Q+A

Biophytis

Equity Research from Kepler Cheuvreux

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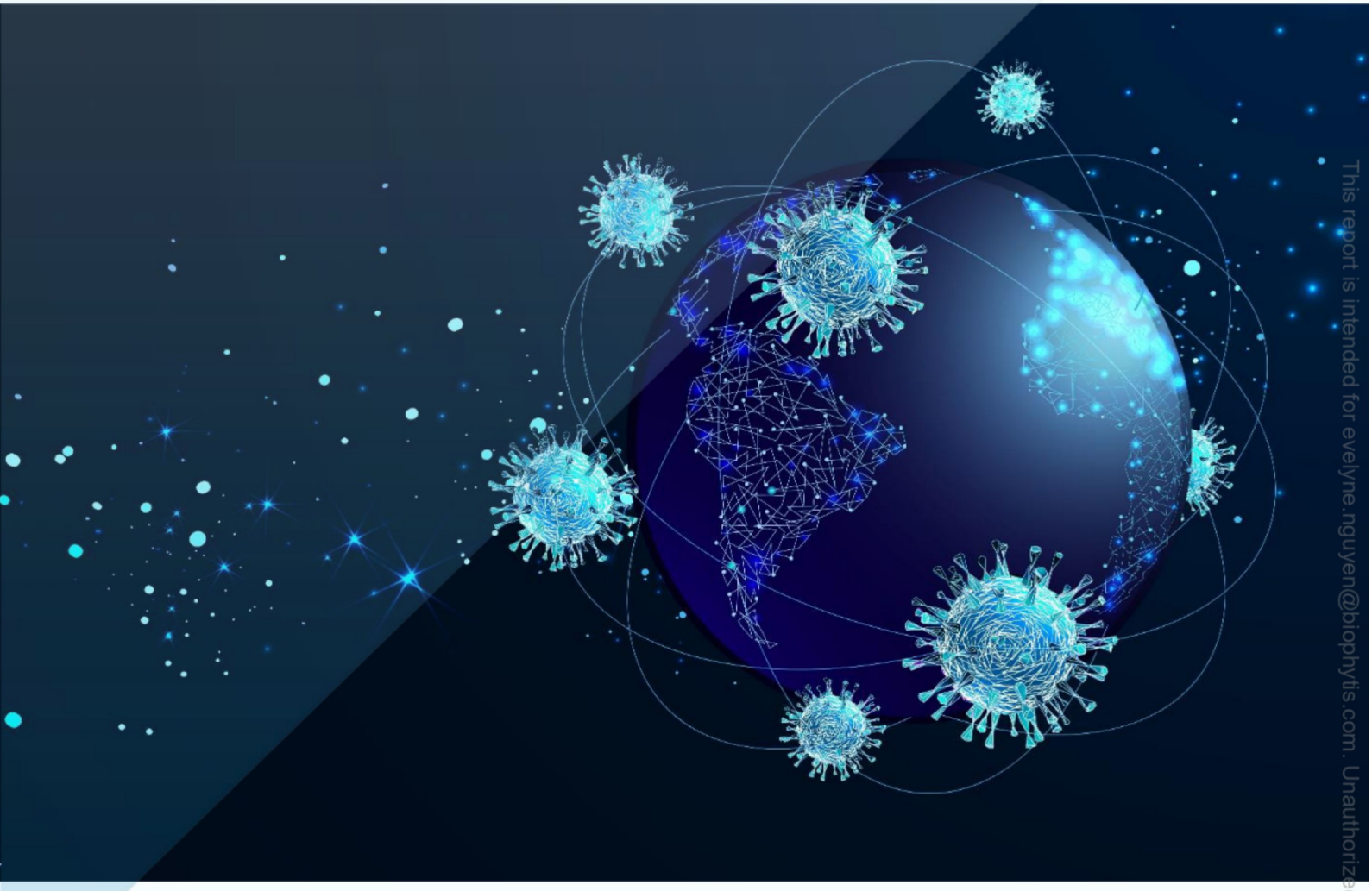
Market data as of: 04 December 2020

France | Pharma & biotech

MCap: EUR61.9m



Q. Will 2021 be a pivotal year for Biophytis?

Biophytis is now developing its main drug candidate, Sarconeos (BIO101), for the treatment and/or prevention of COVID-19-induced pneumonia and for sarcopenia. While the pandemic has slowed down the course of the SARA-INT study (sarcopenia), the enrolment of the COVA study (COVID-19) seems to be accelerating with the second wave of the pandemic. The company is expected to release first efficacy results for both the COVA and SARA-INT studies as early as H1 2021. 2021 should see the publication of important clinical results that will determine the future of Biophytis. Therefore, we wonder about the probability of success of these various clinical studies.

See our answer inside…

Hold (Reduce)

Target Price:	EUR0.66 (0.27)
Current Price:	EUR0.62
Up/downside:	6.5%
Change in TP:	141.1%
Change in Adj.	0.3% 20E/NM+ 21E

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Q+A in 1 minute

Change in Sales: down nm 20E/up nm
Change in Adj EBIT: -4.1% 20E/NM+ 21E

Bloomberg: ALBPS FP	Reuters: ALBPS.PA
Free float	74.5%
Avg. daily volume (EURm)	3.8
YTD abs performance	211.6%
52-week high/low (EUR)	2.65/0.16

FY to 31/12 (EUR)	12/20E	12/21E	12/22E
Sales (m)	0.0	99.7	124.3
EBITDA adj (m)	-17.9	79.5	114.7
EBIT adj (m)	-18.1	79.2	114.4
Net profit adj (m)	-22.4	68.5	98.9
Net financial debt (m)	-1.3	-70.3	-168.4
FCF (m)	-21.9	68.4	97.5
EPS adj. and ful. dil.	-0.22	0.69	0.99
Consensus EPS	na	na	na
Net dividend	0.00	0.00	0.00
FY to 31/12	**12/20E**	**12/21E**	**12/22E**
P/E adj and ful. dil.	na	0.9	0.6
EV/EBITDA	na	na	na
EV/EBIT	na	na	na
FCF yield	-35.4%	110.6%	157.6%
Dividend yield	0.0%	0.0%	0.0%
ND(F+IFRS16)/EBITDA	0.1	-0.9	-1.5
Gearing	-78.5%	-100.2%	-99.6%
ROIC	na	na	na
EV/IC	na	3.1	61.0

A. Yes, but uncertainties remain

- Biophytis is one of the companies focusing on treating pulmonary symptoms and preventing the risk of deterioration from COVID 19-induced pneumonia.
- The company has demonstrated in preclinical models that Sarconeos (BIO101) acts on a receptor of the renin-angiotensin system (RAS) called the MAS receptor. This physiological system is present in many organs.
- Several preclinical studies have shown that the Sars-Cov-2 virus attacks one of the RAS enzymes called Angiotensin Converting Enzyme type 2 (ACE2). This link between the virus and the ACE2 is believed to cause various symptoms of COVID 19-induced pneumonia. Action on the MAS receptor could theoretically counteract these effects. Nevertheless, to date, there is only little data from preclinical and phase I studies to support the belief that BIO101 can be effective in COVID 19-induced pneumonia or in sarcopenia.
- Due to the lack of clinical data, we believe there are still uncertainties about the potential success of clinical programmes (SARA-INT and COVA). Furthermore, the active clinical pipeline only relies on the BIO101 development. Failure in either SARA-INT or COVA could hamper Biophytis's future.
- The growth of the pandemic could benefit the COVA enrolment and BIO101 future sales. While BIO101 is likely to be a therapeutic option, there are upcoming vaccines and COVID 19-related treatments that will reach the market in the near future. We still forecast sales of c. EUR290m within two years for BIO101.
- Although challenging, the COVA clinical programme could allow Biophytis to transform from 2021 into a commercial biotech company. If positive, Biophytis could generate revenues from 2021. Consequently, we raise Biophytis's TP from EUR0.27 to EUR0.66 and change our rating to Hold, as we believe that the current share price already includes the COVA programme in the market valuation.

Research Framework

Investment case

- Biophytis has developed two plant-based screening platforms to identify potential APIs for the treatment of diseases associated with ageing: Sarcob and Maculia.
- The first platform identified, BIO101, is developed for Sarcopenia, Duchenne Muscular Dystrophy (DMD) and respiratory syndrome associated with COVID-19.
- Biophytis has already carried out a phase I trial with BIO101, which was deemed to have a clean safety profile. Despite this, and the potentially lucrative market, BIO101 still needs to demonstrate the clinical efficacy. Biophytis also entered in the race against COVID-19 with the BIO101. The company is running a phase II/III trial (COVA).

Catalysts

- Top-line results from SARA-INT phase IIb in sarcopenia are expected in H1 2021E.
- Results from COVA phase II/III study are expected in H1 2021E.
- Biophytis should launch MYODA clinical trial in H1 2021.

Valuation methodology

- Our rNPV based valuation model includes sarconeos (BIO101) in sarcopenia and in COVID-19-induced pneumonia. We consider other assets (i.e. BIO101 in DMD) as free options given their early stage of development.
- We set the discount rate at 15%, which is in line with the biotechnology environment.
- Note that we do not include the dilution arising from ORNANE and issuance of BSAs.

Risks to our rating

- Main risk with Biophytis' pipeline is clinical failure to demonstrate efficacy with BIO101 in SARA-INT study and in COVA study.
- Dilution arising from Atlas convertible bonds and share subscription warrants.

Biophytis **Hold | Target Price:** EUR0.66

Company description

Biophytis is a France-based biotechnology company focused on the development of treatments for diseases associated with aging, particularly those affecting muscular and visual functions. Biophytis's leading assets are BIO101, developed for sarcopenia, and BIO201, developed for the intermediate AMD indication. Both have plant-derived APIs.

Management

Stanislas Veillet, CEO
Dr. Samuel Agus, CMO
Evelyne Nguyen, CFO

Key shareholders

Management	3.20%

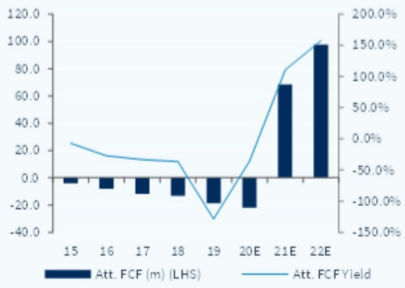
Key data charts

Price performances

Sales in sarcopenia(EURm)

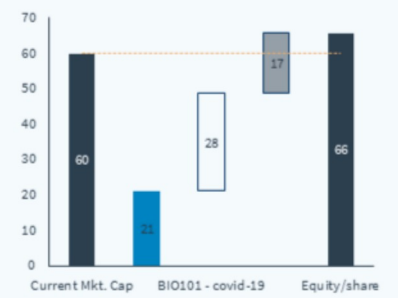
Sales in COVID-19 (EURm)

FCF



Biophytis revenues (EURm)

Sum of the parts (EURm)



SWOT analysis

Strengths

- Outsourcing R&D drives low cash outflow
- Strong potential to generate deals
- Fast clinical development in covid-19

Weaknesses

- No proprietary technology
- Limited back-up developments
- Limited intellectual property protection for ongoing research

Opportunities

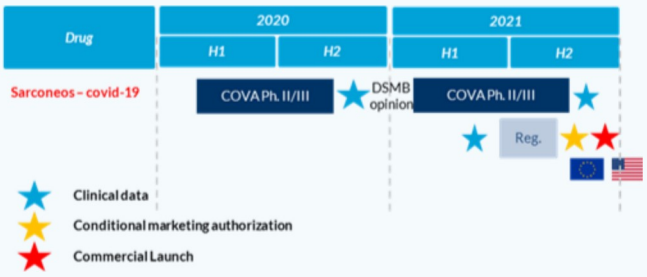
- A number of indications with no addressed medication
- Sarcopenia is an indication of emerging interest in pharma
- Large market potential for the AMD indication

Threats

- Failure in clinical trials
- Many candidates for the dry AMD indication failed
- Sarcopenia is still not clearly defined by agencies
- Adoption rates of pharmacological treatments for sarcopenia

