Document produced on
1 December 2022 at 7:59am CET
Document published on
1 December 2022 at 2:12pm CET

EQUITY RESEARCH

PAT — **BUY**

RESEARCH STUDY

TP 24.6€

Up/Downside: 58%

A Sales Boom That Is Expected To Continue

Research partially paid by the Issuer

Thanks to the increase in cosmetics distribution agreements, business should rebound in H2. In addition, the share could benefit from a buoyant newsflow in clinical research.

Created in 2005, Plant Advanced Technologies PAT is positioned on the plant extract market through the identification and production of rare molecules intended to be integrated into the composition of certain medicines, care products or food supplements. These extracts are difficult to synthesise and their production is often linked to protected species. After more than 15 years of research, PAT has innovative know-how in the stimulation of plant metabolism and in the identification, revelation and production of rare biomolecules, which offer solutions.

After 2020 was marked by the health crisis (revenue of -6%), the group's activity has recovered in 2021 with revenue surpassing €2.3m (+34%) thanks to the sales of cosmetic ingredients within PAT SA and the dynamism of the subsidiaries Couleurs de Plantes and Straticell. At the beginning of FY2022, sales have not yet benefited from orders linked to the Clariant partnership (H1 revenue down by -8.6%), but management expect sales to take off in H2, which should generate revenue comparable to that of 2021 (revenue of €2.3-2.5m targeted).

In the coming months, the group should benefit from the growing partnership with Clariant, but also from products launched by Dermophil and a luxury giant, which should fuel sales of ingredients for cosmetics (confirmation of the dynamics expected for 2023). The group could also announce the signing of new collaboration/distribution agreements in the cosmetics sector. The expected growth should enable the group to reach operational balance by 2023.

In addition, a molecule has shown promising results in the preclinical phase for the treatment of psoriasis (pharma segment, Temisis subsidiary), another molecule with effects on cognitive abilities is also in the development phase (nutraceutical segment, Cellengo subsidiary), and projects are underway in agrochemicals, which should provide growth drivers in the next 3 to 5 years.

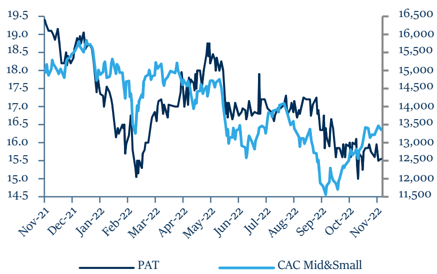
We believe that the share price could resume an upward trend as soon as the acceleration of cosmetics sales is confirmed. In addition, the progress of Temisis' clinical studies and the work carried out within Cellengo could offer the group a significant potential for revaluation. Therefore, we recommend a Buy rating on the stock with a target price of €24.6 (DCF valuation), representing a potential upside of more than 50%.

Key data	
Price (€)	15.6
Industry	Heathcare
Ticker	ALPAT-FR
Shares Out (m)	1.091
Market Cap (m €)	17.0
Next event	RN S1 2022 : 30/10/2022

Ownership (%)	
Famille Fèvre	28.4
Famille Bourgaud	6.3
Clariant	10.1
Vetoquinol	2.1
Free float	52.1

EPS (€)	12/22e	12/23e	12/24e
Estimates	-0.81	0.22	1.08
Change vs previous estimates (%)	na	0.0	0.0

Performance (%)	1D	1M	YTD
Price Perf	0.0	-2.8	-16.4
Rel CAC Mid&Small	0.0	-7.9	-2.9



TP ICAP Midcap Estimates	12/21	12/22e	12/23e	12/24e
Sales (m €)	2.3	2.4	3.2	5.0
Current Op Inc (m €)	-2.8	-3.1	-2.4	-1.7
Current op. Margin (%)	na	na	na	na
EPS (€)	-1.01	-0.81	0.22	1.08
DPS (€)	0.00	0.00	0.00	0.00
Yield (%)	0.0	0.0	0.0	0.0
FCF (m €)	-1.6	-1.1	-0.1	0.4

Valuation Ratio	12/22e	12/23e	12/24e
EV/Sales	9.0	6.8	4.3
EV/EBITDA	na	194.7	19.0
PE	na	71.6	14.5

Analyst
Claire Deray - Sponsor Finance for TPICAP Midcap

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Description

Plant Advanced Technologies, or PAT, is specialised in the identification, optimisation and production of rare plant-based molecules, which were until now inaccessible, for cosmetic, nutraceutical, pharmaceutical and fine chemical industries.

SWOT Analysis

Strengths

- Technological know-how and in-house production capacities
- Promising research and commercial partnerships
- A "green" image in the field of ingredients thanks to plant-based products

Weaknesses

- Revenue still limited, long time to market
- Shared ownership of certain products (co-development)
- Cash consumption to ensure the develpment of own products

Opportunities

- Launch of new products with Clariant
- Discovery of new active ingredients (greenhouse in La Réunion)
- Promising prospects in pharma (anti-inflammatory) and nutraceuticals (cognitive faculties)

Threats

- Challenges marketing products and product launch delays
- Difficulties in generating positive results/ FCF
- Challenges finding external funding to support pre-clinical and clinical development

Overview

Plant-Centric Know-How

State-of-the-art technology

Founded in 2005, Plant Advanced Technologies is a company based in Nancy, France (research centre and production site) which had 59 employees at the end of 2020, including subsidiaries. PAT is positioned on the market for plant extracts intended for the cosmetics, nutraceutical, pharmaceutical and green chemistry sectors.

Plants in their natural environment are subject to multiple aggressions, which have led them to develop defence mechanisms, including the production of molecules by chemical means. The active ingredients of these molecules have been used for thousands of years for their curative, medicinal or cosmetic properties.

Thanks to 15 years of research in collaboration with universities and private companies, PAT has expertise in stimulating plant metabolism and in generating molecules of interest, holding 18 patent families. The techniques developed have enabled PAT to improve the quality of the molecules produced (fully controlled environment thanks to greenhouse cultivation), to exploit new capacities (access to plant roots, overexpression and concentration of active ingredients) and thus to significantly increase the yields of molecules compared to more traditional field cultivation methods.

PAT is now able to offer industrial companies contracts to supply molecules from its plant production, and soon, fermentation platforms. The company is developing three patented technologies: PAT Milking Plants® (production and harvesting of active ingredients by root exudation), Metabolic Engineering (reprogramming of microorganisms and production of rare molecules by fermentation) and PAT Target Binding® (Finding ligands that bind to target proteins of interest).

In addition to its internal research resources, the group has been and still is able to rely on collaborative projects that allow it to complete its know-how, save time in research programmes and receive external funding.

