INVEST SECURITIES

CLEANTECH

DEINOVE

BUY

TARGET PRICE : 4,5€ (vs 4,1€) +38%

UPDATE REPORT

AN UNMATCHED PRODUCT PORTFOLIO

Since its founding, Deinove has explored the possibilities offered by the Deinococcus bacteria in the healthcare sector, which is currently a priority area for the group. The antibiotics market is effectively a market of the future, with antibiotic resistance having become a healthcare emergency. The acquisition (100% paid in stock) of Morphochem, which has an antibiotic drug candidate that will enter into phase II trials, therefore represents a very good opportunity. In parallel, Deinove has successfully brought two carotenoids destined for the cosmetics market to the commercialization phase. Our valuation, which requires an equity injection of €15m, equals €130.7m, corresponding to €4.5 per share (vs €4.1 previously). We have a BUY rating for the stock with upside potential of +46% that only takes into account five carotenoids and Morphochem.

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Antibiotic resistance, a healthcare emergency …

Over the last few decades, the effectiveness of antibiotics has run up against bacterial resistance provoked by the massive and sometimes inappropriate use of antibiotics. Antibiotic resistance has become a worldwide healthcare emergency. It is forecast to be the cause of ten million deaths per year in 2050, representing a cost of over $60 trillion.

…and a market of the future

The fight against antibiotic resistance is creating a favorable environment for research players, thereby benefiting Deinove and its Antibiotics Program. Launched in 2009, this program offers high potential for access to new molecules. Deinove has already identified active molecules that combat pathogenic bacteria classified as priorities, with two patent filings made.

A new antibiotic in the clinical phase for Deinove

The acquisition of Morphochem last April 13, 100% paid in stock, has rounded out this antibiotic portfolio with the addition of the antibiotic compound MCB3837, which is currently in the clinical development phase and ready to enter into phase II trials. Additionally, the purchase option covering the NTBI program could further reinforce the portfolio.

Deinochem: two molecules already in the commercialization phase

Deinove is also pursuing the exploitation of its strain library for the development of new molecules for the cosmetics and animal nutrition sectors (Deinochem). The first molecules, destined for the cosmetics industry, are already in the commercialization phase.

A valuation indicating substantial upside potential

Our model integrates five carotenoids (vs. four previously) with business models fine-tuned in reaction to information provided by the company at the April 26 meeting. For Deinobiotics, we only value the new compound MCB3837. Our valuation, which requires an equity injection of €15m, equals €130.7m, corresponding to €4.5 per share. We have a BUY rating for the stock, which offers the advantages of molecules already in the commercialization phase and a high potential antibiotic candidate.

…/…

in € / share	2018e	2019e	2020e
Adjusted EPS	-0,37	-0,45	-0,04
chg.	*n.s.*	*n.s.*	*n.s.*
estimates chg.	*n.s.*	*n.s.*	*n.s.*

au 31/12	2018e	2019e	2020e
PE	n.s.	n.s.	n.s.
EV/Sales	n.s.	6,55x	3,23x
EV/EBITDA	n.s.	n.s.	n.s.
EV/EBITA	n.s.	n.s.	n.s.
FCF yield*	n.s.	n.s.	n.s.
Div. yield (%)	n.s.	n.s.	n.s.

* After tax op. FCF before WCR

key points	
Share price (€)	3,25
Number of Shares (m)	11,8
Market cap. (€m)	38
Free float (€m)	32
ISIN	FR0010879056
Ticker	ALDEI-FR
DJ Sector	Process Industries

	1m	3m	Ytd
Absolute perf.	-14,9%	+52,2%	+89,0%
Relative perf.	-16,8%	+52,3%	+88,2%

Source : Factset, Invest Securities estimates

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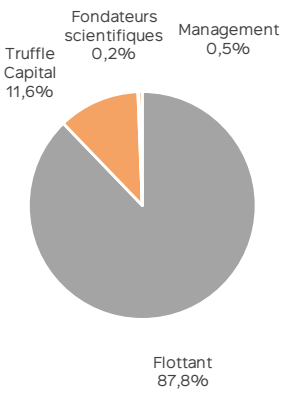
INVESTMENT CASE

Deinove is a biotechnology company that discovers, develops and produces high valued added compounds through the exploitation of the potential of its library of 6,000 rare bacteria, the deinococci. The company's activities are based on the discoveries of Professor Miroslav Radman. Deinove seeks to contribute new, high value added solutions in three major areas of application: (i) healthcare through the discovery and development of new antibiotics, (ii) cosmetics with anti-oxidants, anti-age molecules and texturizing agents and (iii) nutrition through the development of dyes, anti-oxidants and nutritional additives.

DONNÉES FINANCIÈRES

Shareholders



Share information	2013	2014	2015	2016	2017p	2018e	2019e	2020e
Published EPS (€)	-0,68	-1,23	-0,78	-0,75	-0,68	-0,50	-0,59	-0,08
Adjusted EPS (€)	**-0,45**	**-0,85**	**-0,62**	**-0,62**	**-0,53**	**-0,37**	**-0,45**	**-0,04**
Diff. I.S. vs Consensus	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*
Dividend	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Valuation ratios	2013	2014	2015	2016	2017p	2018e	2019e	2020e
P/E	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
EV/Sales	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	6,55x	3,23x
VE/EBITDA	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
VE/EBITA	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Op. FCF bef. WCR yield	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Op. FCF yield	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Div. yield (%)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

NB : valuation based on annual average price for past exercise

Entreprise Value (€m)	2013	2014	2015	2016	2017p	2018e	2019e	2020e
Share price in €	*11,1*	*11,5*	*6,9*	*3,2*	*2,0*	*2,0*	*2,0*	*2,0*
Market cap.	56,0	62,0	59,0	28,8	21,3	36,4	36,4	36,4
Net Debt	1,2	2,3	-5,8	0,8	5,2	-2,4	5,1	6,7
Minorities	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Provisions/ near-debt	0,0	0,0	0,0	0,2	0,2	0,0	0,0	0,0
+/- Adjustments	-2,1	-0,8	-0,8	-0,3	-0,1	0,1	0,1	0,1
Entreprise Value (EV)	**55,1**	**63,6**	**52,4**	**29,5**	**26,6**	**34,2**	**41,6**	**43,2**

Income statement (€m)	2013	2014	2015	2016	2017p	2018e	2019e	2020e
Sales	0,1	0,0	0,2	0,3	0,1	1,1	6,4	13,4
chg.	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*	*n.s.*
EBITDA	-5,2	-6,7	-7,6	-6,8	-8,7	-6,1	-7,3	-1,3
EBITA	**-5,5**	**-7,2**	**-8,2**	**-8,2**	**-9,8**	**-6,6**	**-7,8**	**-1,8**
chg.	***n.s.***	***n.s.***	***n.s.***	***n.s.***	***n.s.***	***n.s.***	***n.s.***	***n.s.***
EBIT	-5,5	-8,0	-8,3	-8,2	-9,7	-6,6	-7,8	-1,8
Financial result	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Corp. tax	2,0	1,4	1,6	1,1	2,4	1,2	1,3	1,3
Minorities+affiliates	0,0	0,0	0,0	-0,3	0,0	0,0	0,0	0,0
Net attributable profit	-3,4	-6,6	-6,6	-7,4	-7,3	-5,4	-6,5	-0,5
Adjusted net att. profit	**-3,4**	**-6,6**	**-6,6**	**-7,4**	**-7,3**	**-5,4**	**-6,5**	**-0,5**
chg.	***n.s.***	***n.s.***	***n.s.***	***n.s.***	***n.s.***	***n.s.***	***n.s.***	***n.s.***