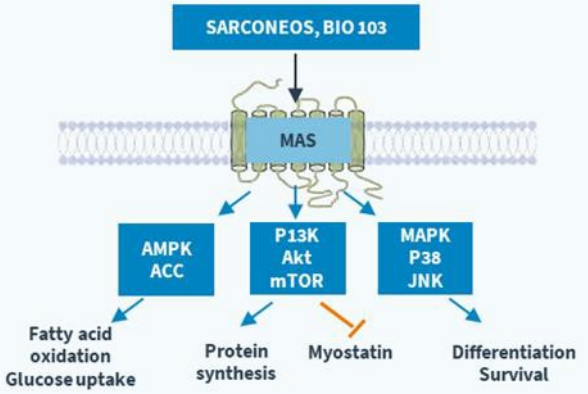
Investment case in six charts

Chart 1: Development timeline for BIO101 in COVID-19



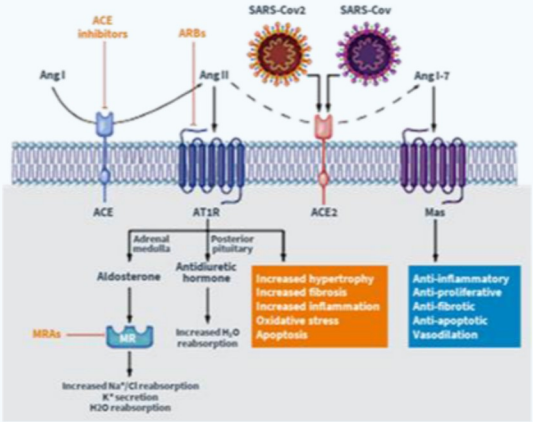
Source: Kepler Cheuvreux

Chart 2: BIO101 mechanism of action



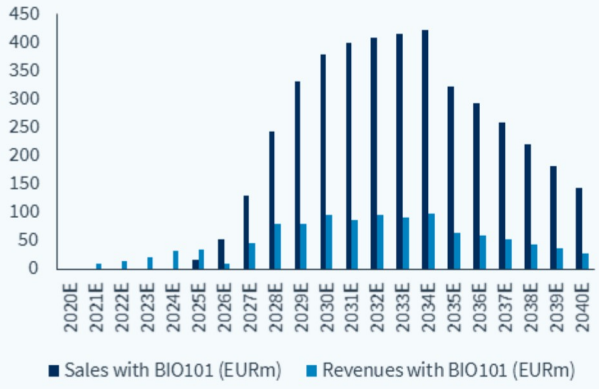
Source: Kepler Cheuvreux

Chart 3: Sars-Cov-2 infection mechanism



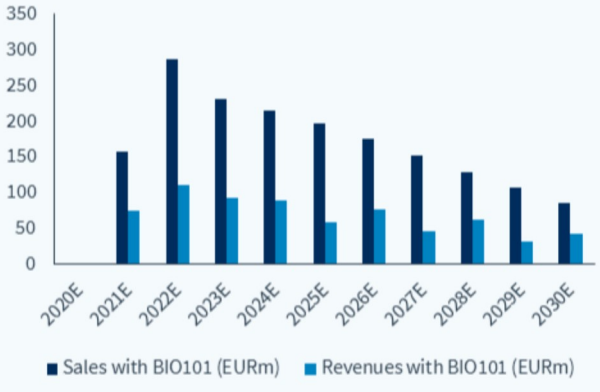
Source: Kepler Cheuvreux

Chart 4: BIO101 sales (partners) and revenues (Biophytis) in sarcopenia



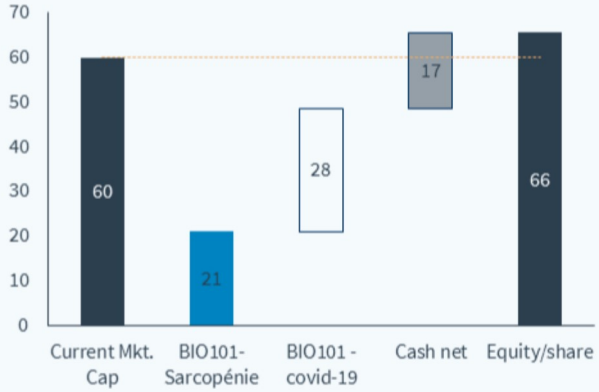
Source: Kepler Cheuvreux

Chart 5: BIO101 sales (partners) and revenues (Biophytis) in COVID-19



Source: Kepler Cheuvreux

Chart 6: Sum of the parts – Biophytis (EURm)



Source: Kepler Cheuvreux

Contents

Will the COVA study be a game-changer for Biophytis?

The company's share price benefited from the effects of announcements on COVID-19. In particular, with the launch of its international COVA study, Biophytis entered the fight against COVID-19 in April, with the launch of its COVA clinical programme for the treatment and/or prevention of COVID 19-induced pneumonia. Progress in the opening of recruitment centres (in the US, France, and Brazil) also contributed to the rise in its share price.

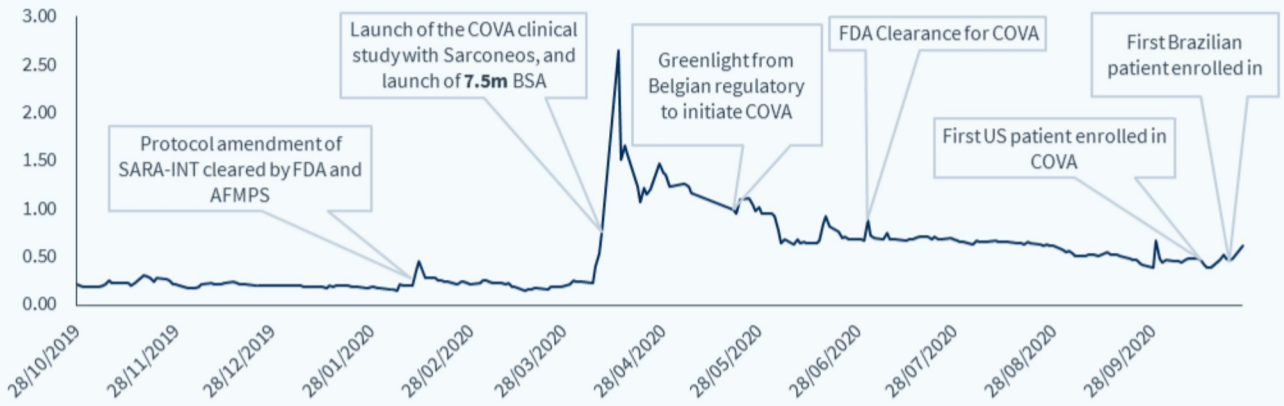
Biophytis's progress is not going unnoticed. Sarconeos could reach the market fast after completion of the phase II/III COVA study. First data is expected in H1 2021, with a potential commercial launch as early as H2 2021. This could allow the company to enhance its scope by signing a partnership agreement for the commercialisation of Sarconeos in 2021.

In addition, although the rate of progress of the COVA study is accelerating, the phase IIb SARA-INT (in sarcopenia) was slowed down due to the pandemic. However, Biophytis is due to release first efficacy and safety results from SARA-INT in H1 2021. This could enable Biophytis to: 1) make progress in terms of its search for development and marketing partners for BIO101 in the treatment of sarcopenia; and 2) provide reassurance about the therapeutic effects related to BIO101's mechanism of action on the MAS receptor.

As a result of Biophytis's clinical progress, we wonder what the chances of success are for the company's pipeline, and what the impact could be on the company's valuation in 2021.

Share price boosted by COVID-19 announcements

Chart 7: Biophytis's share price performance



Source: Thomson Reuters

Two main factors contributed to a significant rise in the share price towards EUR2.65 in April: the launch of the COVA study in the same month, supported by a 7.5m BSA (share subscription warrants) issuance.

On 7 April, Biophytis announced the initiation of the COVA clinical study evaluating Sarconeos as a potential treatment for respiratory failure associated with COVID-19.

Consequently, the rise in the share price was mainly fuelled by: 1) news about the progress of the COVA study, including the authorisation by various regulatory agencies (in Belgium, the US, France, and the UK) to launch the study; and 2) the announcement of the dosing of the first patients in several countries.

Nevertheless, reactions varied by country: the announcement of the inclusion of the first patient in Brazil was positively received (c. +30%), while the inclusion of the first patient in the US had the opposite effect.

On the same day, the company launched a public offering of c. 7.5m share subscription warrants (BSA) at a unit price of EUR0.06.

On 8 April, investors started to benefit from a non-negotiable and non-transferable subscription priority period between 9 April 2020 and 21 April 2020 included. Note that the BSA can **be exercised at a price of EUR0.27 per new share (closing price on 6 April: EUR0.23) over a five-year period. Each BSA gives its holder the right to subscribe to one new Biophytis share.**

Faster progress in COVA study recruitment

Study design

The COVA clinical study is a global multicentre, double-blind, placebo-controlled, group sequential phase II/III study targeting patients with SARS-CoV-2 pneumonia and severe respiratory manifestations, who are treated for up to 28 days with BIO101 (350mg/d) or placebo. The primary end-point is the proportion of participants with either all-cause mortality or respiratory failure, and the key secondary end-point is the proportion of participants who are discharged home.

The study enrolment occurs in two parts:

- Part one with 50 participants and a focus on the safety data, which will facilitate the beginning of recruitment of part 2.

At the end of part one (Q4 2020E), an independent data monitoring committee (iDMC) will review the safety data, followed by an analysis of the efficacy data, for indication of activity. Disclosure of the result of the efficacy analysis will occur if the DMC deems it necessary from a public health perspective and in agreement with the regulatory authorities.

- Part two, with the addition of 260 to 415 participants, with an interim analysis, which is conducted by the iDMC half-way through, to reassess the sample size. The regulatory authorities for consideration on, potentially, an emergency-use authorisation, may also review the efficacy data from this analysis.

COVID-19 second wave has triggered COVA patients' enrolment

The company has started recruiting patients since the summer. Currently there are at least ten centres open for recruitment, including in the US, Brazil, France, and Belgium.

Although there was a lull during the summer on the number of infections, mainly in Europe, recruitment seems to be accelerating for Biophytis now due to the current second wave.

Recruitment for second part should be at least as fast

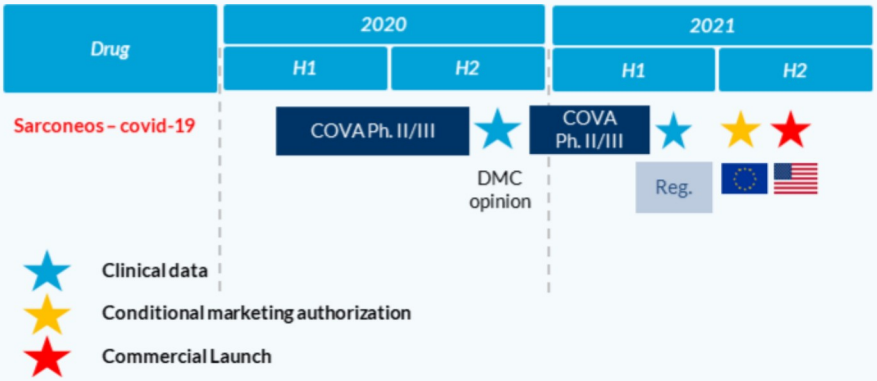
In the event of a positive outcome, Biophytis will then be able to continue with part two of the study. The number of patients required will be confirmed by the DMC (Data Monitoring Committee). Note that we do not expect results to be published from DMC's conclusions. Nevertheless, if the outcome of the analysis is positive, this would be a good signal regarding the safety and efficacy of Sarconeos in patients with SARS-CoV-2 pneumonia.

If recruitment for part two of the study proves to be that rapid, Biophytis's management believes that the first results of phase III could be published before H1 2021.

Given the importance of the associated death risk with ARDS, Biophytis could benefit from the same regulatory pathway as Gilead with Remdesivir (Veklury). Once the first results (H1 2021E) are obtained, Sarconeos could benefit from Emergency Use Authorizations (EUAs) in the US, and conditional marketing approval in Europe.

The two regulatory pathways could allow the US FDA and the EMA (European Medicines Agency) to authorise Sarconeos for commercialisation within a few weeks after filing. However, first clinical data used for filing will need to be confirmed by pursuing clinical phase III. An additional number of patients could be required in the confirmatory study.

Chart 8: Roadmap to market – Sarconeos in COVID-19



Source: Biophytis – Kepler Cheuvreux

Note that Biophytis's CEO, Stanislas Veillet, stated that the COVA study could be completed as of H1 2021E, and that the company could look for Emergency Use Authorization and Conditional Approval as of Q2 2021E. This would lead to early marketing for Sarconeos from H2 2021E.

The pandemic makes finding new treatments imperative, whether to eradicate the virus or to treat symptoms and complications. This is why Biophytis could make very rapid progress in the development of its COVA clinical programme in the treatment of COVID-19. COVA seems to have become Biophytis's top priority.

A first validation in sarcopenia at last?

SARA-INT delays

The SARA-INT study evaluating Sarconeos (BIO101) as a treatment in sarcopenia has suffered several delays.

In 2018, the company estimated that it could complete the recruitment of SARA-INT by H1 2019 (versus end-2019 in the reference document) with the first read-out expected in H2 2019 (vs. summer 2019 announced in the reference document). However, these estimates were revised following the delay with the French and Italian regulatory agencies in opening new recruitment centres. The company therefore estimated that patient recruitment would be completed in H2 2019, with first read out for end-2019, and full results expected in H2 2020.

In October 2019, the company filed a request with the US and Belgian regulatory agencies to modify its clinical protocol, in particular relating to the number of patients to be included (231 vs. 334 previously) based on the results obtained with the SARA-OBS study. This amendment was accepted in early 2020, allowing the company to finalise its recruitment more rapidly, as Biophytis concluded patient enrolment in March.

Because of the pandemic, the majority of clinical centres have had to close their doors for the evaluation of patients in the study. Based on a review of the DSMB (Data Safety and Monitoring Board) and the favourable risk profile of Sarconeos, treatment was extended by three months for sites that are not reopening.