Current collaborative projets

- HerbiScan: INRAe, Arvalis

The HerbiScan project aims to identify new natural plant substances that could be an effective ecological alternative to conventional herbicides. HerbiScan will analyse the herbicidal potential of 300 botanical species from terrestrial biodiversity, seek to identify active molecules and produce the first grams for field trials on field and specialised crops. A 3-year project, launched in January 2020, with a total budget of €1.5m, financed to the tune of €661k by the Programme d'Investissements d'Avenir (Caisse des Dépôts).

- Chaire Bio4Solution: ENSAIA, BASF Agro, LORCA, Agrauxine

Participation in the agro-ecological transition of the agricultural world via the training of agricultural professionals and future generations of engineers and support for agronomic research. Project launched in early 2020 has an annual budget of €281k.

- InnCoCells: 17 partners from various countries

Collaborative research project (starting in May 2021 for 4 years), and which involves 17 diverse partners (academic research institutes SMEs, industrialists, NGOs, etc.), including the companý PAT and its subsidiary Straticell, led by a Finnish institute and spread over 11 countries. The objective is to discover, develop and produce ingredients for the cosmetics sector with a view to sustainable development: environmental protection and resource saving. The research project is financed by the European communitý within the framework of the Horizon 2020 programme, to the tune of €7.9m, including €750k for PAT.

- AKESO: Straticell subsidiary

Research project launched in early 2022 that aims to create an innovation in the dermatology testing market. Financing obtained from the Walloon region for €660k for a total project cost of €1.1m. The objective is to develop an innovative model of wounding and healing of human skin explants or skin equivalents, adapted to industrial needs, with a panel of biomarkers to monitor the acute healing process.

- MicroBIOS : StratiCELL subsidiary

Research project spanning 2019-2023 and targeting the cutaneous microbiota. Funding obtained from the Walloon region (€895k) for a total project cost of €1.3m. The objective is to study the interactions between the skin and its microbiota, and to design in vitro models infected with different bacterial or fungal strains to model pathologies with dysbiosis such as acne, atopic dermatitis or seborrheic dermatitis.

- SenSySkin: StratiCELL subsidiary, Neuron Experts

Research project 2020-2024 in neuro-dermatology. Eurostars funding obtained from Europe and the Walloon region for €605k for a project total of €895k. The project aims to develop an in vitro skin model connected to a network of human sensory neurons derived from stem cells. It should eventually enable the preclinical evaluation of soothing or analgesic compounds applied to the skin and acting on the nerve endings.

- TISSYOU: StratiCELL subsidiary, Rescoll, University of Besançon hospital, Ludwig Boltzman Gesellschaft (AU)

Research project 2021-2024 in tissue engineering Eurostars funding obtained from Europe and the Walloon region to the tune of €379k for a project total of €542k. This is a collaborative project for the industrial production of a biomimetic biomaterial for skin regenerative medicine and in vitro research.

- N'GINS: New Generation of Natural Health Ingredients, Cellengo subsidiary

Project launched at the beginning of 2022 which aims to produce new health ingredients that are currently difficult to source using metabolic engineering technologies (fermentation). BPI funding of €1.6m as part of the France 2030 programme.

- Psoriacure: Temisis, StratiCELL, PharmBioTec and the IMoPA-CNRS laboratory of the University of Lorraine

3-year research project launched in 2020 as part of the European Union's Eurostars innovation programme. Budget of €3.2m, €1.5m of which is funded by grants (including €1.1m for the Temisis and Straticell group subsidiaries). Based on the molecule housed within the Temisis subsidiary for the treatment of psoriasis, the objective is to discover the fields of action of the latter on auto-immune inflammatory diseases.

Target Markets

Cosmetic

Natural ingredients, which were virtually absent from most industrial-scale cosmetic products until a few years ago, due to quality, product stability or production cost constraints, are increasingly being incorporated into product formulations, driven by consumer demand for more natural, authentic, transparent, bioactive, traceable and clean products.

For several years, the group has been working with Seppic in the field of active cosmetics (a subsidiary of the Air Liquide Healthcare group). In addition, to develop and distribute products developed with PAT technologies, the managers signed a partnership with Clariant at the end of 2019 (contract renewed in November for 5 years), which took a 10% stake in the capital on this occasion (fundraising of €2.2m, resulting in a valuation of €20/share). A first co-development product was launched in January 2020 (Prenylium based on white mulberry extract, which reduces wrinkles and won the Fountain Award in the anti-ageing category at the PCHI 2020), followed by the launch of a second product in May 2020: Rootness Energize (extract of Luffa roots to soothe certain inflammations, which won the bronze prize at the BSB Innovation Awards in the "skin benefits" category), and a third product in May 2022: Rootness® Awake (sweet potato extract with antioxidant and anti-inflammatory properties, as an anti-ageing application around the eyes, which received 1st prize at the BSB Award in Berlin last September). The objective of this partnership is to launch one to two new products each year based on extracts developed by the group.

Other distribution partnerships could be concluded to accelerate the group's deployment in this business segment throughout the world.

Nutraceuticals

Within this market, products for brain health (the first area targeted by the company) are booming, driven by the fear of losing cognitive abilities. With the development of an original active ingredient, the directors aim to position themselves in this segment. An innovative active ingredient has been produced by fermentation and has proven its effects in protecting neurons and short and long-term memory on animals.

Clinical tests on humans are planned for 2023, and the developments relating to this active principle have been and are now being carried out by the subsidiary Cellengo, which was created in 2019 (100% owned, contribution of R&D assets valued at €1.5m). The direction is now looking for an industrial partner to co-develop and distribute the product once it has been finalised. PAT would eventually be the supplier of the active ingredient that will be integrated into a finished product.

Pharmaceutical

Aware of the largely unexplored potential of the plant world, the group's teams are conducting research programmes in the pharmaceutical field. In 2015, this research led to the detection of a molecule with remarkable anti-inflammatory properties, which led to the filing of a patent in 2016 and the creation of a dedicated subsidiary (Temisis in 2017, 98% owned). Since then, the compound has proven its efficacy in the treatment of psoriasis with an innovative "first-in-class" mode of action (preclinical study), as effective as topical corticosteroids, twice as effective as Otezla (the reference oral treatment), with no known side effects to date, and with a lower cost than injectable biological treatments. The molecule is in the pre-clinical phase, with larger scale batch manufacturing and toxicology studies underway (topical and oral administration modes being studied). The clinical study for the psoriasis indication could thus begin in 2023.

In parallel, management is planning to extend their field of research to other inflammatory pathologies such as Crohn's disease, asthma and arthritis.

The group is conducting research, alone or in collaboration with pharmaceutical companies, into applications for humans and animals. For the record, Vétoquinol (a veterinary pharmaceutical laboratory) has been a shareholder since 2017 with a 2.2% stake (raising €0.5m at €25/share).

Agrochemistry

While there has been an awareness for many years of the need to develop products that are both effective and, above all, less harmful to humans and the environment, by offering affordable and operational solutions to the agricultural world, the market is still in its infancy. The transition has accelerated in recent years with more restrictive policies/regulations, particularly in Europe.