Cash flow statement (€m	2013	2014	2015	2016	2017p	2018e	2019e	2020e
EBITDA	-5,2	-6,7	-7,6	-6,8	-8,7	-6,1	-7,3	-1,3
Theoretical Tax / EBITA	2,0	1,4	1,6	1,1	2,4	1,2	1,3	1,3
Capex	-0,4	-1,3	-1,8	-1,0	-4,4	-1,0	-1,0	-1,0
Operating FCF bef. WCR	**-3,6**	**-6,6**	**-7,8**	**-6,8**	**-10,6**	**-5,9**	**-7,0**	**-1,0**
Change in WCR	-0,2	0,8	-0,7	0,0	-0,8	-1,5	-0,4	-0,6
Operating FCF	**-3,8**	**-5,9**	**-8,5**	**-6,8**	**-11,4**	**-7,4**	**-7,4**	**-1,6**
Acquisitions/disposals	3,8	1,3	2,2	0,0	0,6	0,0	0,0	0,0
Capital increase/decrease	0,7	4,1	14,3	0,8	6,6	15,0	0,0	0,0
Dividends paid	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Other adjustments	0,1	-0,6	0,3	-0,7	-0,2	0,0	0,0	0,0
Published FreeCash Flow	**0,8**	**-1,1**	**8,2**	**-6,7**	**-4,5**	**7,6**	**-7,4**	**-1,6**

Balance Sheet (€m)	2013	2014	2015	2016	2017p	2018e	2019e	2020e
Assets	2,8	2,3	2,0	2,3	5,7	5,7	5,8	5,9
Intangible assets/GW	0,1	0,1	0,1	0,2	3,6	3,2	2,9	2,5
WCR	1,0	0,2	0,3	0,1	0,3	1,8	2,2	2,8
Group equity capital	2,6	0,2	8,1	1,4	0,7	9,9	3,0	2,1
Minority shareholders	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Provisions	0,0	0,0	0,0	0,2	0,2	0,0	0,0	0,0
Net financial debt	**1,2**	**2,3**	**-5,8**	**0,8**	**5,2**	**-2,4**	**5,1**	**6,7**

Financial ratios	2013	2014	2015	2016	2017p	2018e	2019e	2020e
EBITDA margin	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
EBITA margin	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Adjusted Net Profit/Sales	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
ROCE	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
ROE adjusted	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Gearing	47,9%	1190,8%	n.s.	55,3%	772,4%	n.s.	169,5%	320,2%
ND/EBITDA (in x)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

Source : company, Invest Securities Estimates

Next events
23/05/18 AGO + AGE à 14h

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4 - Deinove, at the heart of the bacterial world

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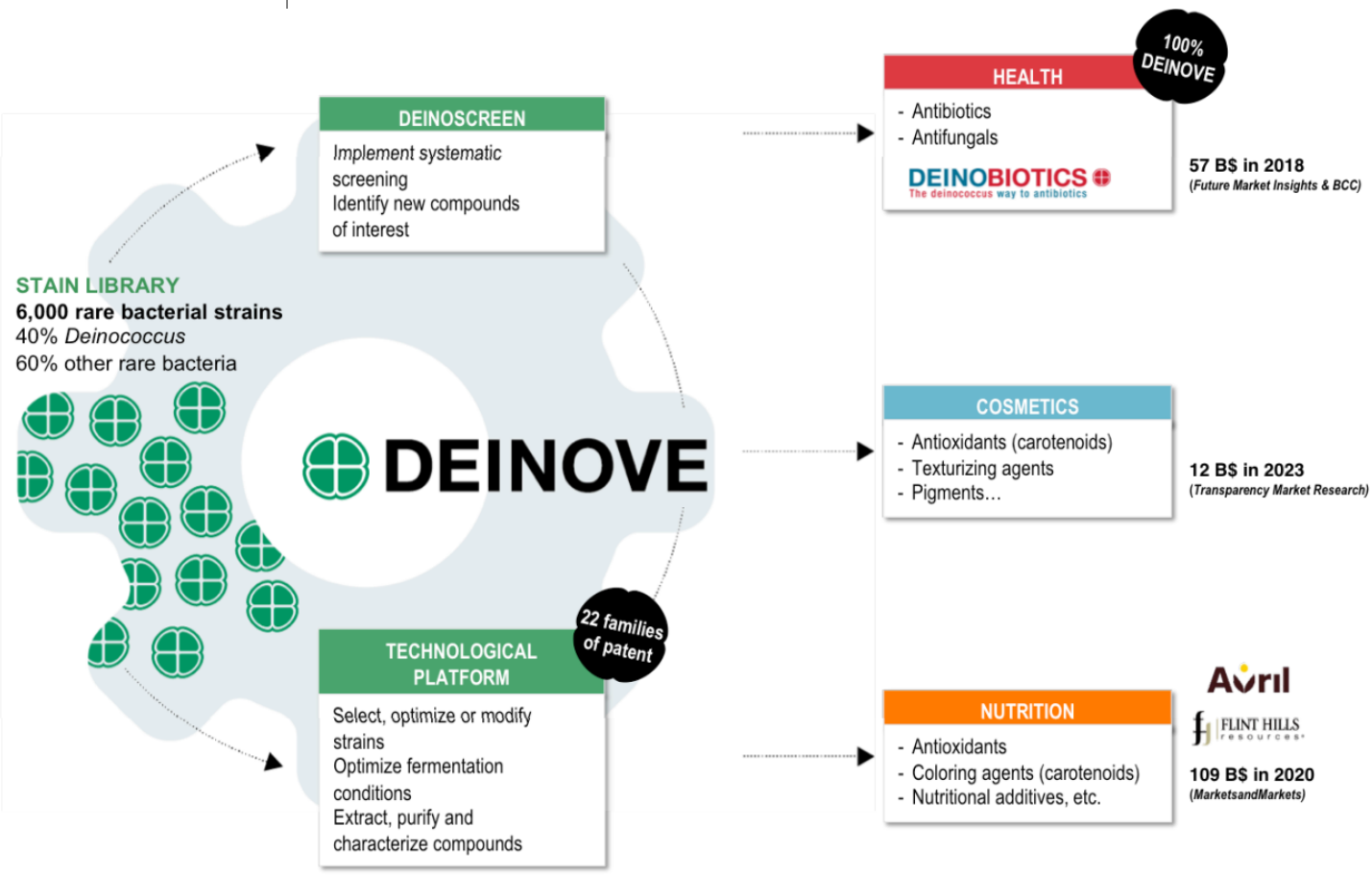
Deinove is a biotechnology company developing compounds from the bacterial world of interest to the health, nutrition and cosmetics industries.

To this end, Deinove relies on two key assets:

- ✓ a globally-unique collection of 6,000 rare and still unexploited bacteria, including the genus Deinococcus;
- ✓ a recognized scientific and technological excellence, which relies on a team of high-level researchers and a state-of-the-art platform that allows it to transform these microorganisms into natural micro-factories for industrial production.



Source: company

4.1 Deinove has important assets

4.1.1 A library of more than 6000 strains

Deinove has a rich collection of more than 6000 bacterial strains, which represents a major asset for its future developments. The strains are selected according to an original radiation screening method patented by the company based on UV resistance. This is why the strains are, for the most part, rare and with varied properties, like the Deinococci, that are only exploited by Deinove.

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This bacterial genus, discovered in 1956, has genetic and metabolic properties potentially useful for industrial purposes. It is the only genus of the Deinococcal order of the Deinococcus-Thermus branch of bacterial families. Deinococci are positive staining bacteria (Gram +), but they have a second membrane and are therefore structurally close to Gram- bacteria. Their two main characteristics are the presence of a carotenoid pigment that gives them a pink color (Deinoxanthin) and their high resistance to gamma and UV radiation, these are the two main criteria used to isolate new species.

This diverse library of 6000 bacterial strains (*Deinococcus, Bacillus, Microbacterium, Arthobacter …*) was created thanks to research platforms that for 4 years drew on biodiversity as well as different biological environments, including the most extreme such as volcanoes or glaciers.

Among the strains collected, bacteria that naturally produce compounds of interest are identified and their natural capacities are optimized by genetic engineering and fermenting thanks to Deinove's know-how, before being directed towards hyperproduction of the compounds.

4.1.2 A team together with advanced equipment

Deinove constantly recruits highly qualified employees and invests in state-of-the-art equipment to support its research efforts. Thanks to these investments, an increasingly automated metabolic engineering platform dedicated to deinococci has been developed and will later extend to other bacteria. The company wishes to be able to multiply the lines of research and obtain proof of concept in a very short time, which represents an undeniable advantage when negotiating possible industrial partnerships.