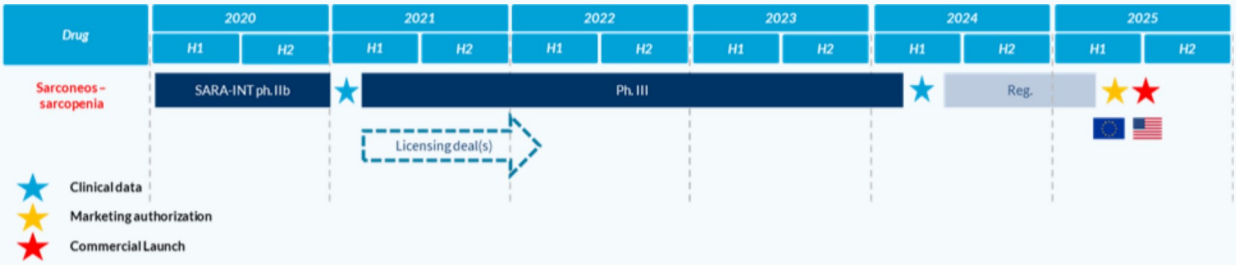
The company now expects the last patient to complete the SARA-INT study at the end of 2020. Biophytis is likely to provide top-line results by H1 2021E, and no interim analysis will be undertaken by the DSMB.

What is next?

Should the results of the study be positive, Biophytis would probably have to continue the development of Sarconeos in sarcopenia in a much larger phase III. Such a clinical trial would be particularly expensive. This is why the company would like to license its product in this indication to one or more partners that would provide the necessary financing for the conduct or take over the trial from them.

Phase III is due to start after partners have been found. Despite having any detailed information, we estimate that phase III will last three years. Considering a regulatory review lasting at least one year, BIO101 in sarcopenia could be commercialised from 2025. Nevertheless, according to the company, the development process could go faster: 1) the phase III clinical trial could be completed within two years; and 2) the regulatory process for sarconeos could be faster (c. nine months). This would lead to a commercial launch of sarconeos (BIO101) in 2024.

Chart 9: Roadmap to market – Sarconeos (BIO101) in sarcopenia



Source: Kepler Cheuvreux

Several clinical and regulatory milestones could be passed next year. In addition, the company may be able to find partners for the development and commercialisation of its products.

Various questions arise with the development Sarconeos in COVID-19

While the development of Sarconeos in the treatment of sarcopenia and COVID-19 looks interesting, several questions arise.

- What is the basis for the development of BIO101 for the treatment of COVID-19?
- What is the likelihood of success of this "opportunistic" programme?
- Will it definitively transform Biophytis in 2021?
- Finally, what upside remains after the share price surge?

Rationale for developing Sarconeos in COVID-induced pneumonia

Biophytis's drug candidate is composed of 20E-hydroxyecdysone, a molecule found throughout the plant kingdom and particularly at high levels in various species. The company has succeeded in showing that this molecule acts on the MAS receptor of the Renin Angiotensin System (RAS). This RAS is a particularly important physiological system in the human body. RAS balance failure is involved in various physio pathological processes (e.g. cardiovascular diseases, inflammation, muscle wasting).

Several preclinical studies have demonstrated the involvement of SAR in the mechanism of infection of Sars-Cov-2. The deregulation of this system by the virus is at the origin of the failures of organs in COVID-19. This is one of the possible causes of COVID 19-related pneumonia and other systemic symptoms.

The action of BIO101 on the MAS receptor could offset the effects of the virus on RAS. While there are already drugs that target the RAS, Sarconeos (BIO101) is one of the few that directly targets the MAS receptor, so it seems rational to develop BIO101 to treat the respiratory symptoms of COVID-19.

Combined preclinical studies seem to justify the use of BIO101 in COVID-19-induced pneumonia. Indeed, both Sars-Cov-2 and BIO101 act on the RAS. In addition, Biophytis showed in preclinical studies that BIO101 acts on the respiratory function. Finally, preclinical models show that 20-E (BIO101's Active Principle Ingredient) has an effect on inflammatory biomarkers, leading experts to think that BIO101 could have a protective effect at a respiratory level.

Nevertheless, BIO101 has never demonstrated any effects against COVID-19, or against associated respiratory symptoms in clinical or preclinical studies. Moreover, only the safety and its actions on certain biomarkers concentration (mainly relating to RAS and muscular anabolism) have been demonstrated in phase I and preclinical studies.

BIO101 actions carried out by activating MAS receptor

Sarconeos (BIO101)

Sarconeos (BIO101) is Biophytis's lead drug candidate. It is a small molecule administered orally. Sarconeos is currently being evaluated for the treatment of Sarcopenia and Sars-Cov-2 induced pneumonia.

The 20-Hydroxyecdysone (20E), contained in BIO101, is extracted mainly from Cyanotis spp. 20E is a phytoecdysone, which belongs to a family of molecules of plant-based origin, analogous to insect hormones, present in medicinal plants used in different continents (Europe, Africa, America, Asia, and Oceania).

It has been known for a while that these steroids have protein anabolic effects and increase the muscle mass of exercised and unexercised muscle (Bàthori et al., 2008, Gorelick-Feldman et al., 2008). Moreover, there is an increasing number of dietary supplements with ecdysteroids that are marketed as natural anabolic agents (Parr et al., 2015).

Biophytis demonstrates that BIO101 is a MAS receptor agonist

Biophytis isolated BIO101 (20-Hydroxyecdysone) and found that BIO101 had the ability to modulate a human receptor called MAS, which plays a key role in the renin-angiotensin system (RAS).

Through pre-clinical studies and literature data, the company has determined the primary mechanism of action of BIO101. Indeed, the active ingredient of BIO101 is a steroidal agonist of the MAS receptor.

Chart 10: BIO101 signalling pathways

Source: Biophytis

MAS receptor is a critical element of the RAS

The Renin-Angiotensin System (RAS) is particularly important, as it regulates a number of biological effects in the human body. The RAS is known as a major regulator of a wide range of physiology and pathophysiology such as the mediation of fluid/electrolyte homeostasis and the maintenance of vascular tone via angiotensin type 1 receptor (AT1R) in vital organs (kidneys, vascular smooth muscle, lung, heart, brain, adrenals, pituitary gland, and liver).

RAS (or RAS elements) is found at the systemic level, but also more locally at the tissue level. The tissue RAS is involved mainly in cardiovascular regulation and inflammatory processes such as vascular permeability and tone and cell apoptosis, growth, migration, and differentiation.

RAS is activated through the Angiotensin receptor type I (ATR1) downstream mechanism and is counterbalanced through the activation of the MAS receptor. Activating the ATR1 involves the formation of angiotensin II (Ang II) through angiotensin converting enzyme (ACE) from angiotensin I (Ang **I**).

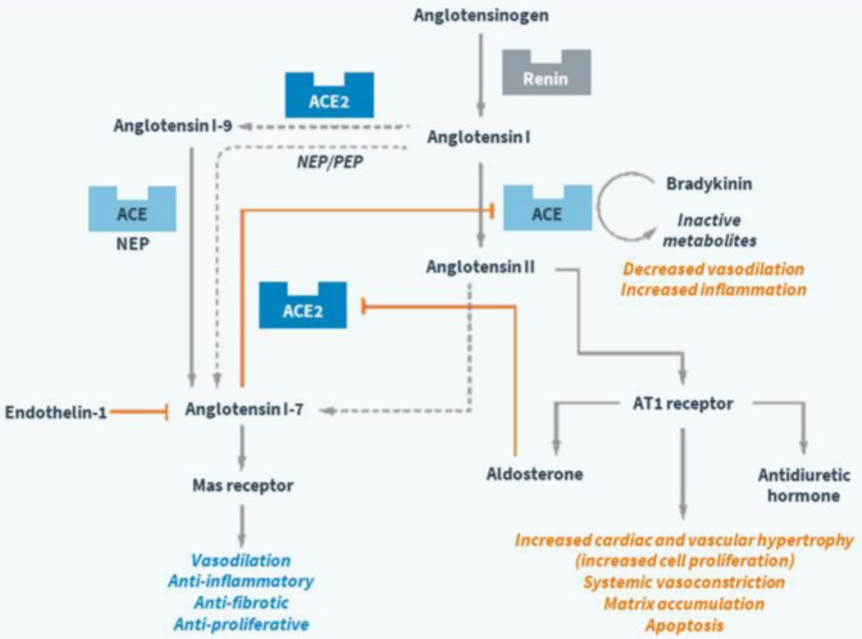
Note that Renin is upstream of this system. It is mainly produced in the kidneys and will allow the formation of angiotensinogen and Ang I.

Ang II is a central regulator of the inflammatory response. The activated Ang II synthesis from tissue-resident cells enhances vascular permeability by promoting the production of proinflammatory factors.

Activation of ATR1 by Ang II will lead to a number of physiological and pathophysiological functions including hypertension, myocardial hypertrophy, cardiac fibrosis, inflammation, vascular remodelling, and atherosclerosis.

Physiologically, these effects can be counterbalanced by the conversion of Ang **I** to Angiotensin 1-9 (Ang 1-9) by the converting enzyme type II (ACE2). More importantly, Ang II is converted to Ang 1-7 through ACE2. The Ang1-7 has a range of anti-inflammatory, antioxidant, vasodilator, and natriuretic effects that are mediated by the MAS receptor.

Chart 11: RAS and ACE2/Ang1-7/Mas Axis Regulation



Source: SARS-Cov-2 Interaction With Renin Angiotensin System; Brojakowska et al.

Biophytis has demonstrated that the action of BIO101 is similar to Ang 1-7 which activates the MAS receptor. Nevertheless, it is still possible that some effects may differ, as it has been shown that the MAS receptor may respond differently depending on the peptidic/non-peptidic nature of the ligand used (Tirupula et al., 2014).

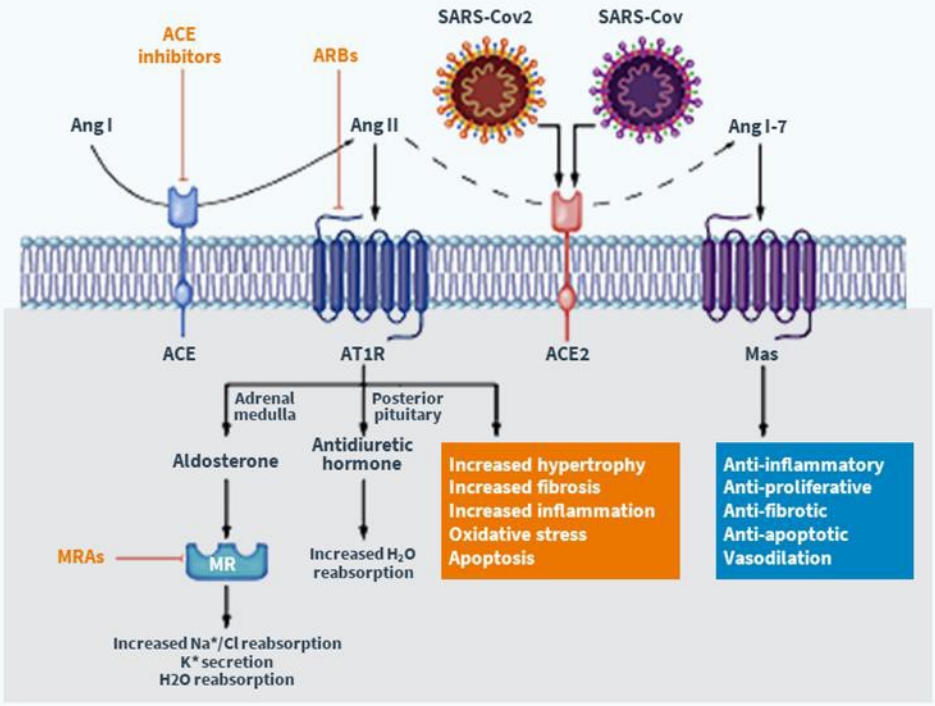
SarS-Cov-2 affected the RAS

Extensive research has been carried out on the virus since the onset of the epidemic in China at end-2019. Its genetic identification has made it possible to characterise it and to find very strong similarities with the already known Sars-Cov-1 (2002). This has helped to identify its mechanism of action, that is very similar to Sars-Cov-1, which had already been demonstrated.

Both SARS-CoV strains have been identified to use the angiotensin-converting-enzyme 2 (ACE2) as the portal of entry into the affected cell. The S spike protein of SARS-CoV-2 binds with angiotensin-converting enzyme 2 (ACE2) as a functional “receptor” and then enters into host cells to replicate and damage host cells and organs.[1]

[1] Iwasaki, Saito, Zhao, Sakamoto, Hirota, and Ma; Inflammation Triggered by SARS-CoV-2 and ACE2 Augment Drives Multiple Organ Failure of Severe COVID-19: Molecular Mechanisms and Implications; 2020

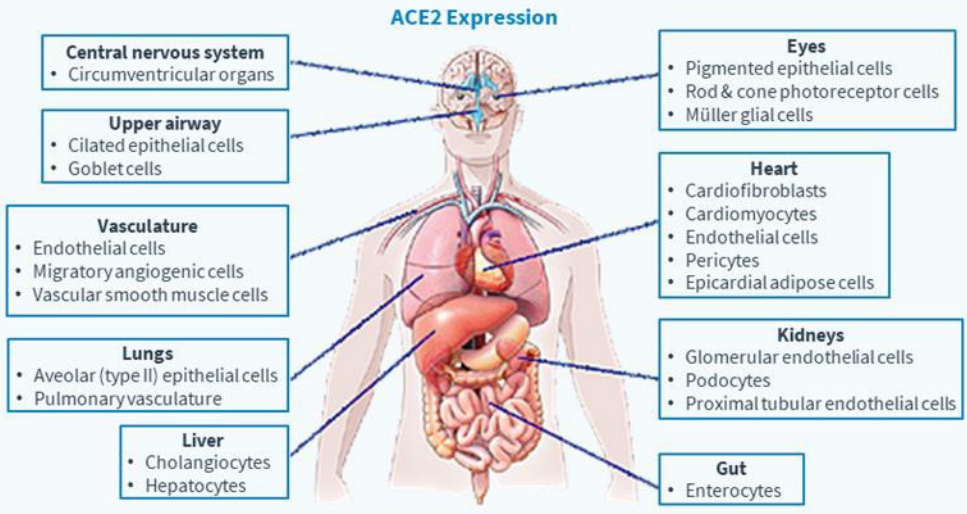
Chart 12: The Renin-Angiotensin System Interaction With COVID-19



Source: SARS-Cov-2 Interaction With Renin Angiotensin System; Brojakowska et al.