Thanks to its technology that allows the identification of new natural substances, PAT has launched several research programmes in this field, in partnership with BASF Agro since 2016 with the aim of developing new fungicides, and with INRAe (National Research Institute for Agriculture, Food and the Environment) since 2020 with the aim of developing new bio-herbicides.

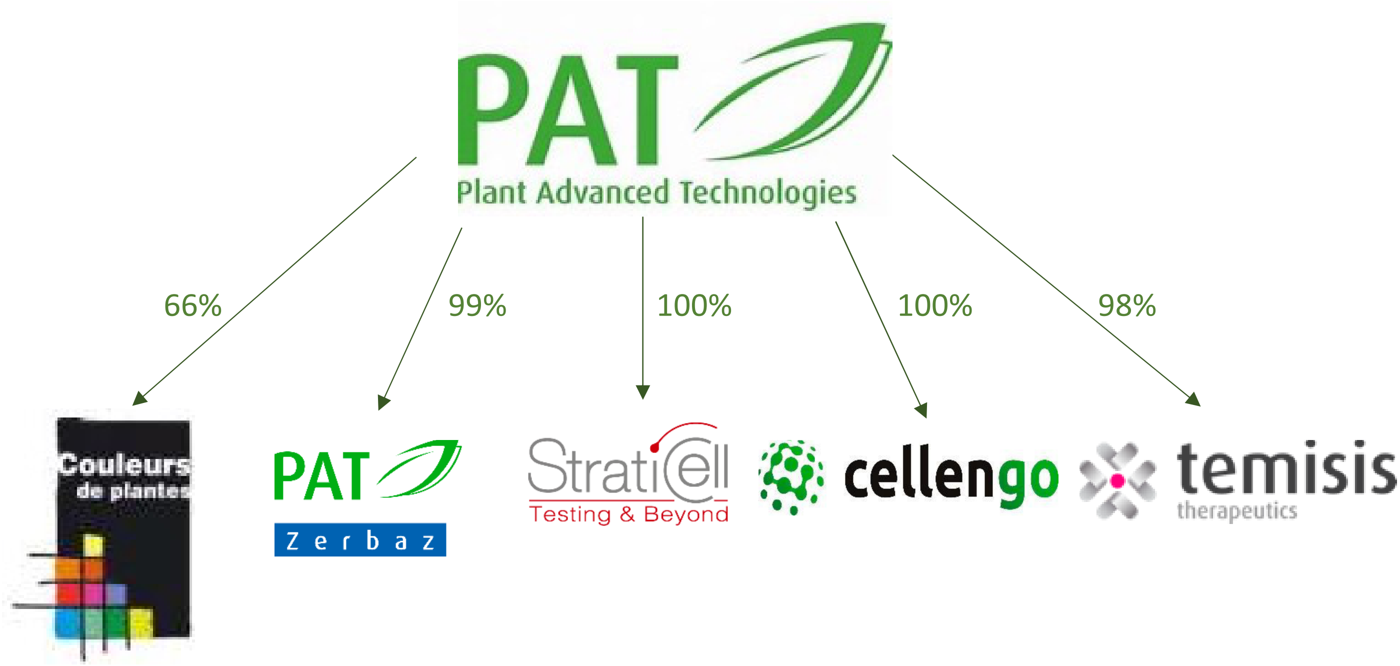
One Company and Five Subsidiaries

Jean-Paul Fèvre and Frédéric Bourgaud, who founded the company, are still in charge of management as Chairman and CEO and Vice President Research, but also of the shareholding, despite the succession of fundraising in recent years. Between them they still hold more than 34% of the company's capital, ahead of Clariant with only 10%.

Even if management and control of the company have not changed much in recent years, this is not the case for the group's structure, which has been enriched by the creation of subsidiaries with promising projects and by acquisitions.

- StratiCell: A Belgian company acquired in 2015 specialising in in vitro efficacy and safety testing of products for the cosmetics industry (skin care products). Revenue of nearly €819k in 2021.
- PAT Zerbaz: Created in 2015 on the Reunion Island, the company is dedicated to the exploitation of local biodiversity based on the parent company’s know-how. Discovery and production thanks to local greenhouses. Revenue reached nearly €413k in 2021.
- Couleurs de Plantes: acquisition of a stake in 2016. Company specialising in the production and extraction of plant-based dyes and pigments (cosmetics, textiles, materials and packaging). Revenue surpassing €569k in 2021.
- Temisis: Created in 2017, development of active molecules for inflammatory diseases (asset contribution worth €2.5m). Strengthening of the teams in 2021 with the arrival of Mathieu Losguardi as Managing Director of the company (experience in M&A in the pharmaceutical sector and evaluation of biotech projects within investment funds), appointment of Director of Pharmaceutical Development and a specialist in immunology and inflammation.
- Cellengo: Founded in 2019, specialising in the development and production of plant-based actives via microbial fermentation (metabolic engineering technology, asset contribution worth €1.5m completed in July 2020).

Graph 1: Organisation chart



Source: PAT

Over the last 15 years, management has been able to deploy, with internal resources but also through partnerships, efficient teams and tools in the field of research and discovery, exploitation and production of plant-based active ingredients.

A Sales Boon That Is Expected to Continue

It should be noted that since the end of 2020, the group has been publishing consolidated data, which gives a better idea of the overall activity and, above all, of the value of the assets developed, as assets have been contributed by certain subsidiaries: Temisis (€2.5m recorded in 2018) and Cellengo (€1.5m realised in 2020), as well as the significant investments made in Reunion Island, for example (PAT Zerbaz, a subsidiary with a budget of over €1m).

Increased Product Sales

Diversified revenue sources

Group revenue, which amounted to €2.3m in 2021, is derived from the production of active ingredients (nearly 60%) and research services (40%) in the form of remuneration by the end client. This revenue was supplemented by subsidies (nearly €1.2m in 2021) and government research tax credits (nearly €1.1m).

The group's strategy aims to diversify its revenue sources for molecules of interest production (products in the catalogue or developed on an exclusive basis) or towards licensing revenues for the use of the technology developed by third parties.

Within its technology platforms, the company aims to provide its customers with technical and economic solutions that will allow them to include a molecule of interest produced by PAT in their final products. In this model, revenues are derived from the supply of the molecule of interest. They therefore depend on the contracted price and the volumes ordered. The objective is to establish multi-year contracts based on the exclusivity of the molecule developed for a particular customer or on so-called catalogue products, as is the case for the first cosmetics customer (Chanel), or with Clariant (co-development and distribution partnership).

Molecule research and discovery should continue. The objective is not to proceed directly to the marketing of new products, a long and costly process in the case of pharmaceutical products, but to conduct preclinical studies, within the company or a dedicated subsidiary, which will highlight the potential of the molecules and arouse the interest of other research companies or pharmaceutical manufacturers. In this case, the patented molecule will either be sold or will be the subject of a licensing agreement. In the first case the income is immediate and fixed, and in the second case the income is deferred but should be recurrent. PAT's ambition is to offer a dual solution: discoverer of molecules of interest and producer of these molecules.