For the production of molecules of interest, the company has extremely sophisticated tools:

- ✓ a strain conservation system that ensures the sustainability of the strains library, which is a strategic asset of the Company;
- ✓ a screening platform based on in vitro and in cellulo tests (cell culture laboratory for cosmetic screening in particular and more recently screening for antibiotic activity);
- ✓ a robotized strain optimization platform, coupled with a bioinformatics system for the design of genetic constructs, whose mission is to produce dedicated strains according to the targeted molecules. This platform is also used by the Antibiotics programme to optimize molecules and thus obtain therapeutic molecules with optimal performance;
- ✓ a fermentation engineering platform that continuously evaluates the performance of selected strains and identifies areas for improvement in each process, thus guiding the work of genetic engineering. This platform is also used for the production of bacterial biomass for various efficacy tests;
- ✓ an extraction and purification platform to obtain the final product.

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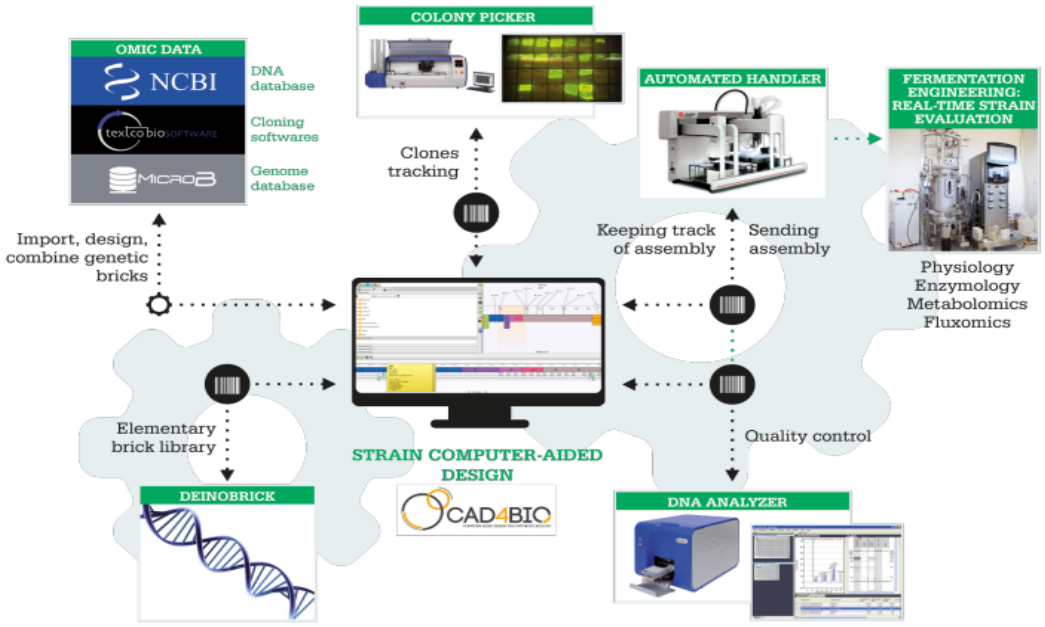
A state-of-the-art technological platform



Source: company

4.1.3 A strong intellectual property portfolio

It is necessary for Deinove to obtain, maintain and enforce patents and intellectual property rights. The company is building a unique portfolio of IP and innovative bioprocesses currently comprising 21 patent families - more than 130 international patent applications (including Europe, Eurasia, the US, Canada, Brazil, Australia, Japan and China) - covering selection, culture and strain engineering techniques and their applications in targeted markets.

To date, 9 families of patents have already been issued in different geographical territories, leading to nearly 93 granted patents. The Deinove research platforms are also the only ones in the world to exploit the Deinococcus bacterial genus, which guarantees the company priority for its discoveries.

Given the major challenge of patents in the biotechnology sector, Deinove has established a patent committee that regularly establishes an industrial property strategy. In order to optimize its industrial property rights, Deinove makes the strategic choice to file its patents at an early stage. In the context of partnership agreements with third parties, the intellectual property rights relating to the technologies are held in co-ownership with the partner. The committee pays particular attention to the protection of this intellectual property, in particular by systematically retaining the Deinove patent and discussing the freedom to exploit intellectual property developed in partnership.

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4.2 Antibiotics: a proven and now expanded potential

4.2.1 A programme that dates from 2009 ...

Deinove conducts several research programmes, some alone and others in partnership with industrial companies for easier access to the market. Among the most important programmes developed alone is the AGIR (Antibiotics Against Resistant Infectious Germs) Programme.

Since its creation more than 11 years ago, Deinove wanted to explore the possibilities offered by Deinococcus bacteria in health, particularly in the production of antibiotic and antifungal drugs. The need to discover new antibiotic molecules is now a global emergency, especially since the WHO has set as a public health priority the problem of the fight against antimicrobial resistance. Bacteria are among the world's leading producers of antibiotic substances, and Deinove's bacterial strains, so far largely under-researched and underused in this sphere, have high potential for access to novel molecules of therapeutic interest.

In 2009, Deinove launched an exploratory research programme with the support of Bpifrance and the European Regional Development Fund. This program called AGIR is led by Deinobiotics, a subsidiary created in 2012 and entirely dedicated to the research and development of antibiotics and antifungals. The aim of this programme is to identify novel antibiotic structures from rare or unexploited bacterial strains by developing new methods of collection, culture, screening, optimization and evaluation.

The team of experts responsible for this programme is made up of the best French specialists in antimicrobial development and led by Dr Le Beller. Since 5 January 2017, the subsidiary Deinobiotics has been taken over by Deinove 100% and more than a third of the group's workforce is dedicated to the activities of the Antibiotics Programme.

Furthermore, in 2017, the Deinove AGIR project was selected by the Investments for the Future Programme operated by Bpifrance and will receive support in the form of a € 14.6m financing over 5 years, materializing the commitment of the French public authorities in the fight against antimicrobial resistance. This support raises the total budget of the project to € 25m and the payments, which correspond to nearly half of the grants, will be spread over the 5 years of the programme. In all, Deinove will receive € 10.4m while the Charles Viollette Institute, partner of the project that hosted Deinobiotics until its reintegration within Deinove, will receive € 4.2m.

4.2.2 ... which resulted in two patent applications ...

So far, the Deinobiotics project has identified several bacterial strains of interest and two patent applications have been filed for a new antibiotic structure, while other compounds derived from this molecule or new strains are still under study.

The first innovative antibiotic candidate, DNB101, was patented in early 2017, which was a first step for Deinove to build an intellectual property portfolio in the field of antibiotics. This patent application was made in preparation for the transition to regulatory preclinical studies of this first drug candidate,

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after the announcement of the identification of this novel structure, in September 2016. This new molecule although produced by a strain already studied had never previously been identified and has a new chemical structure. Its activity against antibiotic-resistant bacteria has been proven (see table below) and the next step is its optimization in order to develop the DNB102.

Spectrum of activity of the compound DNB101

Strains	MIC_{90} (µg/mL)	Strains	MIC_{90} (µg/mL)
S.Aureus [MSSA & MRSA]	2	*C. difficile*	0.125
S. Epidermidis [MSSA & MRSA]	0.5	*P. acnes*	0.03
E. faecium [Vancomycin S & R]	0.5	*E. coli*	>4
E faecalis	>4	*P. aeruginosa*	>4
S. pneumoniae	0.125	*C. albicans*	>4

Source: company

MIC90 is the minimum concentration necessary to inhibit the growth of 90% of the pathogenic strain, the lower its value, the greater the potency of the product against the bacterium.

4.2.3 ... benefitting from an exclusive research licence ...

On 8 March, Deinove announced that it had signed an exclusive research licence with Naicons to expand its current strains library and increase opportunities for new antibiotic discovery. This collaboration with the Italian biopharmaceutical company, which also specializes in the search for innovative antibiotics, enables Deinove to initially access 400 selected microbial strains (in a collection of 45,000 vs. 6,000 for Deinove). In case of discovery of a strain of interest, Deinove may acquire it either via a commercial licence or full ownership, to initiate the development of drug candidates. This agreement makes it possible to optimize the use of the Deinove specialized platform whereas the company Naicons does not have the necessary resources to exploit itself all the potentialities of its library. Deinove plans to multiply this type of contract in the coming months and years to optimize its chances of discovering the antibiotics of the future.