In addition, ACE2 is widely expressed, including, in the lungs, cardiovascular system, gut, kidneys, central nervous system, and adipose tissue. While respiratory symptoms are predominant, acute cardiac and kidney injuries, arrhythmias, gut, and liver function abnormalities have all been documented in infected patients, suggesting myocardial, renal, enteric and hepatic damage in COVID-19.

Chart 13: Type II angiotensin converting enzyme expression in the body



Source: xxx

It is clear that the interaction of Sars-Cov-2 with ACE2 will allow the increase of Ang II. The latter will cause various negative effects such as the promotion of inflammatory mechanisms throughout the body due to its interaction with ATR I. This leads to the multiple organ failures found in patients infected with COVID-19. However, since the lungs are the entry point for the

virus, it is the lungs that will be affected first. This is why a large number of patients are hospitalised with pneumonia and severe respiratory distress.

BIO101 will theoretically allow the regulation/compensation of the RAS system (Ang II/ATR I) by mimicking the action of Ang 1-7 and activating the MAS receptors.

BIO101 is mainly developed against the occurrence of respiratory events. Nevertheless, no pulmonary tropism has been demonstrated in our opinion.

However, there is a problem: although safety has been shown in a phase I trial (SARA-PK), the efficacy of the product has only been demonstrated in pre-clinical studies (in sarcopenia and DMD in particular).

Effectiveness remains a question mark

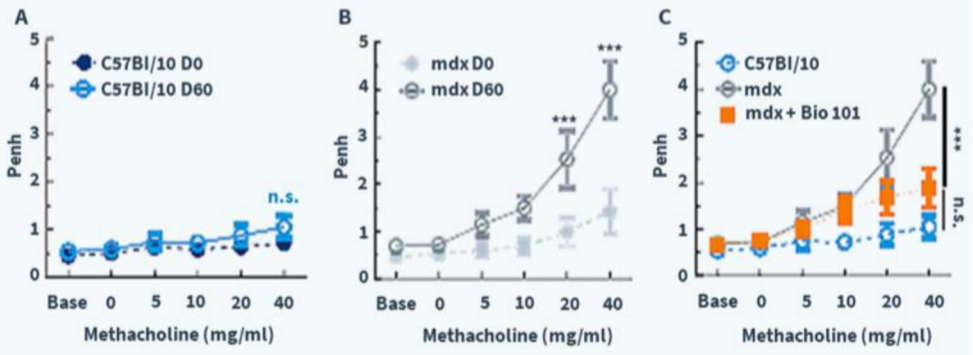
The development of Sarconeos (BIO101) in sarcopenia or COVID-19 relies on preclinical and clinical studies conducted by Biophytis, as also preclinical studies conducted on 20E outside of Biophytis.

Potential to increase respiratory function

Biophytis conducted a preclinical study of BIO101 in Duchenne Muscular Dystrophy (DMD) mice model (called mdx-mice).

The mdx mouse is a popular model for studying DMD. It has a point mutation in its DMD gene. This causes the muscle cells to produce a small, non-functional dystrophin protein. As a result, the mouse has a mild form of DMD where there is increased muscle damage and weakness.

Chart 14: BIO101 treatment improves respiratory functions of mdx treated mice



Source: Biophytis, P. Dilda, et. al., 2019

In the development of BIO101 in COVID-19, Biophytis showed that the BIO101 treatment improves respiratory function in mdx mice. In addition, BIO101 treatment seems to improve the mechanical properties of lungs: it could improve muscle histology by limiting the muscle lesion profile. Those results have to be mitigated with a potential activity in humans, as doses used for the preclinical study are higher than those used in SARA-INT and COVA.

Preclinical study on the 20E conducted by G. Song, et. al. (2019) suggested that it plays a protective role in acute lung injury of mice probably by inhibiting the pro-inflammatory cytokine expression and enhancing the anti-inflammatory cytokine expression. Indeed, the scientists noted a decrease in certain pro-inflammatory biomarkers such as the Tumor Necrosis Factor alpha (TNF alpha) with different dosing of 20E. [2]

[2] Protective effect of 20-hydroxyecdysone against lipopolysaccharides induced acute lung injury in mice; Song G, Xia XC, Zhang K, Ma Y, Yu R, et al.; J Pharm Drug Res 2(3): 109-114

SARA-PK: Evaluating safety and pharmacokinetics

SARA-PK was an exploratory study carried out at the start of 2017 to determine the dose of BIO101 that will be used for the SARA-INT interventional study.

The SARA-PK study was design to test multiple doses of BIO101 according to different therapeutic schemes. The BIO101 was administered to 54 healthy subjects, five cohorts of young adults and older adults.

The company explored the pharmacokinetic parameters of the product through this study. As an exploratory objective, the pharmacodynamic effects of BIO101 were investigated by measuring the variations of some selected biomarkers. Such biomarkers included circulating Myostatin, PIIINP, IL-6, CKMM, CKMB and Hsp72. Renin and aldosterone were also measured as key parameters of the renin angiotensin system.

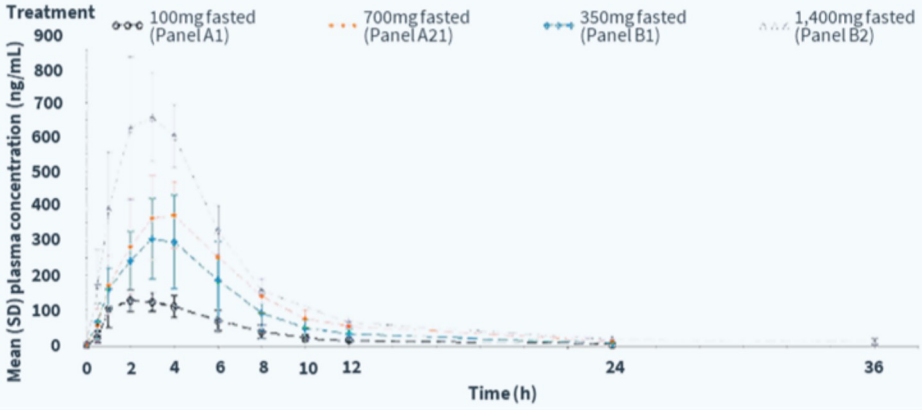
Safety

Sarconeos (BIO101) already showed a safe profile in rodents and non-rodents' toxicology assay and safety pharmacology assays, and in first-in-man trial QUINOLIA. Biophytis has nevertheless confirmed this safety profile with the study. Oral administration of doses up to 1400mg in single and up to 450 mg bid multiple ascending doses were safe and well tolerated. No abnormal clinical signs or laboratory parameters were reported as treatment emergence adverse effects (TEAES). Finally, all TEAEs were mild/moderate and resolved by the end of the study.

Pharmacokinetics

The company measured parameters such as maximum blood concentration (Cmax), product half-life and area under the curve (AUC).

Chart 15: Dose effect evaluation of BIO101



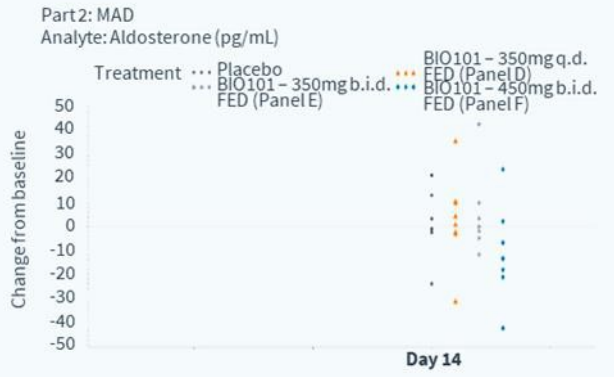
Source: Biophytisx

This pharmacokinetic study shows that the maximum concentration at the plasma level is reached rapidly, meaning that BIO101 is rapidly absorbed. Also, the body rapidly eliminates the active substance, and there is no accumulation of the active principle in the body. This is a positive point, as it is consistent with long-term use, for example in sarcopenia.

Pharmacodynamics

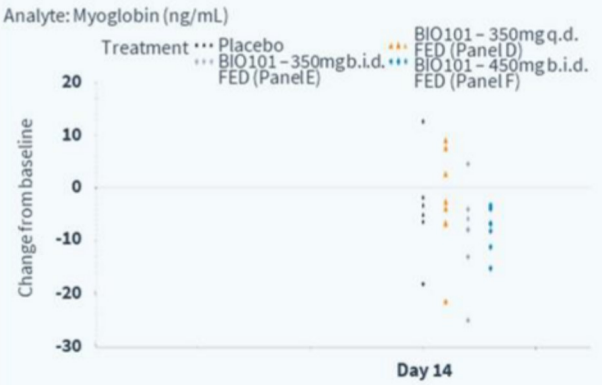
The evolution of the biomarkers has confirmed a change in the anabolic effect of BIO101 mainly at doses of 350mg (twice a day) and 450mg (twice a day).

Chart 16: Changes in aldosterone plasma concentrations at D14



Source: Biophytisx

Chart 17: Changes in myoglobin plasma concentrations at D14



Source: Biophytis

BIO101 tends to decrease Renin, Aldosterone, CRP, myoglobin plasma concentrations, and to increase Pro-peptides of type III pro-collagen (PIIINP). Reductions of Renin and Aldosterone concentrations confirmed the involvement of the RAS in BIO101 effects. The other biomarkers show an effect of BIO101 at the muscular level.

The involvement of these parameters shows that BIO101 could probably have an effect against COVID 19-induced pneumonia and sarcopenia. However, we are unable to determine whether those parameters will have the expected therapeutic effects.

In addition, the company did not demonstrate any tropism of BIO101, so the latter could act anywhere in the body where a RAS and MAS receptor is present. As we noted above, RAS is also present on different organs. Repeated use of BIO101 (e.g. in the SARA-INT or even COVA trial) may result in undesired effects of the drug.

Furthermore, we understand from the publication of L. Dinan et. al (2020), that the bioavailability (the proportion of substance that reaches the bloodstream) of BIO101 is particularly low (<1%), meaning that the majority of the product is eliminated in faeces. A low bioavailability is a limiting point, as it could have high individual variability among patients on product absorption and therefore restrict the product's therapeutic effects.

As we do not yet know the therapeutic window of the BIO101, the low blood concentration resulting from its low bioavailability has no impact on the clinical efficacy of BIO101.

Will the 350mg twice a day be sufficient to obtain a therapeutic effect, either in SARA-INT or in COVA study?

In a phase I/II study (QUINOLIA) conducted in obese healthy volunteers, BIO101 (40mg/day) showed effects on muscle strength (as effects on fat mass, lipid metabolism, resistance to insulin and glucose metabolism, unrelated to COVID-19). Even though the results were not significant, some effects were observed. Note that the study showed a good safety profile for BIO101.

Knowing that Biophytis currently applies a dose of 350mg twice a day in its clinical study, there is a greater chance that BIO101 will show effects in a larger study such as COVA and SARA-INT.

Data available shows that the BIO101 acts on certain biomarkers in the body (anti-inflammatory, muscular, etc.). While there is no question on the safety profile of BIO101, the dose chosen by the company could lead to a potential effect. However, for now it is hard to determine whether the effects on biomarkers will lead to any therapeutic effects in sarcopenia or in COVID-19. Although data gathered in recent years is promising, there are some uncertainties about the efficacy of BIO101 in COVID 19-induced pneumonia and sarcopenia.

Medical need in COVID-induced pneumonia is critical

In its clinical study, Biophytis targets patients designated for hospitalisation or already hospitalised patients with Sars-Cov-2 induced pneumonia. Although symptoms often resolve themselves, some patients suffer from respiratory decompensation, also called Acute Respiratory Distress Syndrome (ARDS). Apart from the supply of oxygen or even respiratory assistance, there is no treatment, making it very urgent to find a way to prevent the deterioration of the respiratory symptoms of COVID-19. Biophytis aims to target this segment with the BIO101.

We have attempted to model the sales that could be generated by BIO101 in this indication. First, we estimated that the number of patients eligible for treatment in the countries that gave their approval for the clinical trials is c. 1.3m.

In the event of conditional marketing authorisations in the EU, Brazil, and the US, Biophytis and its potential partner(s) should reach peak sales very quickly (2-3 years) considering the urgency. We forecast a rapid sales uptake, reaching c. EUR290m within two years. Further drugs or vaccines are also expected to reach the market in the near future, leading to a decrease in patients requiring the Biophytis drug candidate and a subsequent gradual decline of its sales.