A business strategy that is taking shape

With the added value of the technology developed and the products under development, the group has already achieved successful product and sometimes commercial partnerships with leading companies in most of its target segments.

- Cosmetics: Chanel (2012), Expanscience (2016), Seppic (2017), Clariant (2019), Dermophil and a luxury giant (2021)
- Pharmaceuticals: Vétoquinol (2017)
- Agrochemicals: BASF (2016), INRAe (2020)

The next step is to move to the large-scale marketing phase via the historical partners but also via new commercial agreements. Management is in fact favouring indirect distribution. The commercial conquest, which has been slow to materialise, has begun to accelerate, with the entry into the capital of Clariant in 2019, but also for its subsidiaries.

Sales rebound in 2021, consolidation expected in 2022

For the record, in 2017, the parent company's revenue suffered from order delays from its main customer (product sales activity) and from its strategy of refocusing on internal R&D developments. The activity started to increase again in 2018, reaching €1.1-1.2m of annual revenue (60% product sales, 40% R&D).

The effects of the health crisis (postponement of launches and halt in the development of new products) slightly penalised the group's activity in 2020, with revenue down by -6% to €1.7m, but above all delayed the take-off of molecule sales in the cosmetics segment, which materialised from the beginning of the 2021 financial year.

In 2021, the annual consolidated revenue is €2.3m, up +34% vs. 2020, by company:

- PAT SA: +22% cosmetic ingredients (ramp-up of Clariant contract and new contracts) and research programmes
- Straticell: +39% to €818k in vitro skin testing, driven by the dynamic pharmaceutical sector and US customers
- Couleurs de Plantes: +59% to €569k, producer of plant dyes and pigments, dynamism of the cosmetics segment (strong demand for natural products, increase in sales of the hair care product range) and the textile segment (distribution agreements in Asia for natural dye products for the textile industry)
- PAT Zerbaz: research activity in La Réunion +38% to €413k (neutralised in intra-group)

Table 1: Revenue trends

K€	2015	2016	2017	2018	2019	2020	2021	S1-2022
PAT SA	1 013	1 154	807	1 142	1 173	1 256	1 538	188
Change	12,3%	13,9%	-30,1%	41,5%	2,7%	7,1%	22,4%	-39,9%
Straticell	-	685	815	717	704	590	819	394
Change	-	-	19,0%	-12,1%	-1,8%	-16,2%	38,7%	-5,5%
Couleurs de Plantes	-	315	150	348	412	357	569	366
Change	-	-	-52,3%	132,0%	18,4%	-13,3%	59,2%	4,9%
Temisis	-	-	-	-	-	-	-	-
PAT Zerbaz	-	-	-	-	21	300	413	255
Change	-	-	-	-	-	-	37,6%	-
Cellengo	-	-	-	-	-	-	-	-
Total Sales	**1 013**	**2 154**	**1 772**	**2 207**	**2 310**	**2 504**	**3 339**	**1 203**
Intra-group (estimated)	-	0	223	315	481	785	1 034	307
Consolidated sales (estimated/reported)	**1 013**	**2 154**	**1 549**	**1 892**	**1 829**	**1 719**	**2 305**	**896**
Change	**12,3%**	**112,6%**	**-28,1%**	**22,1%**	**-3,3%**	**-6,0%**	**34,1%**	**-8,6%**

Source: PAT

In H1 2022, activity was down by -9% to €0.9m, due to a lower contribution from historical customers and a slow start for sales with Clariant. Indeed, if the activity of the subsidiaries Straticell (€394k vs. €417k in H1 2021) and Couleurs de Plantes (production and extraction of pigments dyes of plant origin, €366k vs. €349k) confirm the positive trends of 2021, the sale of cosmetic ingredients within PAT SA lagged (revenue of only €188k vs. €313k). During H1, orders from the partnership with Clariant remained low despite the catalogue's three products.

In H2, Couleurs de Plantes should benefit from the completion of certain projects, notably in textile printing, but will be penalised by difficulties in sourcing raw materials (€500k of revenue targeted for the subsidiary in 2022 vs. €569k in 2021). Thanks to third-party study dynamics, Straticell's revenue should accelerate in H2, allowing an increase in activity levels for FY2022: targeted revenue of €900k vs. €819k in 2021. Finally, sales of cosmetic ingredients should return to growth at PAT SA with more significant volumes for Clariant. Overall, the delay seen at the beginning of the year should be made up, and the management expects to generate revenue comparable to that of 2021, with revenue of around €2.3-2.5m.

A Promising Outlook

For the product sales activity, the group is not at the same level of progress in the targeted areas of activity. In cosmetics, the group already has a strong product portfolio:

- historical products such as Edulis, exclusive to Chanel since 2012 (anti-wrinkle active ingredient) and Spirae Exudactive® (product developed and marketed in-house)
- in the catalogue such as Prenylium®, Rootness®, Energize or Rootness® Awake from the partnership signed with Clariant, or with Seppic (Equibiome™) and Expanscience (Neurovity)
- or in the pipeline, 7 new products in the advanced stages of development (to be marketed within 1 to 3 years)

In nutraceuticals, the development of an active ingredient to restore cognitive abilities (housed within the Cellengo subsidiary) is in the preliminary phase, with a market launch not envisaged before 2024. The tests carried out on animals for this molecule have been conclusive and the specifications for launching the clinical study on humans have been drawn up, but before launching the patient recruitment phase (approximately 200 people targeted), technical steps are still necessary in terms of controlling the production of the yeast before moving on to a larger scale (sourcing of the raw material, in-house production of the strain that serves as the basis for fermentation, optimisation of the yeast's performance, etc.).

In pharmaceuticals, while the group is carrying out research in several areas (anti-inflammatory, anti-Alzheimer's, etc.), the most advanced programme concerns the project on the treatment of psoriasis housed within the Temisis subsidiary, which is in the preclinical phase. Animal testing is expected to continue in 2023, with the launch of the phase I study planned for 2024. The clinical studies should probably last about two years, i.e. until the end of 2025 (no invoicing expected for the molecules supplied during this research phase), for a sale or a licensing contract for the molecule by 2025-2026.

Finally, in the field of agrochemicals, the current programmes are still in the early stages of research. Two promising products have already been identified but should not be marketed before 2026.