4.2.4 ... and an agreement that could complete the antibiotic portfolio

On 22 March, Deinove announced the signing of a licence option agreement with the British company RedX Pharma for the acquisition of its NBTI (Novel Bacterial Topoisomerase Inhibitor) anti-infective program, targeting infections caused by critical priority pathogens (Acinetobacter, Pseudomonas aeruginosa). The NBTI programme covers a new class of antibiotics more easily targeting multi-resistant Gram- bacteria that are more resistant and generally more dangerous than Gram+ bacteria. It was selected in 2017 (along with 10 other programmes out of 168 applications) by the CARB-X global consortium, one of the largest public-private initiatives supporting research and innovation against antibiotic resistance.

This new class of antibiotics would replace fluoroquinolones, having the same target but a different site of action, which rules out the risk of cross-resistance. The initial indication targeted by these antibiotics is nosocomial pneumonia. More than 740 000 cases of this disease have been identified and 11.5% of Gram-associated pathogenic bacteria are multi-resistant to antibiotics. According to Deinove, treatment related to the disease would represent a $ 3.8 billion market by 2020.

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In addition to nosocomial pneumonia, other indications are targeted by these new antibiotics, namely urinary tract infections or intra-abdominal infections.

This programme has been the subject of prior optimization and a thorough in vivo evaluation confirming its acceptable toxicity profile and its potential for both efficacy and safety. The NBTI programme is also eligible for Qualified Infectious Disease Product (QIDP) designation and Fast Track status. This latter status is delivered to compounds developed for indications where therapeutic choices are restricted.

Redx Pharma intends to focus on indications of cancer and fibrosis, and Deinove will continue the work of optimization and selection for potential entry into the regulatory preclinical phase of one or more molecules. This work complements the AGIR programme. Deinove has until the end of 2018 to confirm its interest in this series of molecules and exercise its option. The transaction provides for an upfront payment and a supplement limited to the exercise of the option, the amounts of which have not been disclosed.

4.2.5 An opportunity that makes sense: the acquisition of Morphochem

On 13 April, the company announced the acquisition, through a contribution-in-kind transaction, of the entire capital of the Austrian company Biovertis, which itself owns the entire capital of the German company Morphochem. The latter has developed the antibiotic compound MCB3837 now in clinical phase. This acquisition allows Deinove to add a pharma molecule in the clinical phase, targeting severe *Clostridium difficile* (C.Diff) infections, gastrointestinal infections related to a disruption of the intestinal microbiota in fragile patients.

✓ An antibiotic against Clostridium difficile ...

C.diff infections are major pathologies, with clinical signs ranging from diarrhoea, abdominal pain and vomiting to peritonitis or septic shock. According to the Centers for Disease Control (CDC) and disease prevention, 40% of patients with C.Diff have a severe form and the mortality rate in patients with severe forms with complications is 35-50%. Because of the development of very virulent strains, C. diff infections have become more and more recurrent and require in 20% of cases rehospitalization within 30 days.

✓ ... whose incidence has greatly increased ...

The incidence of C.Diff has increased significantly over the last 20 years in Europe and North America. The CDC has recently identified C.Diff as one of the leading causes of healthcare-associated infections ahead even of staphylococcus aureus. In 2011, half a million Americans were infected and more than 29,000 patients died within 30 days of diagnosis (more than double the number of AIDS victims). Experts predict more than one million C.Diff patients in 2021,for the United States and Europe combined. Economically, the resulting costs would be between $ 1.2 and $ 4.8 billion a year in the United States and about € 3.0 billion a year in Europe.

✓ ... and whose treatments are not very effective

There are different treatments for C. diff, which vary according to the severity of the disease and are mostly administered orally, nasogastrically or intravenously in some cases. For mild forms, the known treatment is oral metronidazole, which is also used for moderate forms, in addition to oral Vancomycin. The latter

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is also used for the treatment of severe forms, with nasogastric Vancomycin or intravenous Metronidazole. However, to date, no fully effective antibiotic treatment is available because of the very consequences of the disease: oral treatments struggle to reach the intestine because of the patient's pathological condition, while antibiotics by intravenous routes do not penetrate the gastrointestinal barrier and therefore do not reach the site of infection.

✓ A first-in-class antibiotic that raises hope

The compound MCB3837 is a first-in-class antibiotic effective on Gram + bacteria and more particularly Clostridium difficile. The antibiotic is administered intravenously since oral treatments are not effective in severe infections. Intravenous administration of MCB3837 may provide a new and effective treatment option as it is able to cross the gastrointestinal barrier and target the bacteria.

The molecule is now ready to enter phase II. Several phase I trials in healthy volunteers have shown a high concentration of the antibiotic in the stool, a strong marker of its activity in the intestine. This first clinical phase allowed both to test the tolerance on a total of 100 subjects and to prove the safety of the drug. MCB3837 also obtained in 2016 both QIDP and FDA Fast Track status, which should favour its clinical development (favoured exchanges with the FDA, help with clinical developments, etc.) and result in a market launch within 4 or 5 years in the United States, the main market for the product, followed by a presentation of the product dossier in Europe 6 months or a year later.

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4.2.6 Research targeting the treatment of Clostridium difficile-related infections

Molecules under development against Clostridium difficile

Clinical phase in 2015	Drug / Product	Type of product	Indications	Current status
Phase III	MK-3415 (actoxumab) / MK-6072 (bezlotoxumab) (Merck)	Antibody	Treatment of C.diff anti-toxins A (MK-3415) and B (MK-6072) with intravenous antibodies as adjunctive therapy	Bezlotoxumab is more effective, and was approved by the FDA at the end of 2016 and marketed in 2017 under the name Zinplava
	Surotomycin (CB-183,315) (Cubist)	Antibiotic	Treatment of C.diff: Lipopeptide an antibiotic related to Daptomycin but administered orally	Development halted in 2017 based on test results
	Cadazolid (Actelion)	Antibiotic	Treatment of C.diff: hybrid antibiotic molecule, comprising fluoroquinolone and oxazolidinone groups, administered orally	Development halted
	C.difficile vaccine (Sanofi Pasteur)	Vaccine	Primary prevention of C.diff: vaccine containing toxioids of toxins A and B	Stopped at the end of 2017
Phase II	VP20621 C.difficile non-toxigenic (Shire Viropharma)	Prevention (vaccination approach)	Prevention of recurrent C.diff	Stopped at the end of 2017
	Ramoplanin (Ology Bioservices ex Nanotherapeutics)	Antibiotic	Treatment of C.diff	Stopped at the end of 2017
	LFF571 (Novartis)	Antibiotic	Treatment of C.diff: LFF571 is a new semi-synthetic thiopeptide	Interrupted after phase II
	SER-109 (Seres Therapeutics)	Microbiome	Treatment of recurrent C.diff: therapeutic oral microbiome (mixture of bacterial spores), tested in an open clinical trial	Currently in Phase III; The company expects this study to result in a registration application and commercialization
	SMT 19969 (Ridinilazole) (Summit)	Antibiotic	Treatment of C.diff: SMT19969 is a novel antibiotic molecule administered orally and active against certain Clostridial species (including C. diff)	Phase III entry scheduled for H1 2018
	C.difficile prophylactic vaccine, PF-06425090 (Pfizer)	Vaccine	Primary prevention of C.diff	Phase III (Fast track)
	VLA84 vaccine (Valneva)	Vaccine	Prevention of C.diff: a vaccine comprising a recombinant protein consisting of two truncated C. diff toxins (A and B)	Positive results from Phase II, the vaccine is ready to enter phase III
	MCB3837 (Deinove)	Antibiotic	An antibiotic effective on Gram + bacteria and more particularly C.diff. Administered intravenously and able to cross the gastrointestinal barrier and thus target the bacteria	Entry into Phase II forthcoming (Fast track)
Phase I	SYN-004 (ribaxamase) (Synthetic Biologics)	Enzyme for boosting antibiotic activity	Prevention of C.diff: SYN-004 is a class A beta-lactamase	Entry into Phase III; the drug has received the FDA's revolutionary treatment designation
	CRS3123, previously known as REP3123 (Crestone)	Antibiotic	Experimental Oral Antibiotic for the treatment of C.diff	Phase I successfully completed
	PolyCAb (MicroPharm)	Antibody	Treatment of severe C.diff: polyclonal antibodies administered intravenously	Phase I completed in 2016

Source: Valneva, Invest Securities

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4.2.7 An operation carried out without cash exchange with controlled dilution

The acquisition will be realized through a contribution in kind in the form of shares to the benefit of Deinove. In return for this contribution in kind, the contributors (mainly two funds managed by TVM capital) will receive 500,001 Deinove shares (on the basis of a price of € 1.8 / share, the market price on the last trading day preceding the signature of the letter of intent, worth € 0.9m) to which will be attached 8m BAAs (Share Allocation Warrants).