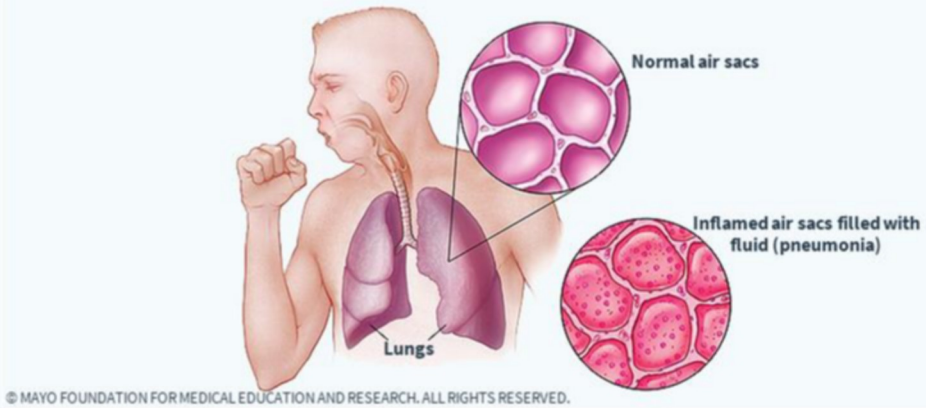
COVID-induced pneumonia

Starts with pneumonia…

Infection through the coronavirus Sars-Cov-2 is responsible for a severe form of pneumonia.

Classically, pneumonia is an infection that inflames the air sacs in one or both lungs. The air sacs may fill with fluid or pus (purulent material), causing a cough with phlegm or pus, fever, chills, and difficulty breathing. A variety of organisms, including bacteria, viruses and fungi, can cause pneumonia.

Chart 18: Pneumonia physiopathology



Source: Mayo Clinic

Distinct patterns of disease progression were documented in early clinical descriptions of the COVID-19 cases. The respiratory system of many patients with acute COVID-19 is affected, characterised by dry cough, dyspnoea, hypoxaemia, and abnormal imaging results.

Some patients might progress to severe or critical disease, including pneumonia and acute respiratory failure. Severe cases can occur early on in the disease but clinical observation typically describes a two-step disease progression, starting with a mild-to-moderate presentation,

followed by a secondary respiratory worsening 9–12 days after the first onset of symptoms. (Ganesh Raghu, et. al., 2020).[3]

…and may evolve to critical ARDS

The disease can develop into a condition known as acute respiratory distress syndrome (ARDS). ARDS is characterised by poor oxygenation, pulmonary infiltrates, and acuity of onset. The presence in COVID-19 of hypoxemia (characterising ARDS) is often a fact, nevertheless this type of ARDS differs from the classic forms, in particular because of the pulmonary compliance that is usually normal in the initial stage.[4]

Patients of all age groups can develop ARDS. It is more commonly observed among patients over the age of 65, where ARDS has been described to be present in 17-41% of them, with a median time from first symptom to progression to ARDS of eight days. Intensive care units are faced with the admission of a large number of patients with ARDS symptoms with the need for invasive mechanical ventilation (5% to 20% of infected patients).[5]

Once ARDS develops, patients usually display varying degrees of pulmonary artery vasoconstriction and may subsequently develop pulmonary hypertension. ARDS has a high mortality rate, and there are few effective therapeutic treatments available to fight this condition. The mortality rate of ARDS, commensurate with the severity of the disease, is 27%, 32%, and 45% for mild, moderate, and severe incidences of the disease, respectively.[6]

The management of ARDS secondary to the COVID-19 proves to be challenging and controversial. There is no effective treatment for ARDS and the only supportive care strategies are the mainstays of therapy. Either non-invasive ventilation (nasal cannula, simple masks or high concentration masks) or invasive ventilation (mechanical ventilation).

Estimated number of patients needing treatment in 2021E

Globally, the COVID-19 virus has infected more than 55m people, and more than 1.3m have died. The number of reported cases varies by country (1.4m in the UK, 2.0 m in France, etc.). The incidence rate as of October varies by country from 1.4% to 3.2%. Incidence figures are increasing worldwide.

COVID-19 incidence rates are accelerating worldwide; in France, as of early October, there were more than 40,000 new cases per day. The second wave of infections is now hitting Europe. Total infections are expected to continue to rise between now and year-end.

Among the new COVID-19 cases, there are asymptomatic patients, patients with mild to moderate symptoms, and patients with severe symptoms, the latter being likely to be admitted to hospitals. Based on data provided by country databases, we have estimated an average 9.6% hospitalisation rate, ranging from 5.3% in the US to c. 15% in the UK. For example, France, the UK, and the US have recorded total hospital admissions of c. 217,000, c. 194,000 and c. 590,000 respectively since the start of the pandemic.

The imminent arrival of vaccines on the market is set to drastically reduce the number of moderate to severe cases.

Pfizer and BioNtech have already published interim results, which seem particularly promising compared to expectations (>90% efficacy). While emergency authorisation in the US and Europe is due to be granted before year-end, production capacity will need to be ramped up (2021E: >1.2bn doses) in order to be able to vaccinate the people most at risk and reduce hospital congestion.

[3] Ganesh Raghu, Kevin C Wilson. COVID-19 interstitial pneumonia: monitoring the clinical course in survivors; 8(9): P839-842; 2020

[4] Tirolien JA, Garnier M. COVID-19, un syndrome de détresse respiratoire aigu atypique. Prat Anesth Reanim. 2020;24(4):225-229.

[5] Ziehr DR, Alladina J, Petri CR, et al. Respiratory Pathophysiology of Mechanically Ventilated Patients with COVID-19: A Cohort Study. Am J Respir Crit Care Med. 2020;201(12):1560-1564.

[6] Diamond M, Peniston Feliciano HL, Sanghavi D, et al. Acute Respiratory Distress Syndrome.

Moderna's COVID-19 vaccine candidate met its primary efficacy endpoint (first interim analysis based on 95 events). Phase III includes 30,000 patients and COVID-19 vaccine showed an efficacy of 94.5% (90 cases of COVID-19 were observed in the placebo group versus five in the COVID-19 vaccine group, p<0.0001). Moderna will submit an emergency use authorisation to the FDA very soon, and the trial will continue to reach 151 events.

The decrease in the number of patients suffering from severe symptoms of COVID-19 due to the introduction of vaccines on the market will have a negative impact on future sales of BIO101.

Positioning BIO101 in the armamentarium

At this stage, there is no approved treatment yet targeting respiratory symptoms or COVID-19.

On 10 November, the US pharmaceutical company Eli Lilly obtained Emergency Use Exemption (EUE) in the US for its drug (banlanivimab, a monoclonal antibody) for treating COVID-19. Banlanivimab targets patients over the age of 12 who are at high risk of progressing to severe COVID-19 and/or hospitalisation. This includes people over the age of 65 and those who have certain chronic medical conditions. However, it is not used for hospitalised patients.

There are also treatments used for patients more severely affected by the virus (who are already in intensive care units): Gilead's remdesivir or dexamethasone, the benefits of which have been demonstrated more recently. Depending on the clinical results, BIO101 could be used upstream of the first treatments. BIO101 could be integrated into the therapeutic strategy of COVID-19 among patients admitted to the hospital as an initiation treatment.

BIO101 acts downstream of the infection. In the case of the approval of other treatments for Sars-Cov-2 infection, these drugs could possibly be combined in the therapeutic strategy.

Patients targeted by Biophytis

Biophytis is targeting patients older than 45 with a confirmed diagnosis of COVID-19, hospitalised or planned to be hospitalised, and who present severe respiratory symptoms.

The incidence rate and hospitalisation rate by country is still increasing. According to the CDC (Centre for Disease Control and Prevention), the overall cumulative hospitalisation rate was 207.1 per 100,000 population in the US. As of today, we estimate that the hospitalisation rate among COVID-19 patients is between 5% and 15% depending on the country.

According to the CDC, people aged over 50 account for c. 35% of all COVID-19 cases. However, more than 94% of patients dying from COVID 19-related issues are older than 50. While the hospitalisation rate of patients over 45 is not released by country, we forecast that this age group would represent at least 90% of hospital admissions worldwide.

Among those patients, some are directly transferred to ICUs due to the severity of their COVID-19 symptoms. In October, ICU hospitalisation rates were between 9% and 20%, and estimate that 85% of hospitalised patients would be eligible for BIO101.

The increase in the number of infections worldwide is expected to continue to overload hospitals with COVID cases. The potential emergence of vaccines is likely to reduce the number of patients infected with COVID-19, reducing the number of people eligible for the various treatments against the virus. This decline is not expected to occur before 2021-22 throughout the world. Moreover, until the pandemic is contained, a significant medical need for this indication will remain.

The risk of a worsening of the disease is greater in patients with comorbidities. Literature described a mortality rate in COVID-19-associated ARDS of 45%, and the incidence of ARDS among non-survivors of COVID-19 of 90% (Tzotzos SJ, et. al. 2020)[7]. The medical need for the resolution of the respiratory symptoms of the disease is therefore very important.

Among selected countries, we forecast c. 1.3m patients eligible for the Biophytis candidate drug Sarconeos (BIO101). Note that we only include the five largest European countries, along with

[7] Tzotzos SJ, Fischer B, Fischer H, Zeitlinger M. Incidence of ARDS and outcomes in hospitalized patients with COVID-19: a global literature survey. Crit Care. 2020;24(1):516. Published 2020 Aug 21.

Belgium, Brazil, and the US, as we believe it is more likely that those countries will approve the drug candidate quickly in the event of clinical success.

Table 1: BIO101 in COVID-19 patients waterfall

	EU-6	Brazil	USA
Population	335	214	336
Number of cases ('000)	7,524	5,921	11,128
Hospital admissions ('000)	56	266	592
Hospitalised pts older than 45 ('000)	771	240	532
Hospitalised pts able > 45 to take oral ttt ('000)	658	205	454
Eligible patients to BIO101	**658**	**205**	**454**

Source: Kepler Cheuvreux

Sales forecast for BIO101 in COVID-19

Pricing potential depends on efficacy

There are currently two examples of innovative products that have been priced-in in the US:

- Gilead recently obtained marketing authorisation in the US for Remdesivr for use with severe forms of COVID-19.

Gilead has priced its product at c. USD2,340 or EUR2,000 (list price for medicare/medicaid) and USD3,120 (EUR2,670) for private insurance. In all likelihood, the price for Europe for the millions of doses ordered is the same. This advertised price is for a five-day course of treatment (six vials). Depending on the patient, a 5-10 day course of treatment is necessary.

- Eli Lilly also get an estimated price for the bamlanivimab (LY-CoV555) as the US government has ordered 300,000 doses at a price of USD1,250 (EUR1,100) per dose (700mg/dose).

In the absence of relevant clinical results, we find it difficult to price the product. However, Sarconeos (BIO101) could show the potential of having a medico-economic impact: if it were effective, it could reduce hospitalisation durations. We estimate a price of EUR1500 in Europe, EUR2000 in the US, and EUR1000 in Brazil per course of treatment.

Sales uptake

In the event that Sarconeos were effective, it is likely that the ramp-up of sales would be relatively rapid over the first two years. We estimate that the product could reach its sales peak in no less than three years. We believe that in order to avoid invasive or non-invasive respiratory support, the majority of patients are likely to receive one or more treatments. We forecast a market penetration of 15%.

Several aspects could counteract this scenario:

- The case of the marketing of one or more vaccines on the market. Indeed, the introduction of a COVID-19 vaccine is forecast to reduce the number of people requiring symptomatic treatment.
- The market entry before or after Biophytis's treatments against pneumonia associated with COVID-19.
- A growing number of preventive or curative treatments against COVID-19.

From our discussions with the company, we understand that BIO101 could obtain conditional marketing approval as early as mid-2021 in Europe and the US. The product would therefore be launched in H2 2021.

Annual sales of c. EUR290m within two years

Given that Biophytis does not intend to market BIO101 itself, the company will therefore have to first find a global partner or several regional partners for the marketing and distribution of BIO101 in case of clinical success.

Signing of partnerships for the marketing of BIO101 leaves room for potential upside after the clinical phase success.

Chart 19: Sales estimates (Partner(s)) (EURm)

Source: Kepler Cheuvreux

In our view, sales will decrease after 2022E as a result of the emergence of vaccines and COVID-19 related treatment on the market, with fewer infections worldwide.

We forecast peak sales of c. EUR290m to be reached within two years.

Valuation update

Given the current progress with Sarconeos (BIO101) in the COVA study, we integrate the clinical programme potential into our valuation model. We now take into account the two most advanced clinical programmes of the company: SARA-INT and COVA.

While no changes were applied to sales forecasts for Sarconeos in sarcopenia, the company communicated on first efficacy results in sarcopenia released in Q1 2021. Hence, if the results are positive, we expect the signing of the co-development and commercialisation partnership to be done in 2021.

Biophytis is likely to be particularly active in business development, as it will look for partners to develop and commercialise Sarconeos (BIO101) either in sarcopenia or in COVID-19-induced pneumonia. Multiple partnerships could be signed worldwide in 2021E.

Despite commercial and partnership potential, as of today our valuation model does not show significant upside on Biophytis's current valuation. We value Biophytis at EUR66m, or EUR0.66 per share. Although we acknowledge that there is significant potential either in sarcopenia or in COVID-19 clinical programmes, current clinical evidence seems limited. However, if positive results are released next year, Biophytis could be valued at c. EUR300m.

