3	7.0	6.6	-12.0	-30.6	-36.3
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total equity	**14.7**	**21.3**	**7.0**	**6.6**	**-12.0**	**-30.6**	**-36.3**
Provisions	0.3	2.2	2.3	0.9	0.9	0.9	0.9
thereof provisions for pensions and similar obligations	0.3	2.2	2.3	0.8	0.8	0.8	0.8
Financial liabilities (total)	4.4	0.0	20.2	20.4	50.4	60.4	60.4
Short-term financial liabilities	0.0	0.0	1.3	1.3	1.3	1.3	1.3
Accounts payable	4.8	3.9	6.6	8.0	3.2	4.7	9.5
Other liabilities	0.6	0.7	0.7	2.3	2.3	2.3	2.3
Liabilities	**10.1**	**6.8**	**29.8**	**31.6**	**56.8**	**68.3**	**73.1**
Total liabilities and shareholders' equity	**24.9**	**28.1**	**36.8**	**38.2**	**44.8**	**37.7**	**36.8**

Financial Ratios

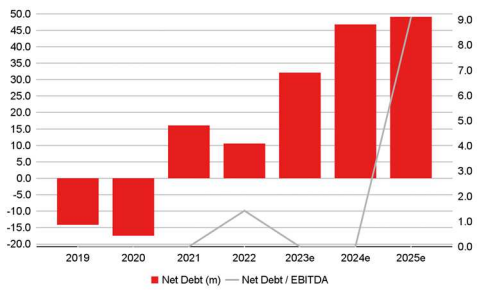
	2019	2020	2021	2022	2023e	2024e	2025e
Efficiency of Capital Employment							
Operating Assets Turnover	-1.9 x	-12.4 x	53.6 x	-17.6 x	5.5 x	5.6 x	5.9 x
Capital Employed Turnover	13.4 x	5.1 x	0.3 x	1.9 x	0.6 x	0.9 x	1.6 x
ROA	-318.6 %	111.7 %	-106.2 %	-2.4 %	-91.0 %	-92.8 %	-29.2 %
Return on Capital							
ROCE (NOPAT)	n.a.	n.a.	n.a.	21.5 %	n.a.	n.a.	n.a.
ROE	-97.8 %	11.6 %	-154.3 %	-7.0 %	692.5 %	87.4 %	17.1 %
Adj. ROE	-97.8 %	11.6 %	-154.3 %	-7.0 %	692.5 %	87.4 %	17.1 %
Balance sheet quality							
Net Debt	-14.1	-17.5	16.1	10.6	33.4	52.6	61.0
Net Financial Debt	-14.4	-19.7	13.8	9.7	32.6	51.8	60.2
Net Gearing	-96.0 %	-82.0 %	229.6 %	159.8 %	-278.8 %	-172.1 %	-168.1 %
Net Fin. Debt / EBITDA	n.a.	n.a.	n.a.	302.6 %	n.a.	n.a.	4069.3 %
Book Value / Share	2.3	3.2	1.0	0.9	-1.7	-4.3	-5.1
Book value per share ex intangibles	2.0	2.9	-1.8	-1.8	-4.4	-7.0	-7.7