The BAAs will give the right to the allocation of free shares during the period of validity, in the following way:

- ✓ 500,001 new shares at the beginning of the next clinical trial, i.e. phase II;
- ✓ 2,300,000 new shares at the beginning of Phase IIb / III;
- ✓ 2,300,000 new shares at the end of the positive phase of Phase IIb / III;
- ✓ 1,399,998 new shares upon FDA approval of the application for commercialization in the United States or in any country or group of countries representing the same commercial value as the United States;
- ✓ 1,499,998 new shares at the time of the first marketing authorization in the United States or in any country or group of countries representing the same commercial value as the United States.

Thus, successive dilutions will correspond to significant value creation steps, the objective being that the latter will more than offset the dilutions. The approval of the operation will be validated during the general meeting of 23/05/2018.

Following this acquisition, TVM Capital becomes a new Deinove shareholder and is committed to keeping the shares created for six months and significantly contributing to future financing needs. The shareholder will have the right to appoint a director to the Board of Directors of Deinove (as long as the contributors collectively hold at least 5% of the capital). TVM Capital Life Science is a group of independent investment consultants and venture capital fund managers, based in Munich and recognized as one of the largest European investors in the pharmaceutical and biotechnology sector.

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4.3 Carotenoids: marketing has begun

4.3.1 An extensive screening program

Deinove has focused its developments in industrial biotechnology on the carotenoid family. Previously products have been mainly petroleum-based, these compounds have a strong potential in the three markets targeted by Deinove: in the form of food supplements or incorporated into skin care because of their antioxidant properties, as dyes in the nutrition sector, etc.

The goal of Deinove's Deinochem Carotenoids Programme is to provide a competitive biosourced alternative for industry by developing a range of naturally-produced carotenoids produced by biotechnology and offering significant advantages in terms of stability of supply and quality, preservation natural resources and finally costs.

4.3.2 Marketing of a first 100% Deinove active cosmetic agent ...

Several hundred deinococcal strains naturally produce carotenoids with novel structures. By optimizing this metabolic pathway, Deinove has managed to produce five types of carotenoids with proven commercial potential. A first novel carotenoid was selected and developed as an innovative active ingredient for cosmetics, with a commercial launch in April 2018.

Deinove plans to market it directly in the form of ingredients to manufacturers in its target markets but does not plan to develop its own industrial tools: it outsources production including the large-scale fermentation, extraction, purification and formulation while developing the entire process book upstream of this industrialization. As part of the development of its first carotenoid, fermentation on an industrial scale was entrusted to SAS Pivert while extraction was entrusted to Veg'Extra.

On April 10, Deinove announced the launch of Phyt-N-Resist, the first pure Phytoene dedicated to cosmetic products. Phytoene, a colourless carotenoid and precursor of all carotenoids, is a substance synthesized by plants that protects cells against oxidative stress and has skin regeneration properties. Until then, it was impossible to extract pure Phytoene, vegetable extraction processes allowing only a less concentrated mixture of carotenoids to be obtained.

The group's scientific platform has designed an exclusive process for deinococcus fermentation, allowing the production of the first pure phytoene for application in the cosmetics industry. Clinical tests have led to remarkable results, especially in reducing wrinkles. This innovative anti-aging ingredient has proven its effectiveness notably with targeted antioxidant protection and improved skin regeneration (14 days against 20 days in natural conditions).

4.3.3 ... and 4 partnerships including 1 in the marketing phase

- ✓ Hebelys, the second active cosmetic agent marketed with Greentech

This first collaborative programme for cosmetic applications started in March 2017. It aims to co-develop and commercialize new active ingredients for skin care, with a goal of marketing a first ingredient by the end of 2018. This partner program builds on the results of the programme

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Deinoscreen led by Deinove that has characterized the benefits of dozens of its strains on health and beauty. Six strains were selected by Greentech among those proposed by Deinove.

Greentech is a French company specializing in the production of high-tech active ingredients from the plant, marine and microbial worlds. Founded 25 years ago, and with subsidiaries in Germany, the United States and Brazil, Greentech today markets around 100 active ingredients derived from biodiversity to cosmetic manufacturers in more than 30 countries.

On April 16th, Deinove and Greentech announced the launch of Hebelys, the first cosmetics product from their collaboration. Hebelys is a natural anti-aging agent produced by fermentation of *Sphingomonas*, a bacterium from the Deinove strain. During tests, it demonstrated its ability to preserve the skin's youthfulness through its action on various aging factors and in particular on a protein involved in the process of cellular senescence. GREENTECH will provide effective marketing of HEBELYS®.

✓ A third active cosmetic agent in conjuction with Oleos by the end of 2018

Started in January 2018, this collaborative programme aims to develop a new 100% natural active cosmetic agent combining the exclusive properties of Deinove bacteria and Oléos' patented Oléo-eco-extraction technology. Deinove works to optimize the production performance of the selected strain, while Oleos formulates an innovative ingredient by applying its extraction process to bacterial biomass. The objective is to obtain a stable oily active ingredient, with clinically proven efficacy, that is easy to formulate and conforms with the requirements of the cosmetic market. The commercial launch is scheduled for the end of 2018. Oleos is a French company created in 2010, and joined the American Hallstar group in 2016. From its proprietary process, the company has developed about twenty active ingredients marketed under cosmetic brands in France and internationally, and continues to expand its range.

✓ Programme in animal nutrition in collaboration with Avril (ex- Sofiprotéol)

Launched in September 2014, the COLOR2B project aims to produce natural additives for animal nutrition. After performing a fine-grained selection of strains, their potential was validated by Avril via tests to check their effectiveness and bioavailability: the compounds produced by these strains, added in the feed of farm animals, were well assimilated and have produced the desired beneficial effects. April has chosen a strain on this basis. The project now focuses on the development of the finished product formulation and various preliminary analyses for industrialization.

✓ Animal Nutrition Programme in collaboration with Flint Hills Resources

Announced at the end of 2015, this programme targets the production by Deinococcus bacteria of animal feed additives from the raw material supplied by Flint Hills Resources (FHR), a leading refining and petrochemical company in the United States, and a subsidiary of Koch Industries - one of the world's largest private companies. FHR supports all R & D costs related to the project. FHR has selected several strains that meet their criteria and that are currently being evaluated. If successful, both partners will study the terms of a licensing agreement of the technology developed during the project.

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4.4 Models and valuations

4.4.1 Financial visibility until Q1 2019

When it published its annual results, the company reported cash of € 4.9m (vs. € 9.3m in 2016). Cash consumption in 2017 amounted to € 9.9m, including € 8.1m for operating expenses and € 1.8m for investments (laboratory equipment).

In 2017, Deinove received € 5.4m from: (i) € 1.4m from the CIR, (ii) € 0.1m from state aid, (iii) € 2.8m from the equity financing line, (iv) € 0.5m from disposal of the balance of its stake in Carbios and (v) € 0.6m cash flow from its subsidiary Deinobiotics.

The group considers that it has financial visibility until Q1 2019, without using the 4th tranche of its equity financing line. It should also be remembered that the group will benefit from BpiFrance funding of € 10.4m over a period of 5 years for its AGIR program (Antibiotics against Resistant Infectious Germs), of which € 2.6m was received in Q1 2018.

Nevertheless, before the acquisition of Morphochem, we felt that the company would have to find new sources of funding for needs evaluated at a minimum of € 6m. The financing needs for the development of the antibiotic MCB3837 will lead us to reevaluate this amount.

4.4.2 Expected revenues for Deinochem

During its strategic presentation on 26/04 the company gave some details about its various carotenoid programmes (Deinochem).