Methodology and scope

We value the company through a sum of the parts, which now takes into account:

- The SARA-INT programme that evaluates Sarconeos in sarcopenia.
- The COVA programme that evaluates Sarconeos against COVID-19.

To value these programmes, we use the risk-adjusted net present value method. As the company does not currently intend to market its product on its own, we take into account the potential signing of development and marketing partnerships.

Biophytis registered several patents worldwide on phytoecdysones, 20-E (the principle active ingredient of BIO101), 20-E pharmaceutical preparation, and 20-E and derived used in several conditions. Recall that patent protection runs for 20 years from the date of registration. BIO101 is likely to be protected in the US and Europe for at least the next 15 years. As of today, no patent has been registered for BIO101 for the treatment of COVID-19. Our sales forecasts for potential partners were estimated until 2040E in either sarcopenia or COVID-19.

The company's revenues will consist of royalties on net sales and payments from upfront and milestone payments. Our valuation takes into account the estimated R&D costs of the two clinical programmes.

Changes regarding SARA-INT programmes

While the last of the 231 patients was recruited in March, due to COVID-19, the company had to adapt the trial by closing all on-site activities and organising patient follow-up from home.

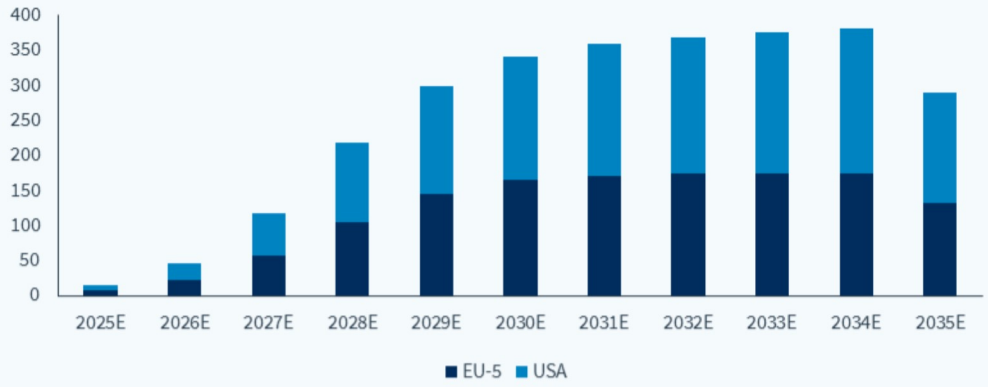
In August, Biophytis announced that its clinical sites were reopening. Based on a review of the DSMB and the favourable risk profile of Sarconeos, treatment was extended by three months for sites that were not reopened at the time. Considering those changes, the company expects the last patient to complete the SARA-INT study at the end of 2020.

Biophytis is due to provide top-line results by H1 2021E. Note that no interim analysis will be undertaken by the DSMB. If the SARA-INT phase IIb is successful, the company will need to initiate a new phase III study, which we estimate will last three years in total. Biophytis will have to seek partnership to finance BIO101 in sarcopenia clinical development.

As we expect phase III to be completed in 2024E, the company and partner(s) will be able to file marketing authorisation applications in Europe and the US. Considering a one-year review by health authorities, marketing approval could be granted in 2025, with a commercial launch in the same year.

For now, we are not changing our estimates regarding potential sales by one or more partners for the Sarconeos (BIO101) in sarcopenia. We expect peak sales of EUR380m by 2033E.

Chart 20: Sarconeos (BIO101) in sarcopenia sales estimates (partner(s)) (EURm)



Source: Kepler Cheuvreux

Development and marketing collaboration expected

The company's business development strategy is not set in stone. Depending on the level of interest shown in Sarconeos, Biophytis could either sign significant partnerships for the development and marketing of its products in North America and Europe, or multiple partnerships with regional players.

Sarconeos (BIO101) in sarcopenia

The search for a partner is set to become fully active as soon as the results of the SARA-INT phase IIb Sarconeos study are available. Hence, we expect an out-licensing deal to be signed in 2021 for the development and marketing of BIO101 in sarcopenia in the US and EU-5. We assume that Biophytis would receive proceeds worth 35% of the product's rNPV (pretax).

Below are our inputs for the deal:

Table 2: Partnership on BIO101 in sarcopenia inputs

EURm	Worldwide
Closing	2021
Deal amount (EURm)	300
Upfront (EURm)	24
Milestones (EURm)	276
Royalty rate (%)	10%

Source: Kepler Cheuvreux

Sarconeos (BIO101) in COVID-19-induced pneumonia

A number of partnerships have been signed for the development of a vaccine against Sars-Cov-2 (e.g. Pfizer and BioNtech). However, there are also a few deals with major pharma companies for the development of treatments for COVID-19:

- Novartis has secured an option to license two experimental drugs that Molecular Partners is developing to treat or prevent COVID-19 for roughly USD66m, including USD44m equity investment.
- Roche paid USD350m for partial rights to an oral antiviral drug (currently in phase II study) developed by Boston based biotech Atea Pharmaceuticals.
- GlaxoSmithKline bought USD250m of Vir Biotechnology shares to help speed up the development of treatment to fight the novel coronavirus.

As phase II/III clinical results are to be released next year, we expect Biophytis to sign an out-licensing deal for the commercialisation of BIO101 in COVID-19 at the end of H1 or early H2 2021. We assume that Biophytis would receive proceeds worth 55% of the product's rNPV (pretax).

Below are our inputs for the deal:

Table 3: Partnership for BIO101 in COVID-19 inputs

EURm	Worldwide
Closing	2021
Deal amount (EURm)	190
Upfront (EURm)	29
Milestones (EURm)	162
Royalty rate (%)	30%

Source: Kepler Cheuvreux

Valuation parameters

R&D expenses are likely to increase from H2 2020 onwards

R&D costs have certainly increased due to the start of the COVA programme this year. We estimate the overall cost of this phase II/III at c. EUR19m (2020-21). This leads to 2020 R&D expenses of EUR11.6m compared to EUR9.1m in 2019.

We assume that the partner for BIO101 will take charge of the remaining development costs (clinical and regulatory). Note that the partner could launch an additional phase III to confirm phase II/III results.

Regarding Sarconeos in sarcopenia, a confirmatory phase III study should be started next to phase IIb SARA-INT trial completion. The company expects to find a partner before initiating phase III. Hence, we also expect the partner to finance BIO101 development (clinical and regulatory). Note that we estimate that the phase III study could cost EUR43m over three years.

We also think that in the coming years, the French "Crédit Impôts Recherche" (CIR) will reach similar levels as seen in 2019 (c. EUR3m) in our estimated R&D expenses.

Likelihood of success

Our model also takes into consideration the likelihood of occurrence of each cash flow based on the probability of success (POS) of the clinical studies. The likelihood of approval (LOA) is: 1) 23% for BIO101 in sarcopenia; and 2) 13% for BIO101 in COVID-19.

Table 4: Success rate for sarcopenia programme

Development stage	POS* (%)	LOA** (%)
Ph. IIb to Ph. III	38%	23%
Ph. III to NDA.	68%	60%
NDA to launch	89%	89%

*Probability of Success; ** Likelihood of Approval
Source: BIO; Kepler Cheuvreux

Table 5: Success rate for COVID-19 programme

Development stage	POS** (%)	LOA*** (%)
Ph. II/III to EUA*	16%	13%
EUR to Launch	84%	84%

*Emergency Use Approval; **Probability of Success;***Likelihood of Approval
Source: BIO; Kepler Cheuvreux

Tax rate

Biophytis is set to license out all of these products. Its revenues will come from milestone payments and royalties on sales. We estimate a tax rate of 15% based on French tax regulations for royalty payments (set by The National Institute of Intellectual Property).

Special agreement

In 2015, Biophytis exercised its exclusive worldwide license option on patents relating to 20-Hydroxyecdysone and its use.

An agreement was therefore negotiated, an exploitation agreement with the SATT consortium representing UPMC, CNRS and INRA. If the company licenses BIO101, it will be required to pay double-digit annual royalties based on the revenues received (sales and milestone payments).

While no figures have been given, we currently estimate that the company will have to pay 10% royalties on its revenues under the SATT agreement. This agreement mainly covers the patent for

20-Hydroxyecdysone products and their use in the preparation of medicines. Therefore, we believe that this agreement also covers the indication for Sarcopenia and the indication COVID-19.

Discount rate

The company currently appears to be funded to face the development stages of the Sarconeos next year. Nevertheless, its advanced pipeline is structured into a single product. We set the discount rate at 15%, which is in line with the biotechnology environment.

Financing and number of shares

The company managed to finance its operations through the year. Thanks to several private placements, share subscription warrants, and convertible bond financing (ATLAS contract), Biophytis raised a total amount to date of EUR33.7m.

Table 6: Summary of Biophytis funding in 2020

EURm	Raised (EURm)	Date
Private placement	3.3	14/02/2020
ATLAS - ORNANE tranche #1	3.0	01/04/2020
Warrants (BSA) subscription	0.4	07/04/2020
Private placement	4.0	23/06/2020
ATLAS - ORNANE tranche #2	3.0	29/06/2020
Private placement	6.1	03/07/2020
ATLAS - ORNANE tranche #3	3.0	11/09/2020
Private placement	10.0	30/09/2020
Warrants (BSA) exercises (ongoing)	0.9	01/11/2020
Total	**33.7**	**2020**

Source: Kepler Cheuvreux

Biophytis published a cash position at the end of June of EUR12.2m, meaning there is additional financing of c. EUR16m.

Biophytis released a total number of shares of c. 99.8m on 1 December 2020.

The company will still have to redeem the end of the third ORNANE tranche (EUR0.75m) of the contract with Atlas (signed in April). If the reimbursement in shares had occurred on 3 December, the company would have to issue 1.3m shares (1.4% dilution).

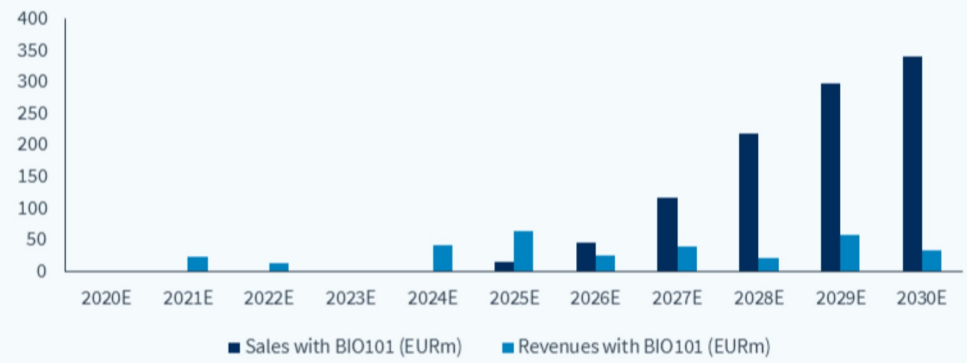
In addition, a large part of the warrants (BSA) is not yet converted. Note that the exercise price is set at EUR0.27 (compared to the current share price of EUR0.62). The issue of these warrants would lead to the creation of c. 4.3m Biophytis shares. A total of c. 5.6m (5.3% dilution) shares are currently still to be created.

In our valuation model, we take into account 99.8m as of December 1st (source: Biophytis).

Valuation of BIO101 in sarcopenia (EUR21m)

Biophytis - revenue forecasts

Chart 21: Sales (partners) and revenues (Biophytis) forecast (EURm)



Source: Kepler Cheuvreux

rNPV for Sarconeos (BIO101) in sarcopenia

Table 7: rNPV for Sarconeos (BIO101) in sarcopenia

EURm	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Revenues	**0**	**24**	**14**	**0**	**41**	**64**	**25**	**39**	**22**	**57**	**34**
var. y-oy	*0%*	*0%*	*-43%*	*-100%*	*0%*	*54%*	*-60%*	*55%*	*-45%*	*163%*	*-41%*
(-) SG&A	3	4	4	4	4	4	5	5	5	5	6
% revenues	*0%*	*15%*	*28%*	*0%*	*10%*	*7%*	*18%*	*12%*	*23%*	*9%*	*16%*
(-) R&D	6	1	1	1	1	1	1	1	1	1	1
% revenues	*0%*	*2%*	*4%*	*0%*	*1%*	*1%*	*2%*	*1%*	*3%*	*1%*	*2%*
(-) Royalties to SATT Lutech	0	2	1	0	4	6	3	4	2	6	3
% revenues	*0%*	*10%*	*10%*	*0%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*
= EBITDA	**-10**	**17**	**8**	**-5**	**32**	**52**	**18**	**30**	**14**	**46**	**25**
% revenues	*0%*	*72%*	*58%*	*0%*	*78%*	*82%*	*69%*	*76%*	*64%*	*80%*	*72%*
(-) Taxes	0	3	1	0	5	8	3	4	2	7	4
= FCF	**-10**	**15**	**7**	**-5**	**28**	**44**	**15**	**25**	**12**	**39**	**21**
Discounted FCF	**-9**	**13**	**5**	**-3**	**16**	**22**	**6**	**9**	**4**	**11**	**5**
Cumulative probability	*100%*	*38%*	*38%*	*38%*	*26%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*
Risk-adjusted disc. FCF	**-9**	**5**	**2**	**-1**	**4**	**5**	**1**	**2**	**1**	**3**	**1**
rNPV (EURm)	**21**										
rNPV/share (EUR)	**0.21**										