ROCE Development



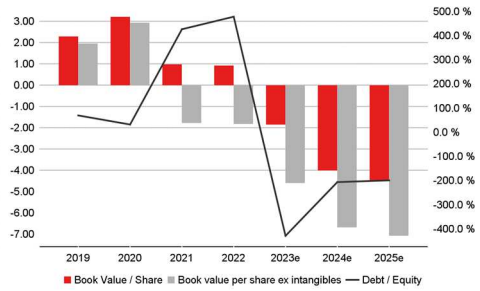
Source: Warburg Research

Net debt
in EUR m



Source: Warburg Research

Book Value per Share
in EUR



Source: Warburg Research

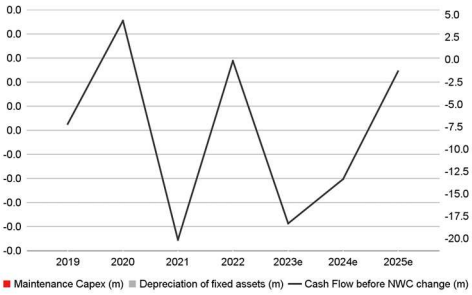
Consolidated cash flow statement

In EUR m	2019	2020	2021	2022	2023e	2024e	2025e
Net income	-7.2	1.8	-21.8	-0.4	-18.6	-18.6	-5.7
Depreciation of fixed assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortisation of goodwill	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortisation of intangible assets	0.0	0.3	1.7	1.7	1.5	2.0	2.0
Increase/decrease in long-term provisions	0.0	1.9	0.0	-1.5	0.0	0.0	0.0
Other non-cash income and expenses	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cash Flow before NWC change	**-7.2**	**4.0**	**-20.1**	**-0.1**	**-17.1**	**-16.6**	**-3.7**
Increase / decrease in inventory	0.0	-1.8	-3.0	1.1	-0.7	-2.1	-6.6
Increase / decrease in accounts receivable	1.0	0.0	-1.2	-0.5	1.3	-0.4	-1.3
Increase / decrease in accounts payable	2.6	-0.9	2.5	1.4	-4.8	1.5	4.8
Increase / decrease in other working capital positions	0.8	-0.7	0.8	4.0	0.0	0.0	0.0
Increase / decrease in working capital (total)	4.4	-3.4	-1.0	6.0	-4.2	-1.0	-3.1
Net cash provided by operating activities [1]	**-2.8**	**0.6**	**-21.1**	**5.9**	**-21.3**	**-17.6**	**-6.8**
Investments in intangible assets	0.0	0.0	-19.2	-1.5	-1.5	-1.5	-1.5
Investments in property, plant and equipment	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1
Payments for acquisitions	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Income from asset disposals	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net cash provided by investing activities [2]	**0.0**	**0.0**	**-19.2**	**-1.6**	**-1.6**	**-1.6**	**-1.6**
Change in financial liabilities	0.0	0.0	20.0	0.1	30.0	10.0	0.0
Dividends paid	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purchase of own shares	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital measures	4.8	0.0	5.1	0.0	0.0	0.0	0.0
Other	-0.3	0.0	2.1	0.0	0.0	0.0	0.0
Net cash provided by financing activities [3]	**4.4**	**0.0**	**27.1**	**0.1**	**30.0**	**10.0**	**0.0**
Change in liquid funds [1]+[2]+[3]	**1.6**	**0.6**	**-13.2**	**4.2**	**7.1**	**-9.2**	**-8.4**
Effects of exchange-rate changes on cash	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
Cash and cash equivalent at end of period	18.9	19.4	6.5	10.6	17.8	8.6	0.2

Financial Ratios

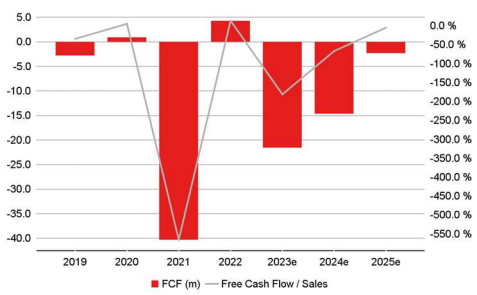
	2019	2020	2021	2022	2023e	2024e	2025e
Cash Flow							
FCF	-2.8	0.6	-40.3	4.3	-22.9	-19.2	-8.4
Free Cash Flow / Sales	-34.8 %	3.2 %	-565.6 %	12.9 %	-174.4 %	-98.9 %	-21.4 %
Free Cash Flow Potential	-7.1	2.3	-19.6	2.9	-14.6	-12.1	1.3
Free Cash Flow / Net Profit	38.6 %	29.9 %	184.7 %	-893.9 %	122.9 %	103.2 %	147.1 %
Interest Received / Avg. Cash	0.0 %	0.0 %	12.0 %	12.9 %	7.0 %	7.6 %	22.9 %
Interest Paid / Avg. Debt	4.6 %	7.4 %	20.4 %	13.8 %	10.0 %	10.0 %	10.0 %
Management of Funds							
Investment ratio	0.2 %	0.0 %	269.4 %	4.8 %	12.2 %	8.2 %	4.1 %
Maint. Capex / Sales	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Capex / Dep	n.a.	0.0 %	1135.7 %	93.7 %	106.7 %	80.0 %	80.0 %
Avg. Working Capital / Sales	-27.1 %	-15.2 %	-11.8 %	-3.2 %	0.2 %	13.4 %	11.8 %
Trade Debtors / Trade Creditors	10.3 %	12.8 %	26.1 %	27.8 %	28.1 %	27.7 %	27.4 %
Inventory Turnover	n.a.	0.0 x	0.6 x	0.5 x	2.5 x	1.7 x	1.0 x
Receivables collection period (days)	23	9	88	24	25	24	24
Payables payment period (days)	176,770	142,569	798	1,491	106	156	261
Cash conversion cycle (Days)	n.a.	-77,809	-126	-774	65	84	123