Table 2: Product pipeline

Market	Product / step	Scope targeted	Client / Partner	Sales time horizon
Cosmetic	Edulis	Anti-aging	Chanel	Already on the market
	Spireae®	Skin moisture	Clariant	Already on the market
	Equibiome®	Skin moisture	Seppic	Already on the market
	Prenylium®	Anti-aging	Clariant	Already on the market
	Rootness® Energize	Skin inflammation	Clariant	Already on the market
	Rootness® Aware	Anti-aging	Clariant	Already on the market
	Neurovity®	Skin regeneration	Expanscience	Already on the market
	Product N°8			
	Product N°9			
	Product N°10			
	Product N°11			
	Product N°12			
Pharma	Clinical phase	Psoriasis		2025-26
Nutraceutic	R&D phase	Memory protection		2024
Agrochemistry	Product N°1			2026
	Product N°2			

Sources : PAT, TPICAP Midcap

Business Forecasts

Based on the current pipeline, product sales activity should be driven mainly by the marketing of cosmetics products, with other application areas taking over in the next two to three years. In cosmetics, given the marketing agreements in place, product sales revenue should probably accelerate from H2 2022. Indeed, the first products launched by Clariant date from the beginning of 2020, have been well received by professionals in the sector, and can now enter the ramp-up phase (18 to 24 months to develop a new product in this segment). It should be noted, however, that sales growth will depend on the success of products that incorporate the group's ingredients (determining the volume effect).

In research, the group should continue its work on behalf of third parties, to prepare the launch of new products or within the framework of collaborative programmes, which should enable it to generate, in our opinion, annual revenue of around €700k.

Overall, our 2022 group revenue forecast stands at €2.4m, +4%, with the acceleration of cosmetic ingredients sales in H2 expected to compensate for the delay in H1, €3.2m for 2023, +46% with an acceleration of volumes with Clariant, and a growth that should exceed 40% in 2024 and 2025 thanks to a growing portfolio of cosmetic ingredients (launches with Clariant, agreements with new partners, etc.) and to the relays offered by nutraceuticals and pharmaceuticals.

Table 3: Summary of revenue forecasts

K€	2019 conso	2020 conso	2021	2022E	2023E	2024E	2025E
Production sold	1 072	975	1 356	1 700	2 500	4 300	6 300
% of sales	59%	57%	59%	71%	78%	86%	90%
R&D	757	744	949	700	700	700	700
% of sales	41%	43%	41%	29%	22%	14%	10%
Total sales	**1 829**	**1 719**	**2 305**	**2 400**	**3 200**	**5 000**	**7 000**
Change	**0,0%**	**-6,0%**	**34,1%**	**4,1%**	**33,3%**	**56,3%**	**40,0%**

Sources: PAT, TPICAP Midcap

Continued Investment

Controlled losses in the past

As the group is still in the research phase, and income has been stable, results have remained negative over the last few years. Despite the implementation of its own research tools and resources (greenhouses in Nancy and Reunion) and the diversification of its fields of application (pharmaceuticals, nutraceuticals, etc.), management has managed to contain its cost structure, which has made it possible to control operating losses (-€2m on average at the group level over the last 3 years).

In addition, the company benefits from subsidies (recorded as exceptional in the corporate accounts, €319k in 2021) and research tax credits (classified as tax, €800k on average in the corporate accounts), which has reduced the average net loss to €800-900k over the last few years.

In the consolidated approach, reported since 2021, the operating losses amounted to -€2.1m in 2021, stable vs. 2020, and the net earnings to -€1.1m vs. -€0.5m in 2020; this result includes an asset depreciation of €453k in 2021 (majority of inventory depreciation) and an exceptional income of €635k in 2020 (capital gain generated by the sale of 1.53% of the Temisis capital) Restated for these items, the restated net result for 2021 was amounted to -€743k in 2021, and -€1,170k in 2020.

Table 4: Results trends

K€ (31/12)	2019 conso	2020 conso	2021 S1	2021 S2	2021 FY	2022 S1
Sales	**1 829**	**1 719**	**980**	**1 325**	**2 305**	**896**
Change in inventories and raw materials	803	782	232	501	733	277
Other charges and external charges	-1 508	-1 602	-885	-949	-1 834	-983
Subsidies	795	752	503	669	1 172	609
Labor costs	-2 910	-3 210	-1 591	-1 696	-3 287	-1 808
Amortisation and provisions	-731	-535	-785	-419	-1 204	-526
EBIT	**-1 722**	**-2 094**	**-1 546**	**-569**	**-2 115**	**-1 535**
EBIT before taxes	-1 822	-2 201	-1 602	-628	-2 230	-1 593
Extraordinaries	48	635	35	27	62	28
Taxes (o/w CIR)	915	1 046	501	555	1 056	523
Net reported profit	**-879**	**-543**	**-1 085**	**-49**	**-1 134**	**-1 052**
Net profit excl. Extraordinaries	**-922**	**-1 170**	**-667**	**-76**	**-743**	**-1 080**

Sources: PAT, TPICAP Midcap

In H1 2022, 2021's trends were confirmed with an operating loss at - €1.5m. The increase in personnel costs was indeed offset by a reduction in asset impairments during the period.

Positive results targeted for 2023

Even if the group should continue to spend on R&D and most probably have to invest in production resources (mainly tools and teams) or strengthen certain support functions (HR, customer care), thanks to the expected take-off of the business and the subsidies obtained (€6.5m to be recorded in the next 3 to 4 years), we believe that losses should be reduced in parallel with the growth of the business, with the break-even point being reached in our forecasts by 2023, including the research tax credits (in line with management's objectives).

However, once critical mass is reached, given the nature of the active ingredients produced (very high MB/revenue) and the additional revenue obtained from technology licensing contracts, the margins generated by the group should be structurally high (double-digit margins expected).

Table 5: Summary of the results forecast

K€ (31/12)	2019 conso	2020 conso	2021	2022E	2023E	2024E	2025E
Sales	**1 829**	**1 719**	**2 305**	**2 400**	**3 200**	**5 000**	**7 000**
Change in inventories and raw materials	803	782	733	1 000	1 200	850	500
Other charges and external charges	-1 508	-1 602	-1 834	-1 968	-2 048	-2 425	-3 185
Subsidies	795	752	1 172	1 300	1 600	1 800	1 800
Labor costs	-2 910	-3 210	-3 287	-3 648	-3 840	-4 100	-4 256
Amortisation and provisions	-731	-535	-1 204	-900	-900	-1 000	-1 000
EBIT	**-1 722**	**-2 094**	**-2 115**	**-1 816**	**-788**	**125**	**859**
EBIT before taxes	-1 822	-2 201	-2 230	-1 984	-932	33	783
Extraordinaries	48	635	62	0	0	0	0
Taxes (o/w CIR)	915	1 046	1 056	1 100	1 200	1 200	1 200
Net reported profit	**-879**	**-543**	**-1 134**	**-907**	**244**	**1 207**	**1 956**
Net profit excl. Extraordinaries	**-922**	**-1 170**	**-743**	**-907**	**244**	**1 207**	**1 956**

Source: PAT, TPICAP Midcap

An ability to attract investors

Regular financing needs (…)

In addition to operational losses, in recent years the group has made several investments in its research tools (laboratories, equipment, etc.) and production tools with the purchase of greenhouses and land in Nancy (2013 and 2016), or the investments made to set up a greenhouse in Reunion. In addition, acquisitions and the creation of subsidiaries have also mobilised cash. Overall, in recent years, PAT has generated an annual financing requirement of €1m (on average on a consolidated basis).