Source: Kepler Cheuvreux

Sensitivity tables

Table 8: Sensitivity tables

Los Ph.III \ LoS Ph. IIb	28%	33%	38%	43%	48%
58%	0.10	0.14	0.17	0.21	0.24
63%	0.12	0.15	0.19	0.23	0.27
68%	0.13	0.17	**0.21**	0.25	0.29
73%	0.14	0.19	0.23	0.27	0.31
78%	0.16	0.20	0.25	0.29	0.34

LoS Ph. IIb \ WACC	12%	14%	15%	17%	18%
28%	0.18	0.15	0.13	0.11	0.09
33%	0.23	0.20	0.17	0.15	0.13
38%	0.28	0.24	**0.21**	0.18	0.16
43%	0.32	0.28	0.25	0.22	0.20
48%	0.37	0.33	0.29	0.26	0.23

Market share \ Pricing	-20%	-10%	0%	10%	20%
13%	0.14	0.15	0.15	0.16	0.17
18%	0.16	0.17	0.18	0.19	0.20
23%	0.18	0.20	**0.21**	0.22	0.24
28%	0.21	0.22	0.24	0.25	0.27
33%	0.23	0.25	0.27	0.28	0.30

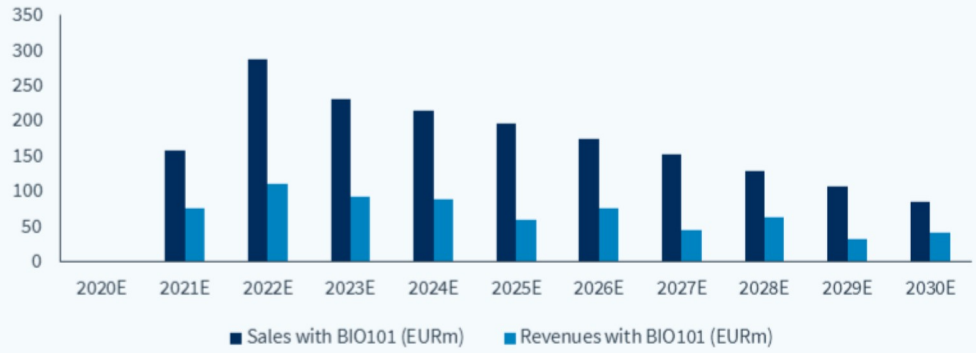
Market share \ Royalty rate	0%	5%	10%	15%	20%
13%	0.08	0.12	0.15	0.19	0.22
18%	0.08	0.13	0.18	0.23	0.28
23%	0.08	0.15	**0.21**	0.27	0.34
28%	0.08	0.16	0.24	0.32	0.39
33%	0.08	0.18	0.27	0.36	0.45

Source: Kepler Cheuvreux

Valuation of BIO101 in COVID-19 (EUR28m)

Biophytis - revenue forecasts

Chart 22: Biophytis revenues vs. partners' sales – BIO101 – Covid-19 (EURm)



Source: Kepler Cheuvreux

rNPV for Sarconeos (BIO101) in COVID-19-induced pneumonia

Table 9: rNPV for Sarconeos (BIO101) in COVID-19-induced pneumonia

EURm	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Revenues	**0**	**76**	**110**	**94**	**89**	**59**	**77**	**46**	**63**	**32**	**42**
var. y-oy	*0%*	*0%*	*46%*	*-15%*	*-5%*	*-34%*	*30%*	*-40%*	*38%*	*-49%*	*31%*
(-) SG&A	3	3	4	4	4	4	4	4	4	4	4
% revenues	*0%*	*5%*	*3%*	*4%*	*4%*	*6%*	*5%*	*9%*	*6%*	*13%*	*10%*
(-) R&D	5	10	1	1	1	1	1	1	1	1	1
% revenues	*0%*	*14%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*2%*	*1%*
(-) Royalties to SATT Lutech	0	8	11	9	9	6	8	5	6	3	4
% revenues	*0%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*
= EBITDA	**-9**	**54**	**95**	**80**	**76**	**49**	**65**	**37**	**52**	**24**	**33**
% revenues	*0%*	*72%*	*86%*	*86%*	*85%*	*83%*	*84%*	*80%*	*83%*	*76%*	*79%*
(-) Taxes	0	8	14	12	11	7	10	6	8	4	5
= FCF	**-9**	**46**	**81**	**68**	**64**	**41**	**55**	**31**	**44**	**21**	**28**
Discounted FCF	**-8**	**40**	**61**	**44**	**36**	**20**	**24**	**12**	**14**	**6**	**7**
Cumulative probability	*100%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*
Risk-adjusted disc. FCF	**-8**	**5**	**8**	**6**	**5**	**3**	**3**	**2**	**2**	**1**	**1**
rNPV (EURm)	**28**										
rNPV/share (EUR)	**0.28**										

Source: Kepler Cheuvreux

Sensitivity tables

Table 10: Sensitivity tables

LoS Ph. III \ LoS Ph. II	16%	21%	26%	31%	36%
51%	0.10	0.16	0.22	0.28	0.33
56%	0.12	0.18	0.25	0.31	0.37
61%	0.14	0.21	**0.28**	0.35	0.42
66%	0.16	0.23	0.31	0.38	0.46
71%	0.17	0.26	0.34	0.42	0.50

Market share \ WACC	12%	14%	15%	17%	18%
5%	0.09	0.08	0.07	0.07	0.06
10%	0.20	0.19	0.18	0.16	0.15
15%	0.32	0.30	**0.28**	0.26	0.24
20%	0.43	0.40	0.38	0.35	0.33
25%	0.55	0.51	0.48	0.45	0.42

Market share \ Pricing	-20%	-10%	0%	10%	20%
5%	0.07	0.07	0.07	0.07	0.07
10%	0.18	0.18	0.18	0.18	0.18
15%	0.28	0.28	**0.28**	0.28	0.28
20%	0.38	0.38	0.38	0.38	0.38
25%	0.48	0.48	0.48	0.48	0.48

Market share \ Royalty rate	20%	25%	30%	35%	40%
5%	0.04	0.06	0.07	0.09	0.11
10%	0.11	0.14	0.18	0.21	0.24
15%	0.18	0.23	**0.28**	0.33	0.38
20%	0.24	0.31	0.38	0.45	0.51
25%	0.31	0.39	0.48	0.56	0.65

Source: Kepler Cheuvreux

Upgrade from Reduce to Hold, TP EUR0.66

Table 11: Sum of the parts, Biophytis

Product / Program	Strategy	Peak Sales (EURm)	NPV (EURm)	Discount	rNPV (EURm)	rNPV/Share (EUR)
Sarconeos (BIO101) - Sarcopénie	Partnerships	381	112	81%	21	0.21
Sarconeos (BIO101) - covid-19	Partnerships	288	262	89%	28	0.28
Equity Value			**374**	**87%**	**49**	**0.49**
+ Cash			17		17	0.17
Enterprise Value			**391**	**83%**	**66**	**0.66**

Source: Kepler Cheuvreux

We value Biophytis at EUR0.66 per share (EUR65m). Given the current valuation of EUR0.60 per share (as of 03 December 2020), our model shows limited upside on the stock. We think that the current valuation already includes Sarconeos's potential in sarcopenia and COVID-19. Henceforth we take into account the potential value creation from the COVA study outcome and progress made in the SARA-INT study. Accordingly, we upgrade our rating from Reduce to Hold.

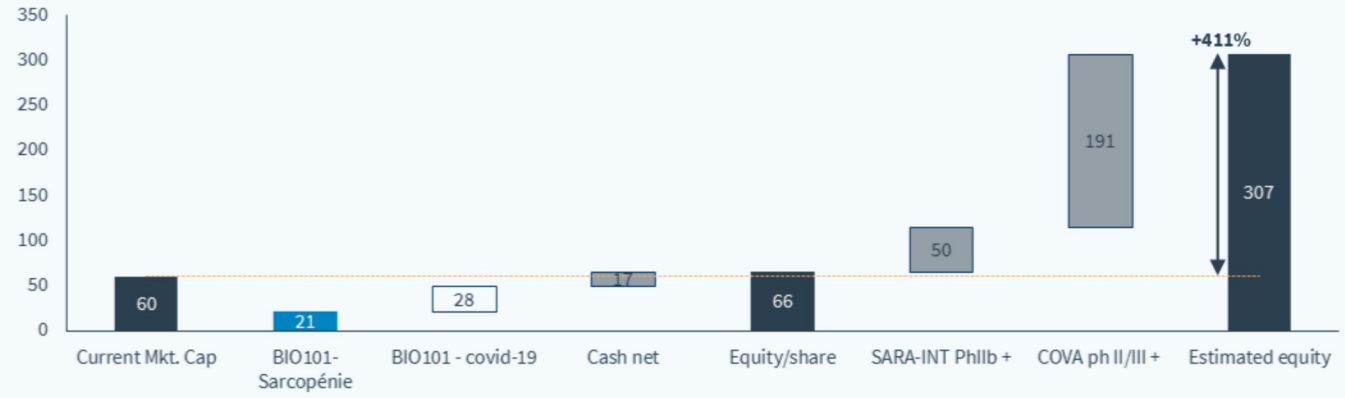
Potential additional value

Next year, two major events could boost Biophytis's valuation:

- The publication of conclusive results from the SARA-INT trial early next year could represent additional value of EUR50m (EUR0.5 per share).

- If the results of the phase II/III COVA study prove positive, our valuation of Biophytis could rise by an additional EUR191m (EUR1.9 per share).

Chart 23: Potential trend in equity value (EURm)



Source: Kepler Cheuvreux

Expected newsflow

Newsflow is set to be intense in the coming months. Clinical updates aside, in H1 2021E Biophytis could announce the signing of a development and commercial partnership, at least for BIO101, for the treatment of COVID-19.

Table 12: Expected newsflow

Events		Estimated impacts
End of enrolment in the part-1 COVA study	Q4 2020	Moderate
DMC conclusions on COVA study	Q4 2020	High
Start of MYODA programme	H1 2021	Low
Top-line results from SARA-INT	H1 2021	High
Top-line results from phase II/III COVA	H1 2021	High

Source: Kepler Cheuvreux

Investment conclusion

The company has shown that BIO101 can act on the renin-angiotensin system. Indeed, several clinical and preclinical studies have demonstrated the action of BIO101 on certain biomarkers linked to this system.

With the emergence of Sars-Cov-2, the scientific community has amply demonstrated that the virus interacts with RAS. This interaction, which enables it to infect lung cells, could be the cause of all the serious or critical symptoms that patients experience. BIO101's action could therefore play a key role in the resolution or prevention of lung problems.

In addition, the majority of clinical developments are being carried out on vaccines, the treatment of Sars-Cov-2 directly, or the treatment of respiratory distress syndrome. We believe that BIO101 could play a role in the therapeutic strategy against COVID-19.

These three points are important, as they justify the development of BIO101 to be used in the treatment of COVID-19. Nevertheless, we believe there are major issues regarding the product: Sarconeos (BIO101) has not significantly demonstrated clinical efficacy in the treatment of either sarcopenia or COVID-19.

Based on the pre-clinical and clinical studies, we can only estimate potential activity (anti-inflammatory or anti-fibrotic in COVID) that would not necessarily be directed at the lungs. For now, this activity is theoretical, but the data provided by the company allows us to estimate a safety profile that would be favourable for the continuation of clinical trials.

Based on our estimates, we believe that BIO101 could be a game-changer for the company if it provides initial confirmation of the drug's efficacy. Accordingly, if the DMC's conclusion on the first part of the COVA study proves positive, Biophytis could actively start seeking a partner for the emergency commercialisation of Sarconeos in the fight against COVID-19 in the coming months. This is why our valuation includes BIO101 in the treatment of COVID-19-induced pneumonia.

The opinion of the DMC about the COVA study will provide indications on the safety profile of the BIO101 and the protocol used by Biophytis. Efficacy results will only be released after completion of phase II/III expected in H1 2021. In the meantime, first efficacy results from SARA-INT study are likely to boost Biophytis's valuation.

Next, in the event of positive results in both programmes, the upside for Biophytis will mainly be linked to the signing of future development and commercialisation partnerships.

We raise our target price from EUR0.27 to EUR0.66. Biophytis's share price has risen sharply in recent months following the announcements of progress made in the treatment of COVID-19. As of today, Biophytis is a single asset-company, and we estimate that it is well valued considering the risk on the stock (directly linked to clinical development). Pending further data or even confirmation of the therapeutic effect of Sarconeos, we upgrade our rating from Reduce to Hold.