Concerning the products intended for cosmetics, (direct) marketing of the first ingredient was launched at the end of April. It is a product containing very pure phytoene whose price would be between 800 and 1000 € / kg.

The second ingredient was developed in partnership with Greentech which will ensure its marketing, scheduled for the end of the year. Its price should be in 300 and 400 € / kg.

Finally, a third compound is also planned for the end of the year. It is developed in partnership with Oleos and we do not have information on its price at this stage.

The two programmes for animal feed, the first developed with Avril and the second with Fint Hills Resources, continue to be developed.

Thus, we keep in our model these last two and we add the two ingredients developed with Greentech and Oleos, which gives us 5 ingredients in total (vs 3 previously).

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✓ Revenue generated by the compound developed with Avril

€m	12/17	12/18	12/19	12/20	12/21	12/22	12/23	12/24	12/25
Deinochem sales - Avril contract	0,03	0,10	1,60	2,20	2,40	4,80	9,60	12,00	15,00
Upfronts	0,03	0,10	1,00	1,00	0,00	0,00	0,00	0,00	0,00
Royalties pour Deinove (6%)	0,00	0,00	0,60	1,20	2,40	4,80	9,60	12,00	15,00
Ventes partenaires (m€)		0,00	10,00	20,00	40,00	80,00	160,00	200,00	250,00

For this compound, we chose a royalties model which assumes Deinove will receive 6% of revenue generated. According to our hypothesis, Deinove should reach € 2m milestones, one in 2019 and the second in 2020.

✓ Revenues generated by compound developed with Flint Hills Resources

€m	12/17	12/18	12/19	12/20	12/21	12/22	12/23	12/24	12/25
Deinochem sales - Flint Hills	0,05	0,05	0,65	2,20	3,40	4,80	9,60	12,00	15,00
Upfronts	0,05	0,05	0,05	1,00	1,00	0,00	0,00	0,00	0,00
Royalties pour Deinove (6%)		0,00	0,60	1,20	2,40	4,80	9,60	12,00	15,00
Ventes partenaires (m€)			10,00	20,00	40,00	80,00	160,00	200,00	250,00

For this compound, we also chose a royalties model which assumes Deinove will receive 6% of revenue generated. According to our hypothesis, Deinove should reach € 2m milestones, one in 2020 and the second in 2021.

✓ Revenue generated by the Phy-N-Resist compound

€m	12/17	12/18	12/19	12/20	12/21	12/22	12/23	12/24	12/25
Deinochem sales - Phyt-N-Resist		0,90	2,70	4,50	7,20	9,00	9,00	9,00	9,00
Upfronts		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Price per Kg (€)		900,00	900,00	900,00	900,00	900,00	900,00	900,00	900,00
Quantities sold (kg)		1 000	3 000	5 000	8 000	10 000	10 000	10 000	10 000
Sales for Deinove		0,90	2,70	4,50	7,20	9,00	9,00	9,00	9,00
Cost of sales		-0,27	-0,81	-1,35	-2,16	-2,70	-2,70	-2,70	-2,70

For this compound we selected a direct sales model with a price of 900 € / kg. Deinove will not receive an upfront payment for this product. Our manufacturing cost assumption is 30%.

✓ Revenue generated by the Hebelys compound

€m	12/17	12/18	12/19	12/20	12/21	12/22	12/23	12/24	12/25
Deinochem sales - Hebelys		0,00	0,80	2,00	4,00	4,80	6,00	6,00	6,00
Upfronts		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Price per Kg (€)		400,00	400,00	400,00	400,00	400,00	400,00	400,00	400,00
Quantities sold (kg)		0	2 000	5 000	10 000	12 000	15 000	15 000	15 000
Sales for Deinove		0,00	0,80	2,00	4,00	4,80	6,00	6,00	6,00
Cost of sales		0,00	-0,40	-1,00	-2,00	-2,40	-3,00	-3,00	-3,00

For this compound we selected a sales model via Greentech with a price of 400 € / kg. Deinove will not receive an upfront payment for this product, the cost of sales for Deinove is 50%.

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✓ Revenue generated by the compound developed with Oleos

€m	12/17	12/18	12/19	12/20	12/21	12/22	12/23	12/24	12/25
Deinochem sales -Oleos		0,00	0,60	2,50	3,00	3,60	4,50	4,50	4,50
Upfronts		0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00
Price per Kg (€)		300,00	300,00	300,00	300,00	300,00	300,00	300,00	300,00
Quantities sold (kg)		0	2 000	5 000	10 000	12 000	15 000	15 000	15 000
Sales for Deinove		0,00	0,60	1,50	3,00	3,60	4,50	4,50	4,50
Cost of sales		0,00	-0,30	-0,75	-1,50	-1,80	-2,25	-2,25	-2,25

For this compound we used the same sales model as previously with a price of 300 € / kg. Deinove will not receive an upfront payment for this product, the cost of sales for Deinove is 50%.

Ultimately, the turnover achieved by the carotenoid compounds evolves as follows:

€m	12/17	12/18	12/19	12/20	12/21	12/22	12/23	12/24	12/25
SALES	**0,07**	**1,05**	**6,35**	**13,40**	**20,00**	**27,00**	**38,70**	**43,50**	**49,50**
GROSS MARGIN	**0,07**	**0,78**	**4,84**	**10,30**	**14,34**	**20,10**	**30,75**	**35,55**	**41,55**

The gross margin is high, because (i) two compounds are marketed via royalties and (ii) the margins realized on the other three are themselves high.

4.4.3 Anticipated antibiotic therapy revenues

The business includes:

- ✓ A main active agent which consists of the compound MCB3837 (entry into phase II), which is an antibiotic bought via Morphochem;
- ✓ An internally developed active agent, DNB101 that is not yet in preclinical phase;
- ✓ A licensing option with the British company RedX Pharma for the acquisition of its anti-infectious NTBI programme.

At this stage, we do not have sufficient elements to be able to model the last two active agents. Our business is thus limited to the compound MCB3837.

For the latter we know that we will be in phase II by end 2018. We anticipate the start of phase III in 2021 and a commercial launch in late 2023 in the USA. Our prevalence rates were calculated from the 2021 projections (source: Decision Resources: Treatment Trends C. diff. Infections (EU) 2013. Davies et al. LID 2014. Lessa et al., 2015. Morphochem).

Our modeling horizon is 2038, i.e. 10 years after the antibiotic is placed on the market plus 5 years thanks to the QIDP status.

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Status		Commercialization							
Europe(€m)		2023	2024	2025	2026	2027	2028	2029	2030
West Europe population		410	412	414	416	418	420	422	424
Prevalence rate		0,010%	0,010%	0,010%	0,010%	0,010%	0,010%	0,010%	0,010%
Total number of patient		415 120	417 196	419 282	421 378	423 485	425 603	427 731	429 869
initial indication (40%)		166 048	166 878	167 713	168 551	169 394	170 241	171 092	171 948
Market share			1 660	8 344	25 157	50 565	84 697	85 121	85 546
Price per treatment	1500		1 500	1 500	1 500	1 500	1 500	1 500	1 500
Sales (€m)			**2,5**	**12,5**	**37,7**	**75,8**	**127,0**	**127,7**	**128,3**
USA (€m)		2023	2024	2025	2026	2027	2028	2029	2030
USA population		365	368	370	373	375	378	381	383
Prevalence rate		0,018%	0,018%	0,018%	0,018%	0,018%	0,018%	0,018%	0,018%
Total number of patient		671 300	676 000	680 732	685 497	690 295	695 127	699 993	704 893
initial indication (40%)		268 520	270 400	272 293	274 199	276 118	278 051	279 997	281 957
Market share		6 713	13 520	40 844	82 260	138 059	139 025	139 999	140 979
Price per treatment	1875	1 875	1 875	1 875	1 875	1 875	1 875	1 875	1 875
Sales (€m)		**12,6**	**25,3**	**76,6**	**154,2**	**258,9**	**260,7**	**262,5**	**264,3**
Total sales (€m)		**12,6**	**27,8**	**89,1**	**192,0**	**334,7**	**387,7**	**390,2**	**392,7**