Table 6: Synthetic flow table (PAT SA before 2020)

en K€	2015	2016	2017	2018	2019	2020	2020 conso	2021
Operating cash	-86	-813	-186	-500	-220	-454	-512	191
Capex	-1 208	-1 838	-1 665	-976	-766	-635	-577	-1 186
Change in WCR	-1 224	60	128	394	348	-217	590	-578
Financial investments	-446	-90	-518	-3 215	-704	-1 575	-1 305	0
Total cash generation or need	**-2 880**	**-1 867**	**-1 987**	**-1 540**	**-1 001**	**-2 740**	**-860**	**-1 108**
Increase of dette	-272	159	264	1 104	-301	1 490	2 109	392
Capital increase	6 254	0	488	1 078	2 177	0	24	-40
Change in cash and cash equivalent	3 102	-1 708	-1 235	642	875	-1 250	1 276	-757

Source: PAT

It should be noted that although the activities of Temisis and Cellengo have, until now, been financed almost exclusively by the company, the situation could change. Indeed, the cost of the clinical studies will be substantial, in the order of €10m for Temisis (preclinical phase and clinical trials), and €1 to 2 million for the technical phase before the launch of the clinical study for Cellengo (probably several million euros for the clinical study itself). Management has already indicated their intention to seek outside investors.

For Temisis, a fundraising of €1.6m (based on a pre-money valuation of €40m) was completed at the end of 2020. Overall, the company is aiming to raise €3-5m for the first tranche, which should probably be accelerated with the recruitment of Mathieu Losguardi as Managing Director due to his experience.

(…) fulfilled by successful capital increases

Overall, since its listing on Euronext Access in 2009 (fundraising from individuals as part of the ISF PME scheme), the group has raised more than €14m through capital increases, half from the public and half by bringing in industrialists from the sector: Vétoquinol in 2017 (animal health specialist, shareholder of 2% of the capital) and Clariant in 2019 (specialty chemicals, shareholder of 10% of the capital).

Table 7: History of fundraising since the listing

Year	Cash raised (M€)	Operation
2009	0,5	Listing on Euronext Access (ISF PME)
2010	1,5	Capital increase (ISF PME)
2014	1,0	Capital increase (ISF PME)
2015	7,3	Transfer on Alternext (public offering)
2017	0,5	Vetoquinol entry in the capital (25 € per share)
2018	1,1	Raise of cash from industrials and l'Institut Lorrain de participation (20 € per share)
2019	2,2	Entry of Clariant in the capital (20 € per share)
Total	**14**	

Sources: PAT, TPICAP Midcap

Thanks to a controlled consumption of cash and their know-how in fundraising, the founders remain the main shareholders of the company: Jean-Paul Fèvre, the current CEO, holds 28% of the capital (as at 30 June 2022, via his holding company and in his own name), Frédéric Bourgaud, the current VP of Research, holds 6% of the capital, and Eric Gontier, who is not in the company, holds 3%, i.e. more than 37% of the capital between the three.

Needs under control

Due to operating losses that should remain under control and thanks to the strategy of spinning off projects that have reached the clinical research phase, we estimate that financing needs in the coming years will mainly concern the support of the ramp-up of ingredient sales via investment in production capacity and the probable increase in working capital.

As in the past, we estimate cash consumption at just over €1m for 2022, a near break-even situation in 2023, and positive cash generation from 2024.

Table 8: Consumption/cash generation forecasts

en K€	2020	2020 conso	2021	2022E	2023E	2024E	2025E
Capacité d'autofinancement	-454	-512	191	16	1 168	2 233	2 983
Capex	-635	-577	-1 186	-1 200	-1 120	-1 000	-1 050
Variation du BFR	-217	590	-578	57	-192	-792	-850
Investissements financiers	-1 575	-1 305	0	0	0	0	0
Total des besoins/ressources de financement	**-2 740**	**-860**	**-1 108**	**-1 097**	**-104,0**	**480,8**	**1122,8**
Augmentation de la dette	1 490	2 109	392	0	-500	-500	-500
Augmentation de capital	0	24	-40	0	0	0	0
Variation de la trésorerie	-1 250	1 276	-757	-1 097	-604	-19	623

Sources: PAT, TPICAP Midcap

With a cash position of €2.5m at the end of 2021 and €1.6m at the end of June 2022, and the securing of subsidies (more than €6.5m to date), we believe that the group has no short-term financing problems.

However, as the horizon for generating positive FCF is still a little distant and given the possible launch of new development projects (new pharmaceutical and nutraceutical applications, etc.), we believe that management, while maintaining their concern to limit the dilution of the historical shareholders, could choose to raise one or more capital funds in the years to come in order to give themselves a few margins of safety.

Valuation

Valuation by the stock market peer comparisons

Within the sector, most suppliers are neither producers (for cultivated plants) nor collectors (for wild plants) of the raw material. PAT's positioning, which ranges from research to the production of plant-based molecules of interest, is in this sense rather singular. This enables it to control the entire chain and to discover new molecules and/or optimise the production of existing molecules, and ultimately offers it the potential for higher margins. There is no directly comparable listed company.

Furthermore, although there are many small players in the ingredients segment, whether for the cosmetics, nutraceutical, food or pharmaceutical sectors, as soon as they reach a significant size they are most often bought out by the sector's majors. Our sample is thus composed of listed companies of significant size that operate in the field of ingredients, essentially in the perfume and cosmetics sector.

Table 9: Characteristics of market peer comparison companies

Company	Price* (€)	Market Cap. (M€)	Sales 2021 (M€)	EBIT 2021 (M€)	EBIT/Sales 21
Sensient Technologies	70,9	2 982	1 168	144	12,3%
Chr Hansen Holding	59,5	7 840	1 077	296	27,4%
International Flavors	96,2	24 517	9 861	755	7,7%
Groupe Berkem	5,3	92	39	2,4	6,2%
Robertet	1 958,5	1 958,5	606	94	15,4%
Givaudan	3 302,4	30 474	6 185	1 005	16,2%
Symrise	110,1	15 389	3 845	499	13,0%
Kerry Group A	92,6	16 395	7 351	804	10,9%
Tate & Lyle	8,6	3 412	1 617	195	12,1%
PAT	**15,6**	**17,0**	**2,4**	**-1,8**	**Ns**

*Priec on 28th november 2022

Sources: Factset, TPICAP Midcap

The median of the valuation multiples in our sample is 2.9x for 2022 revenue multiples, 15.5x EBITDA and 23.7x EBIT. Given the company's level of maturity, at the start of the marketing of its products, with a still low revenue and results that should be negative for a few more years, we believe that the stock market comparison approach is not very relevant. Therefore, we have chosen not to use this method in our valuation of the company.