Valuation table

Market data as of:04 December 2020

FY to 31/12 (EUR)	12/13	12/14	12/15	12/16	12/17	12/18	12/19	12/20E	12/21E	12/22E
Per share data (EUR)										
EPS adjusted		-0.94	-0.68	-1.28	-1.24	-1.05	-1.05	-0.22	0.69	0.99
% Change			+chg	-chg	+chg	+chg	-chg	+chg	+chg	44.5%
EPS adjusted and fully diluted		-0.94	-0.68	-1.28	-1.24	-1.05	-1.05	-0.22	0.69	0.99
% Change			+chg	-chg	+chg	+chg	-chg	+chg	+chg	44.5%
EPS reported		-0.94	-0.68	-1.28	-1.24	-1.05	-1.05	-0.22	0.69	0.99
% Change			+chg	-chg	+chg	+chg	-chg	+chg	+chg	44.5%
EPS Consensus										
Cash flow per share		-0.61	-0.85	-1.28	-1.26	-0.98	-1.09	-0.22	0.69	0.98
Book value per share		-1.46	2.40	0.73	2.31	0.53	-0.44	0.02	0.70	1.69
DPS		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Number of shares, YE (m)		0.8	4.9	6.2	9.2	13.4	16.9	99.8	99.8	99.8
Nbr of shares, fully diluted, YE (m)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Share price										
Latest price / year end			11.5	3.9	4.7	1.7	0.2	0.6	0.6	0.6
52 week high			17.3	11.2	7.0	4.7	1.8	2.7		
52 week low			8.3	3.2	2.6	1.4	0.2	0.2		
Average price (Year)			12.1	4.8	3.8	2.7	0.9	0.6	0.6	0.6
Enterprise value (EURm)										
Market capitalisation			59.0	29.8	35.4	36.5	14.5	61.9	61.9	61.9
Net financial debt		0.7	-8.6	-2.0	-18.8	-6.2	8.9	-1.3	-70.3	-168.4
Pension provisions		0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1
IFRS 16 debt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Market value of minorities		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MV of equity affiliates (net of tax)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Enterprise value			50.4	27.9	16.6	30.5	23.6	60.7	-8.3	-106.4
Valuation										
P/E adjusted			na	na	na	na	na	na	0.9	0.6
P/E adjusted and fully diluted			na	na	na	na	na	na	0.9	0.6
P/E consensus										
P/BV			5.0	6.6	1.7	5.2	na	35.4	0.9	0.4
P/CF			na	na	na	na	na	na	0.9	0.6
Dividend yield (%)			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dividend yield preference shares (%)			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
FCF yield (%)			-7.1%	-26.9%	-33.0%	-36.2%	-128.2%	-35.4%	110.6%	157.6%
ROE (%)			-62.1%	-97.9%	-88.5%	-99.0%	na	na	190.3%	82.7%
ROIC (%)			na	na	na	na	na	na	na	na
EV/Sales			na	na	na	na	na	na	na	na
EV/EBITDA adj.			na	na	na	na	na	na	na	na
EV/EBIT adj.			na	na	na	na	na	na	na	na
EV/NOPAT			na	na	na	na	na	na	na	na
EV/IC			88.7	76.1	64.4	na	na	na	3.1	61.0
ROIC/WACC			na	na	na	na	na	na	na	na
EV/IC over ROIC/WACC			na	na	na	na	na	na	na	na

Income statement

FY to 31/12 (EUR)	12/13	12/14	12/15	12/16	12/17	12/18	12/19	12/20E	12/21E	12/22E
Sales		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**99.7**	**124.3**
Gross profit		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBITDA reported		-0.7	-3.0	-7.8	-9.6	-13.5	-15.5	-17.9	79.5	114.7
EBITDA adjusted		**-0.7**	**-3.0**	**-7.8**	**-9.6**	**-13.5**	**-15.5**	**-17.9**	**79.5**	**114.7**
Depreciation and amortisation		0.0	-0.1	-0.2	-0.3	-0.3	-0.2	-0.3	-0.3	-0.3
Goodwill impairment		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other financial result and associates		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBIT reported		-0.7	-3.1	-7.9	-9.9	-13.9	-15.7	-18.1	79.2	114.4
EBIT adjusted		**-0.7**	**-3.1**	**-7.9**	**-9.9**	**-13.9**	**-15.7**	**-18.1**	**79.2**	**114.4**
Net financial items		0.0	-0.2	0.0	-3.3	-0.2	-2.9	-4.3	0.0	0.0
Associates		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others		0.0	0.0	0.0	1.8	0.0	0.7	0.0	0.0	0.0
Earnings before tax		-0.7	-3.3	-8.0	-11.4	-14.1	-17.8	-22.4	79.2	114.4
Tax		0.0	0.0	0.0	0.0	0.1	0.0	0.0	-10.7	-15.5
Net profit from continuing op.		-0.7	-3.3	-8.0	-11.4	-14.0	-17.8	-22.4	68.5	98.9
Net profit from disc. activities		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net profit before minorities		-0.7	-3.3	-8.0	-11.4	-14.0	-17.8	-22.4	68.5	98.9
Minorities		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net profit reported		**-0.7**	**-3.3**	**-8.0**	**-11.4**	**-14.0**	**-17.8**	**-22.4**	**68.5**	**98.9**
Adjustments		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net profit adjusted		**-0.7**	**-3.3**	**-8.0**	**-11.4**	**-14.0**	**-17.8**	**-22.4**	**68.5**	**98.9**
Sales % Change									+chg	24.6%
EBITDA reported % Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	44.3%
EBITDA adjusted % Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	44.3%
EBIT reported % Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	44.5%
EBIT adjusted % Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	44.5%
Earnings before tax % Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	44.5%
Net profit from cont. op. % Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	44.5%
Net profit reported % Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	44.5%
Net profit adjusted % Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	44.5%
Gross profit margin (%)		na	na	na	na	na	na	na	0.0%	0.0%
EBITDA margin (%)		na	na	na	na	na	na	na	79.7%	92.3%
EBIT margin (%)		na	na	na	na	na	na	na	79.4%	92.1%
Net profit margin (%)		na	na	na	na	na	na	na	68.6%	79.6%
Tax rate (%)			0.0%	0.0%	0.0%	0.5%	0.2%	0.0%	13.6%	13.6%
Payout ratio (%)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
EPS reported (EUR)		-0.94	-0.68	-1.28	-1.24	-1.05	-1.05	-0.22	0.69	0.99
EPS adjusted (EUR)		-0.94	-0.68	-1.28	-1.24	-1.05	-1.05	-0.22	0.69	0.99
EPS adj and fully diluted (EUR)		-0.94	-0.68	-1.28	-1.24	-1.05	-1.05	-0.22	0.69	0.99
DPS (EUR)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DPS,preference shares (EUR)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EPS reported % Change			+chg	-chg	+chg	+chg	-chg	+chg	+chg	44.5%
EPS adjusted % Change			+chg	-chg	+chg	+chg	-chg	+chg	+chg	44.5%
EPS adj and fully diluted % Change			+chg	-chg	+chg	+chg	-chg	+chg	+chg	44.5%
DPS % Change										
Consensus Sales (EURm)										
Consensus EBITDA (EURm)										
Consensus EBIT (EURm)										
Consensus EPS (EUR)										
Consensus DPS (EUR)										

Cash flow statement

Market data as of: 04 December 2020

FY to 31/12 (EUR)	12/13	12/14	12/15	12/16	12/17	12/18	12/19	12/20E	12/21E	12/22E
Net profit before minorities		-0.7	-3.3	-8.0	-11.4	-14.0	-17.8	-22.4	68.5	98.9
Depreciation and amortisation		0.0	-0.1	-0.2	-0.3	-0.3	-0.2	-0.3	-0.3	-0.3
Goodwill impairment		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Change in working capital		0.3	-0.8	0.2	0.1	1.2	-0.3	1.0	0.4	-0.9
Others		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Levered post tax CF before capex		**-0.5**	**-4.2**	**-7.9**	**-11.5**	**-13.1**	**-18.4**	**-21.7**	**68.6**	**97.7**
% Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	42.4%
Capex		0.0	0.0	-0.1	-0.1	-0.1	-0.3	-0.2	-0.2	-0.2
Free cash flow		**-0.5**	**-4.2**	**-8.0**	**-11.7**	**-13.2**	**-18.6**	**-21.9**	**68.4**	**97.5**
% Change			-chg	-chg	-chg	-chg	-chg	-chg	+chg	42.5%
Acquisitions		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Divestments		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dividend paid		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Share buy back		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital increases		0.0	11.8	0.0	21.7	0.0	0.0	30.2	0.0	0.0
Others		-0.3	1.7	1.4	6.8	0.6	3.5	2.0	0.6	0.5
Change in net financial debt		**0.7**	**-9.3**	**6.6**	**-16.9**	**12.6**	**15.1**	**-10.3**	**-69.0**	**-98.0**
Change in cash and cash equiv.			9.4	-6.3	16.8	-5.5	-8.1	10.3	69.0	98.0
Attributable FCF		-0.5	-4.2	-8.0	-11.7	-13.2	-18.6	-21.9	68.4	97.5
Cash flow per share (EUR)		-0.61	-0.85	-1.28	-1.26	-0.98	-1.09	-0.22	0.69	0.98
% Change			-chg	-chg	+chg	+chg	-chg	+chg	+chg	42.4%
FCF per share (EUR)		-0.61	-0.86	-1.30	-1.27	-0.99	-1.10	-0.22	0.69	0.98
% Change			-chg	-chg	+chg	+chg	-chg	+chg	+chg	42.5%
Capex / Sales (%)		na	na	na	na	na	na	na	0.2%	0.2%
Capex / D&A (%)		17.2%	9.5%	74.6%	46.5%	31.0%	121.4%	60.8%	65.4%	80.0%
Cash flow / Sales (%)		na	na	na	na	na	na	na	68.8%	78.6%
FCF / Sales (%)		na	na	na	na	na	na	na	68.6%	78.5%
FCF Yield (%)			-7.1%	-26.9%	-33.0%	-36.2%	-128.2%	-35.4%	110.6%	157.6%
Unlevered FCF Yield (%)			-7.8%	-28.7%	-50.4%	-42.6%	-66.8%	-29.0%	na	-91.7%

Balance sheet

FY to 31/12 (EUR)	12/13	12/14	12/15	12/16	12/17	12/18	12/19	12/20E	12/21E	12/22E
Cash and cash equivalents		0.0	9.4	3.1	19.9	14.4	6.3	16.6	85.6	183.6
Inventories		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Accounts receivable		0.4	1.4	2.8	3.6	5.0	7.9	8.7	7.4	7.5
Other current assets		0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5
Current assets		**0.4**	**10.8**	**5.9**	**23.4**	**19.4**	**14.7**	**25.7**	**93.4**	**191.6**
Tangible assets		0.0	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Goodwill		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Intangible assets		0.0	2.2	2.1	2.0	1.9	2.4	2.3	2.2	2.1
Financial assets		0.0	0.3	0.1	0.2	0.3	0.4	0.4	0.4	0.4
Other non-current assets		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-current assets		**0.0**	**2.7**	**2.5**	**2.5**	**2.5**	**3.0**	**2.9**	**2.8**	**2.7**
Short term debt		0.2	0.4	0.2	0.3	1.8	9.8	9.8	9.8	9.8
Accounts payable		0.4	0.6	1.9	2.4	4.9	7.9	9.4	8.5	7.6
Other short term liabilities		0.4	0.4	0.8	1.2	1.6	1.9	2.1	2.2	2.3
Current liabilities		**1.0**	**1.4**	**2.9**	**3.9**	**8.3**	**19.7**	**21.4**	**20.5**	**19.8**
Long term debt		0.5	0.4	0.9	0.7	6.4	5.4	5.4	5.4	5.4
Pension provisions		0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1
IFRS16 Debt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other long term provisions		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other long term liabilities		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-current liabilities		**0.6**	**0.4**	**1.0**	**0.8**	**6.6**	**5.5**	**5.5**	**5.5**	**5.5**
Shareholders' equity		-1.1	11.7	4.6	21.2	7.0	-7.5	1.7	70.2	169.1
Minority interests		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total equity		**-1.1**	**11.7**	**4.5**	**21.2**	**7.0**	**-7.5**	**1.7**	**70.2**	**169.1**
Balance sheet total		**0.4**	**13.5**	**8.4**	**25.9**	**21.9**	**17.7**	**28.7**	**96.3**	**194.4**
% Change			3397.4%	-37.9%	209.2%	-15.7%	-19.2%	62.3%	235.7%	101.9%
Book value per share (EUR)		-1.46	2.40	0.73	2.31	0.53	-0.44	0.02	0.70	1.69
% Change			+chg	-69.5%	214.8%	-77.2%	-chg	+chg	3917.9%	140.9%
Net financial debt		0.7	-8.6	-2.0	-18.8	-6.2	8.9	-1.3	-70.3	-168.4
IFRS16 Debt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pension provisions		0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1
Others		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net debt		0.7	-8.6	-1.9	-18.7	-6.0	9.0	-1.2	-70.2	-168.2
Net fi. debt (+IFRS16) / EBITDA (x)		-1.1	2.8	0.3	2.0	0.5	-0.6	0.1	-0.9	-1.5
Trade working capital		0.0	0.8	0.9	1.2	0.1	0.0	-0.8	-1.1	-0.1
Net working capital		-0.4	0.4	0.1	-0.1	-1.5	-1.4	-2.4	-2.8	-1.9
NWC/Sales		na	na	na	na	na	na	na	-2.9%	-1.6%
Inventories/sales		na	na	na	na	na	na	na	0.0%	0.0%
Invested capital		-0.4	0.6	0.4	0.3	-1.2	-1.3	-2.2	-2.7	-1.7
Net fin. debt / FCF (x)		-1.5	2.1	0.2	1.6	0.5	-0.5	0.1	-1.0	-1.7
Gearing (%)		na	-73.8%	-43.7%	-88.9%	-88.6%	na	-78.5%	-100.2%	-99.6%
Goodwill / Equity (%)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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Company Name	Date	Business Line	Rating	Target Price	Closing Price
Biophytis (EUR)	01/10/2020 06:09	Equity Research	Reduce	0.27	0.48

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