Status									
Europe(€m)		2031	2032	2033	2034	2035	2036	2037	2038
West Europe population		426	428	431	433	435	437	439	441
Prevalence rate		0,010%	0,010%	0,010%	0,010%	0,010%	0,010%	0,010%	0,010%
Total number of patient		432 019	434 179	436 350	438 531	440 724	442 928	445 142	447 368
initial indication (40%)		172 807	173 671	174 540	175 413	176 290	177 171	178 057	178 947
Market share		85 974	86 404	86 836	87 270	87 706	88 145	88 586	89 028
Price per treatment	1500	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500
Sales (€m)		**129,0**	**129,6**	**130,3**	**130,9**	**131,6**	**132,2**	**132,9**	**133,5**
USA (€m)		2031	2032	2033	2034	2035	2036	2037	2038
USA population		386	389	391	394	397	400	402	405
Prevalence rate		0,018%	0,018%	0,018%	0,018%	0,018%	0,018%	0,018%	0,018%
Total number of patient		709 827	714 796	719 800	724 838	729 912	735 022	740 167	745 348
initial indication (40%)		283 931	285 918	287 920	289 935	291 965	294 009	296 067	298 139
Market share		141 965	142 959	143 960	144 968	145 982	147 004	148 033	149 070
Price per treatment	1875	1 875	1 875	1 875	1 875	1 875	1 875	1 875	1 875
Sales (€m)		**266,2**	**268,0**	**269,9**	**271,8**	**273,7**	**275,6**	**277,6**	**279,5**
Total sales (€m)		**395,1**	**397,7**	**400,2**	**402,7**	**405,3**	**407,9**	**410,4**	**413,0**

In order to model the revenue generated by this antibiotic candidate, we started with two populations likely to have the highest prevalence rates: Europe, but especially the United States.

- ✓ We assumed prevalence rates constant over time
- ✓ Of all the patients affected by the disease we targeted the 40% with the severe form (initial indication)
- ✓ We assumed a price of 1500 € per treatment (+ 25% in the USA)
- ✓ As the US market is the main target, we have assumed the launch of the antibiotic at the end of 2023 on this market, then in 2024 on the European market
- ✓ Our royalty rate is 15% for Deinove
- ✓ We have assumed an upfront payment of 20% of the sales made during a normal year, the latter being released in 4 stages: 2021 (transition to phase III), 2023 (launch), 2027 (first commercial milestone) and 2030 (second commercial milestone).

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Assuming a possible agreement with a large pharmaceutical group from the time of entry to phase III, the revenues for Deinove are as follows:

		2023	2024	2025	2026	2027	2028	2029	2030
Sales		**12,6**	**27,8**	**89,1**	**192,0**	**334,7**	**387,7**	**390,2**	**392,7**
Royalties Deinove	15%	1,9	4,2	13,4	28,8	50,2	58,2	58,5	58,9
Upfront / Milestones		20,7				20,7			20,7

		2031	2032	2033	2034	2035	2036	2037	2038
Sales		**395,1**	**397,7**	**400,2**	**402,7**	**405,3**	**407,9**	**410,4**	**413,0**
Royalties Deinove	15%	59,3	59,6	60,0	60,4	60,8	61,2	61,6	62,0
Upfront / Milestones									

Finally, we estimated the cost of this programme according to the periods:

- ✓ € 41m until 2021 (beginning of phase III);
- ✓ 25m € from 2022 to 2024 (launch in the USA and Europe);
- ✓ Tending towards 1m € / year beyond.

The total estimated need to reach the marketing phase is € 66m. The company has already announced that it will call for non-dilutive financing, which is widespread, especially in the US. Some answers to calls for projects are even in progress. We believe that this funding could reach € 30m over the 2019-2022 period.

4.4.4 Valuation of the Deinochem business

In order to value the Deinochem business, we use the Discounted Cash Flows method, as the comparable companies method can not be used here because of (i) the very small number of companies listed in France that are comparable and (ii) the stage of progress of the business.

Main assumptions

- ✓ A perpetual growth rate of 1%;
- ✓ A normative margin of 60% from 2026;
- ✓ The ending of the research tax credit in 2025.

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Investments depreciation and amortization are moderate for the group, which treats as expenses most of its research and development costs. Changes in WCR are mainly related to changes in turnover (assumption of one month's turnover for trade receivables and one-half for inventories).

As far as the research tax credit (CIR) is concerned, we calculate it by taking 70% of the external expenses and salaries (represents the eligible part) at the rate of 30%.

Calculation of WACC

For the calculation of the cost of equity, we used a risk-free rate of 0.79% (OAT 10 years as of 11 May 2018) and a market risk premium of 6.3% calculated by Factset (premium compared to CAC 40, as of 11 May 2018).

Instead of beta we use a specific risk premium that we set at 8%.

WACC calculation	
Market capitalization	36,5
Net debt	0,0
Risk-free rate	0,8%
Market premium	6,0%
Specific premium	8,0%
Cost of capital	**14,8%**
Cost of debt	0,0%
Tax rate	15%
Net cost fo debt	**0,0%**
Net debt	0,0%
Equity funding	100,0%
Discount rate	**14,8%**

Flow and valuation table

€m	12/17	12/18	12/19	12/20	12/21	12/22	12/23
Sales	**0,1**	**1,1**	**6,4**	**13,4**	**20,0**	**27,0**	**38,7**
Operating Income	**-9,8**	**-5,6**	**-2,8**	**2,2**	**5,9**	**11,8**	**20,6**
Operating margin	*n.s.*	*n.s.*	*ns*	*16,2%*	*29,6%*	*43,9%*	*53,3%*
Depreciation & Amortization	-1,1	-0,5	-0,5	-0,5	-0,5	-0,5	-0,5
Gross Cash Flow	**-8,7**	**-5,1**	**-2,3**	**2,7**	**6,4**	**12,3**	**21,1**
Tax rate							
Theoretical tax	2,4	1,2	1,3	1,3	1,3	1,1	1,2
Operating Cash Flow	**-6,3**	**-3,9**	**-1,0**	**4,0**	**7,7**	**13,5**	**22,3**
Change in WCR	-0,8	-1,5	-0,4	-0,6	-0,6	-0,6	-1,0
Capital Expenditure	-4,4	-1,0	-1,0	-1,0	-2,0	-2,0	-2,0
Operating Free Cash Flow	**-11,4**	**-6,4**	**-2,4**	**2,4**	**5,2**	**10,9**	**19,3**
coefficient		0,6	1,6	2,6	3,6	4,6	5,6
Discounted Free Cash Flow		-5,9	-2,0	1,7	3,2	5,8	8,9

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€m	12/24	12/25	12/26	12/27	12/28	Normatif
Sales	**43,5**	**49,5**	**52,0**	**54,6**	**57,3**	**57,9**
Operating Income	**26,1**	**31,7**	**31,2**	**32,7**	**34,4**	**34,7**
Operating margin	*59,9%*	*64,1%*	*60,0%*	*60,0%*	*60,0%*	*60,0%*
Depreciation & Amortization	-0,5	-0,5	-2,0	-2,0	-2,0	-2,0
Gross Cash Flow	**26,6**	**32,2**	**33,2**	**34,7**	**36,4**	**36,7**
Tax rate			30,0%	30,0%	30,0%	30,0%
Theoretical tax	1,0	1,0	-10,0	-10,4	-10,9	-11,0
Operating Cash Flow	**27,6**	**33,2**	**23,2**	**24,3**	**25,5**	**25,7**
Change in WCR	-0,4	-0,5	-0,5	-0,6	-0,6	-0,6
Capital Expenditure	-2,0	-2,0	-2,0	-2,0	-2,0	-2,0
Operating Free Cash Flow	**25,2**	**30,7**	**20,7**	**21,8**	**22,9**	**23,1**
coefficient	6,6	7,6	8,6	9,6	10,6	10,6
Discounted Free Cash Flow	10,1	10,7	6,3	5,8	5,3	

Our enterprise value stands at € 88.1m.

Valuation	en m€
Sum of discounted cash flows	49,7
Discounted terminal value	38,4
Financial long term assets	0,0
Enterprise value	**88,1**

4.4.5 Valuation of the antibiotherapy business

In order to value the Deinobiotics business we use the probabilistic Discounted Cash Flows methods.