Table 10: Multiples of market peer comparison companies

Company	PE		EV/Sales		EV/EBITDA		EV/EBIT	
	2022	2023	2022	2023	2022	2023	2022	2023
Sensient Technologies	22,2	21,4	2,6	2,5	14,8	14,0	18,8	17,8
Chr Hansen Holding	31,1	28,1	6,7	6,3	18,7	17,3	24,5	22,2
International Flavors	18,1	17,1	2,9	2,9	14,6	14,0	30,1	23,7
Groupe Berkem	33,0	20,8	1,9	1,7	11,2	8,7	21,9	13,7
Robertet	25,4	23,6	2,9	2,7	15,5	14,5	19,4	17,9
Givaudan	34,1	30,3	4,9	4,7	23,0	21,9	30,7	28,3
Symrise	34,0	31,8	3,6	3,4	17,1	16,2	24,5	22,8
Kerry Group A	21,8	21,5	2,6	2,4	17,5	16,7	23,7	22,4
Tate & Lyle	15,8	14,2	1,8	1,6	10,0	9,2	13,8	12,6
Médiane	**25,4**	**21,5**	**2,9**	**2,7**	**15,5**	**14,5**	**23,7**	**22,2**
PAT	Ns	Ns	9,0	6,8	Ns	Ns	Ns	Ns

Sources : Factset, TPICAP Midcap

DCF valuation method

We have based our modelling on the following assumptions:

- Sustained growth in terms of activity thanks to the relatively strong product pipeline
- An operating margin that will reach 25% at cruising speed
- No tax payments for several years, once the company becomes profitable (tax deferral of more than €13m at the end of 2021)
- A working capital that will evolve in parallel with the activity
- A discount rate of 13.0%
- A perpetual cash flow growth rate of 1.5%.

Table 11: DCF scenario

EURm	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Sales	**3,2**	**5,0**	**7,0**	**9,5**	**12,3**	**15,4**	**18,5**	**20,3**	**21,4**	**22,0**
Change	*33%*	*56%*	*40%*	*35%*	*30%*	*25%*	*20%*	*10%*	*5%*	*3%*
EBITDA	0,1	1,1	1,9	2,6	3,5	4,3	5,3	5,9	6,2	6,6
EBITDA margin	3,5%	22,5%	26,6%	27,0%	28,0%	28,0%	28,5%	29,0%	29,0%	30,0%
% of sales	28,1%	20,0%	14,3%	-93,0%	7,0%	6,0%	5,0%	4,5%	4,3%	4,1%
ROC	**-0,8**	**0,1**	**0,9**	**1,4**	**2,2**	**3,1**	**4,1**	**4,7**	**5,1**	**5,5**
EBIT margin	-24,6%	2,5%	12,3%	15,0%	18,0%	20,0%	22,0%	23,0%	24,0%	25,0%
Growth	Ns	Ns	Ns	65,0%	56,5%	38,9%	32,0%	15,0%	9,6%	7,3%
Tax	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
Tax rate	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns
NOPAT	**0,4**	**1,3**	**2,1**	**2,6**	**3,4**	**4,3**	**5,3**	**5,9**	**6,3**	**6,7**
Amortization	0,9	1,0	1,0	1,1	1,2	1,2	1,2	1,2	1,1	1,1
D&A of sales	28,1%	20,0%	14,3%	12,0%	10,0%	8,0%	6,5%	6,0%	5,0%	5,0%
Change in WCR	-0,2	-0,8	-0,9	-0,9	-1,2	-1,2	-1,0	-0,4	-0,2	0,0
WCR	2,2	3,0	3,9	4,7	5,9	7,1	8,1	8,5	8,8	8,8
% Gross Revenues	69,0%	60,0%	55,0%	50,0%	48,0%	46,0%	44,0%	42,0%	41,0%	40,0%
Operating CF	**1,1**	**1,5**	**2,2**	**2,9**	**3,5**	**4,3**	**5,4**	**6,7**	**7,2**	**7,8**
Investments	-1,1	-1,0	-1,1	-1,1	-1,1	-1,1	-1,0	-1,0	-1,1	-1,1
% sales	35,0%	20,0%	15,0%	12,0%	9,0%	7,0%	5,5%	5,0%	5,0%	5,0%
Free Cash flows	**0,0**	**0,5**	**1,2**	**1,8**	**2,4**	**3,3**	**4,4**	**5,7**	**6,1**	**6,7**
Growth	Ns	Ns	Ns	53%	36%	35%	35%	29%	8%	9%
% of Sales	0,0%	10,7%	16,6%	18,8%	19,6%	21,2%	23,9%	27,9%	28,7%	30,3%
Discounted FCF	0,0	0,4	0,8	1,1	1,3	1,6	1,9	2,1	2,0	2,0
Sum of FCF	13,2									
Terminal Value	17,1									
Infinite growth	1,5%									
Wacc	**13,0%**									
Enterprise value	**30,3**									
Net Debt	3,7									
Valeur des participations	0,1									
Equity value	**26,8**									
Nb of share	1,1									
Implied fair value (EUR)	**24,6**									

Source: TPICAP Midcap

Overall, our DCF valuation approach results in a valuation of €24.6/share.

Table 12: Sensitivity tables

		WACC				
		11,0%	12,0%	**13,0%**	14,0%	15,0%
Infinite growth	1,0%	32,1	27,6	23,9	20,9	18,3
	1,5%	33,2	28,4	**24,6**	21,4	18,7
	2,0%	34,5	29,4	25,3	21,9	19,1

		Long term operating margin				
		23,0%	24,0%	**25,0%**	26,0%	27,0%
Infinite growth	1,0%	22,8	23,3	23,9	24,5	25,0
	1,5%	23,4	24,0	**24,6**	25,1	25,7
	2,0%	24,1	24,7	25,3	25,9	26,5

Source: TPICAP Midcap

Valuation Summary

Having discarded the stock market comparison method, our price target is aligned with the DCF valuation of €24.6/share, which offers an upside of more than 50% compared to the current price. The progress of Temisis' clinical studies and the work carried out within Cellengo could offer the group a significant potential for revaluation.

We believe that the share price could resume its upward trend as soon as the acceleration of product sales is confirmed. Therefore, we are recommending a Buy rating.