CAPEX and Cash Flow
in EUR m



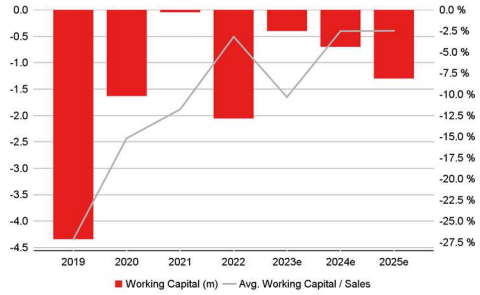
Source: Warburg Research

Free Cash Flow Generation



Source: Warburg Research

Working Capital



Source: Warburg Research

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Company	Disclosure	Link to the historical price targets and rating changes (last 12 months)
PAION	5	https://www.mmwarburg.com/disclaimer/disclaimer_en/DE000A3E5EG5.htm

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Investment recommendation: expected direction of the share price development of the financial instrument up to the given price target in the opinion of the analyst who covers this financial instrument.

-B-	**Buy:**	The price of the analysed financial instrument is expected to rise over the next 12 months.
-H-	**Hold:**	The price of the analysed financial instrument is expected to remain mostly flat over the next 12 months.
-S-	**Sell:**	The price of the analysed financial instrument is expected to fall over the next 12 months.
"-"	**Rating suspended:**	The available information currently does not permit an evaluation of the company.

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING

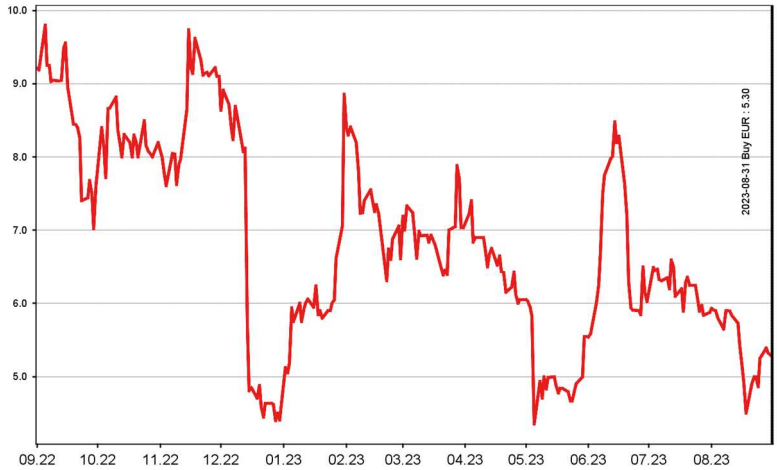
Rating	Number of stocks	% of Universe
Buy	153	74
Hold	44	21
Sell	6	3
Rating suspended	3	1
Total	**206**	**100**

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING …

… taking into account only those companies which were provided with major investment services in the last twelve months.

Rating	Number of stocks	% of Universe
Buy	42	86
Hold	5	10
Sell	0	0
Rating suspended	2	4
Total	**49**	**100**

PRICE AND RATING HISTORY PAION AS OF 31.08.2023



Markings in the chart show rating changes by Warburg Research GmbH in the last 12 months. Every marking details the date and closing price on the day of the rating change.

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