€m		2023	2024	2025	2026	2027	2028	2029	2030
Sales		**12,6**	**27,8**	**89,1**	**192,0**	**334,7**	**387,7**	**390,2**	**392,7**
Royalties Deinove	15%	1,9	4,2	13,4	28,8	50,2	58,2	58,5	58,9
Upfront / Milestones		20,7				20,7			20,7
Non dilutive financing									
TOTAL		**22,5**	**4,2**	**13,4**	**28,8**	**70,9**	**58,2**	**58,5**	**79,6**
Total cost		-10,0	-5,0	-4,0	-3,0	-2,0	-1,0	-1,0	-1,0
Tax rate upfront		*-28%*	*-28%*	*-28%*	*-28%*	*-28%*	*-28%*	*-28%*	*-28%*
Tax rate royalties		*-15%*	*-15%*	*-15%*	*-15%*	*-15%*	*-15%*	*-15%*	*-15%*
NOPAT		**6,5**	**-1,5**	**7,4**	**21,5**	**55,5**	**48,4**	**48,7**	**63,9**
Change in WCR				-2,7	-5,8	-10,0	-11,6	-11,7	-11,8
% of sales		3,0%	3,0%	3,0%	3,0%	3,0%	3,0%	3,0%	3,0%
FCF		**6,5**	**-1,5**	**4,7**	**15,7**	**45,5**	**36,8**	**37,0**	**52,2**

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€m		2031	2032	2033	2034	2035	2036	2037	2038
Sales		**395,1**	**397,7**	**400,2**	**402,7**	**405,3**	**407,9**	**410,4**	**413,0**
Royalties Deinove	15%	59,3	59,6	60,0	60,4	60,8	61,2	61,6	62,0
Upfront / Milestones									
Non dilutive financing									
TOTAL		**59,3**	**59,6**	**60,0**	**60,4**	**60,8**	**61,2**	**61,6**	**62,0**
Total cost		-1,0	-1,0	-1,0	-1,0	-1,0	-1,0	-1,0	-1,0
Tax rate upfront		*-28%*	*-28%*	*-28%*	*-28%*	*-28%*	*-28%*	*-28%*	*-28%*
Tax rate royalties		*-15%*	*-15%*	*-15%*	*-15%*	*-15%*	*-15%*	*-15%*	*-15%*
NOPAT		**49,4**	**49,7**	**50,0**	**50,3**	**50,7**	**51,0**	**51,3**	**51,7**
Change in WCR		-11,9	-11,9	-12,0	-12,1	-12,2	-12,2	-12,3	-12,4
% of sales		3,0%	3,0%	3,0%	3,0%	3,0%	3,0%	3,0%	3,0%
FCF		**37,5**	**37,8**	**38,0**	**38,3**	**38,5**	**38,8**	**39,0**	**39,3**

Main assumptions

- ✓ A commercial launch in late 2023 in the USA and in 2024 in Europe;
- ✓ An upfront payment of 20% of 2038 sales (peak sales) divided into 4 equal milestones (2021, 2023, 2037 and 2030);
- ✓ A probability of success of 30%.

Valuation	€m
Sum of discounted FCF	58,7
Terminal value	30,3
Terminal growth	-50%
WACC	14,8%
NPV	89,0
Success rate	30%
Enterprise value	**26,7**

Our enterprise value stands at € 26.7m.

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4.4.6 A valuation of € 4.5 / share

In total, in order for our forecasts to be financed and according to our assumptions, we estimate that the group will need a total amount of € 15m, which we integrate in the form of a capital increase on the assumption of a discount of 20 % on the last quoted price.

In order to calculate the valuation per share we present in the table below the calculation of the number of shares used:

Dilution	
Nb of existing shares	11 618 334
Dilution from BCE	999 771
Dilution from BSA	1 030 688
Dilution from equity line	1 115 000
Dilution from Morphochem	7 999 997
Dilution from capital increase	6 067 961
	17 213 417

The latter consists of the number of shares at 31/12/17, to which is added the potential dilution generated by the BCE and BSA and by the equity line used at the beginning of the year. Finally, we must add the dilution related to the acquisition of Morphochem and that related to our assumption of capital increase.

In total, our valuation of Deinove's equity amounted to € 130.7m, ie € 4.5 / share. We maintain our BUY recommendation with regard to the potential of each product but also to their different stages of development that allows the company to have a good visibility on the takeoff of its turnover from 2019.

Deinove valuation	€m	€
Deinochem valuation	88,1	3,1
Deinobiotics valuation	26,7	0,9
Net debt 2017	5,2	
Cash in from BSA & BSPCE	6,1	
Capital increase 2018	15,0	
Valuation	**130,7**	**4,5**

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SWOT ANALYSIS

STRENGTHS

- A network of academic and industrial partners and 130 international patents
- A pharmaceutical portfolio with a molecule ready to enter phase II trials
- Products already in the commercial phase

WEAKNESSES

- Certain processes requiring time before reaching the industrial phase

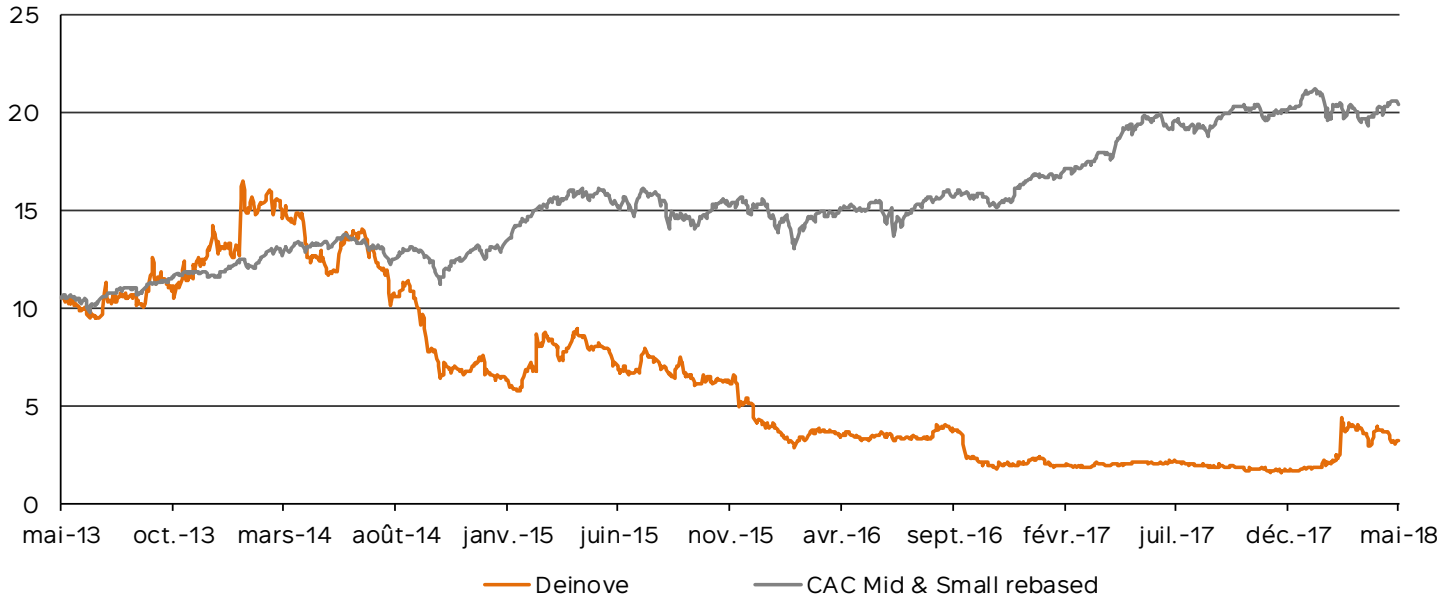
OPPORTUNITIES

- Areas of application with high demand for new molecules
- Antibiotic resistance / very substantial need for new molecules

THREATS

- Competing molecules / technologies

SHARE PRICE CHANGE FOR 5 YEARS



DETECTION OF CONFLICTS OF INTEREST

	Corporate Finance	Treasury stocks holding	Prior communication to company	Analyst's personal interest	Liquidity contract	Listing Sponsor	Research Contract
Deinove	Oui	Non	Oui	Non	Non	Non	Oui

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