FINANCIAL DATA

Income Statement	12/19	12/20	12/21	12/22e	12/23e	12/24e
Sales	1.2	1.3	2.3	2.4	3.2	5.0
Changes (%)	2.7	7.1	83.5	4.1	33.3	56.3
Gross profit	1.3	1.4	2.9	3.0	3.9	6.1
% of Sales	110.8	112.7	127.0	125.0	121.9	121.0
EBITDA	**-1.0**	**-1.2**	**-0.9**	**-0.9**	**0.1**	**1.1**
% of Sales	-81.9	-99.5	-39.5	-38.2	3.5	22.5
Current operating profit	**-1.5**	**-1.6**	**-2.8**	**-3.1**	**-2.4**	**-1.7**
% of Sales	-132.1	-127.1	-123.1	-129.8	-74.6	-33.5
Non-recurring items	0.0	0.0	1.2	1.3	1.6	1.8
EBIT	-1.5	-1.6	-2.1	-1.8	-0.8	0.1
Net financial result	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1
Income Tax	0.8	0.8	1.1	1.1	1.2	1.2
Tax rate (%)	59.7	55.2	48.7	55.4	128.8	-3,659.7
Net profit, group share	**-0.5**	**-0.7**	**-1.1**	**-0.9**	**0.2**	**1.2**
EPS	na	na	na	na	0.22	1.08

Financial Statement	12/19	12/20	12/21	12/22e	12/23e	12/24e
Goodwill	0.0	0.0	0.0	0.0	0.0	0.0
Tangible and intangible assets	5.5	4.4	9.4	9.7	9.9	9.9
Financial assets	2.8	5.2	0.1	0.1	0.1	0.1
Working capital	1.5	1.9	2.1	2.0	2.2	3.0
Other Assets	1.6	2.0	0.0	0.0	0.0	0.0
Shareholders equity group	10.0	9.5	7.7	6.8	7.0	8.2
Minorities	0.0	0.0	0.2	0.0	0.0	0.0
LT & ST provisions and others	0.0	0.0	0.1	0.3	0.4	0.4
Net debt	1.4	4.0	3.7	4.7	4.9	4.4
Other liabilities	4.0	7.0	12.0	13.0	14.0	15.0
Liabilities	11.5	13.6	11.6	11.8	12.3	13.1
Net debt excl. IFRS 16	1.4	4.0	3.7	4.7	4.9	4.4
Gearing net	0.1	0.4	0.5	0.7	0.7	0.5
Leverage	-1.5	-3.2	-4.0	-5.2	43.3	3.9

Cash flow statement	12/19	12/20	12/21	12/22e	12/23e	12/24e
ΔWCR	0.3	-0.2	-0.6	0.1	-0.2	-0.8
Net capex	-1.1	-2.1	-1.1	-1.2	-1.1	-1.0
FCF	-0.6	-1.3	-1.6	-1.1	-0.1	0.4
Acquisitions/Disposals of subsidiaries	-1.5	-2.2	-1.2	-1.2	-1.1	-1.0
Other investments	0.0	0.0	0.4	0.0	0.0	0.0
Change in borrowings	-0.3	1.5	0.4	0.0	-0.5	-0.5
Dividends paid	0.0	0.0	0.0	0.0	0.0	0.0
Repayment of leasing debt	0.0	0.0	0.0	0.0	0.0	0.0
Others	2.2	0.0	-0.0	0.0	0.0	0.0
Changes in exchange rates	0.0	0.0	0.0	0.0	0.0	0.0
Change in net cash over the year	0.9	-1.3	-0.8	-1.1	-0.6	-0.0

ROA (%)	na	na	na	na	2.3%	9.3%
ROE (%)	na	na	na	na	3.8%	15.0%
ROCE (%)	na	na	na	na	5.6%	na

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1. DCF method: discounting of future cash flows generated by the company's operations. Cash flows are determined by the analyst's financial forecasts and models. The discount rate used corresponds to the weighted average cost of capital, which is defined as the weighted average cost of the company's debt and the theoretical cost of its equity as estimated by the analyst.
2. Comparable method: application of market valuation multiples or those observed in recent transactions. These multiples can be used as references and applied to the company's financial aggregates to deduce its valuation. The sample is selected by the analyst based on the characteristics of the company (size, growth, profitability, etc.). The analyst may also apply a premium/discount depending on his perception of the company's characteristics.
3. Assets and liabilities method: estimate of the value of equity capital based on revalued assets adjusted for the value of the debt.
4. Discounted dividend method: discounting of estimated future dividend flows. The discount rate used is generally the cost of capital.
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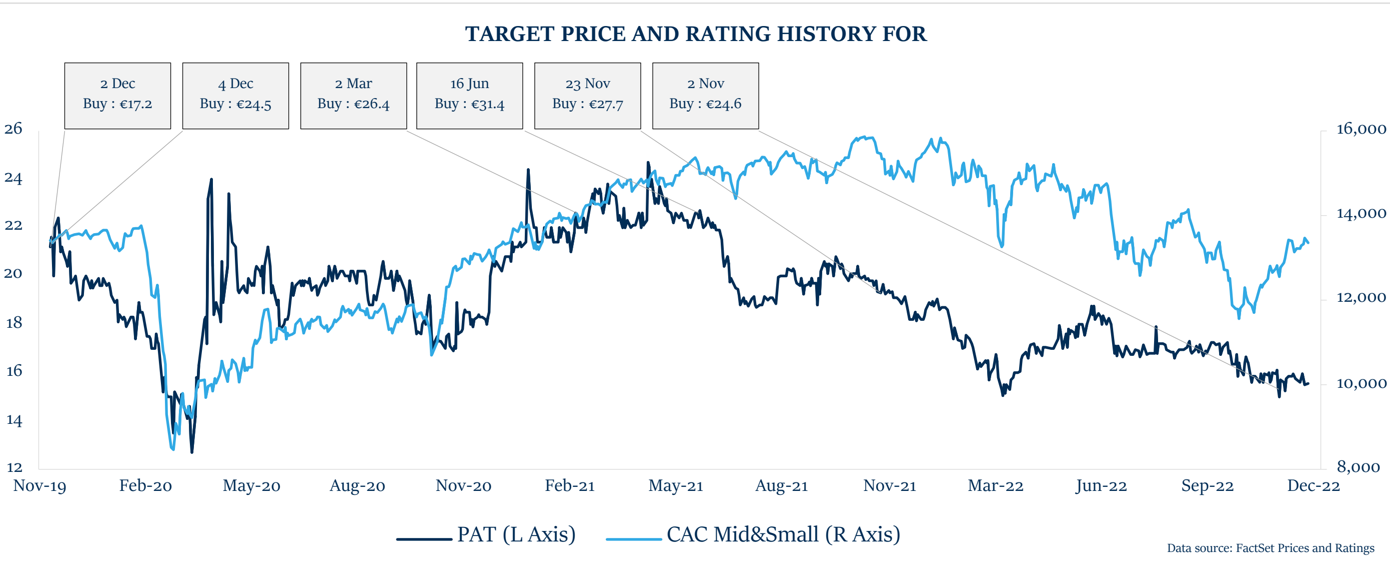

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Sell	1%	0%
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