

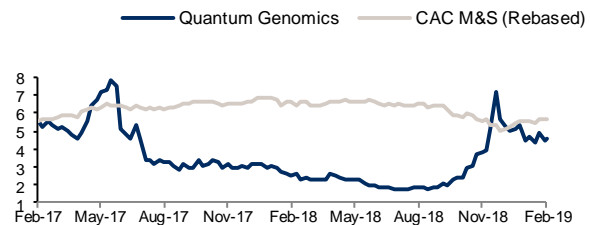
# QUANTUM GENOMICS

**BUY**
**€ 4.58** at 25 February 2019

Target : € 12.5 (172.9%)

## Contact

L/H 12M	€ 1.70/7.25
Vol. 3M	503349 shares/day
Shares Outst.	16 294 349
Mkt Cap.	m€75
Free Float	m€ 59
Market	Euronext Growth
Sector	Life Sciences
Bloomberg	ALQGC FP
Isin	FR0011648971
Index	EN Growth Allshare
<b>Shareholder structure</b>	
Free float	78.4%
Alix Am Pte Ltd.	11.7%
Estate of Liliane Bettencourt	8.3%
Norges Bank Investment Mgmt	1.6%
<b>Capital</b>	



Perf.	1 mth	6 mths	1 year
Absolute	+2.2%	+146.2%	+83.6%
Rel to CAC M&S	-0.6%	+180.4%	+113.4%

## Partnership before H2 2020

- In December 2018, the company drew on the equity line set up in March of last year for the second time, raising an additional €10m. This strengthened its cash position and will allow it to cover all costs associated with the action plan unveiled for 2019.

- With an estimated cash position of €14.3m at the end of 2018, visibility on the company's finances is good through Q1 2020. This supports our assumption that it will reach a deal within 18 months of announcing the results of its Ph II hypertension study.

- ALQGC intends to launch its pivotal study in hypertension in 2019. It estimates that it can bring firibastat to the market by 2023 and that the drug will achieve peak sales of more than €3bn in 2031, with €723m of this going to ALQGC.

- The company also plans to launch a Ph IIb study in heart failure in Q2 2019, which will be a short-term catalyst given the large size of this market and the fact that the condition is still inadequately treated in patients prior to infarction. Diagnosis and treatment currently rely on a process of exclusion, which is why there is so much therapeutic trial and error today.

- Our model now factors in a partnership in 2020, while the phase III hypertension study is still ongoing. We had assumed in our report published in November 2018 that a deal would be signed in 2022, at the end of the phase III.

- We have raised our TP (SOP-based) from €9.3 to €12.5 and are keeping the stock on a Buy. The new TP takes into account the €10m raised in December, a move that supports our belief that a deal will be reached in 2020 vs. 2022 for the hypertension programme.

Chge Adjusted EPS (€)	12/18e	12/19e		
New	-	-		
Old	-	-		
Chge	-	-		
Ratios	12/17	12/18e	12/19e	12/20e
PE	ns	ns	ns	ns
PEG	ns	ns	ns	ns
P/CF	ns	ns	ns	ns
EV/Sales	ns	ns	ns	7.5
EV/Cur.Oper.Inc.	ns	ns	ns	ns
EV/EBIT	ns	ns	ns	ns
P/BVPS	5.0	22.0	15.6	39.8
Yield	0.0%	0.0%	0.0%	0.0%

Per Share data	12/17	12/18e	12/19e	12/20e
Adjusted EPS (€)	-0.85	-0.78	-0.92	-0.59
Chge	ns	ns	ns	ns
CFPS (€)	-0.84	-0.77	-0.99	-0.68
FCFPS (€)	-0.97	-0.78	-0.85	-0.75
BVPS (€)	0.92	0.21	0.29	0.12
Dividend (€)	0.00	0.00	0.00	0.00

Results	12/17	12/18e	12/19e	12/20e
Sales (m€)	0.0	0.0	0.0	10.0
Var.	ns	ns	ns	ns
Cur.Op.Inc./Sales (%)	ns	ns	ns	-125.2
EBIT/Sales (%)	ns	ns	ns	-124.0
EBIT (m€)	-10.5	-13.4	-17.4	-12.4
Net att. Profit (m€)	-9.4	-12.3	-16.3	-11.3
Var.	ns	ns	ns	ns
Net Margin (%)				-112.5

Financ. struct.	12/17	12/18e	12/19e	12/20e
ROCE (%)	ns	ns	ns	ns
ROE (%)	ns	ns	ns	ns
CF (m€)	-9.2	-12.1	-16.1	-11.1
FCF (m€)	-10.6	-12.4	-15.1	-14.3
Net Debt (m€)	-11.1	-14.3	-6.5	0.5
Equity + Min. (m€)	10.1	3.3	5.2	2.2
Gearing (%)	-109.5	-435.6	-124.9	24.4

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## **1. Equity line drawn on in December 2018**

### **1. GD estimate: €14.3m of cash at the end of 2018**

Quantum Genomics set up a €24m equity line financing facility in March 2018, available for a three-year period with a maximum discount of 7.5%. Shares are to be offered at a value determined by weighting the average share price by volumes over the two trading days preceding each issue.

A first €4m tranche was drawn on 31 October, 2018 and about €10m more were issued in December 2018, lifting the number of shares in issue at end-2018 to 15,774,349.

When we initiated coverage of the stock in November 2018, we anticipated two developments directly related to the company's financial situation:

- Postponement of the Ph IIb study in heart failure (HF), originally scheduled for launch by the end of 2018, but which we saw kicking off in 2019 given the company's cash requirements and the need to give priority to its most advanced hypertension (HT) programme. This assumption has been confirmed since Quantum Genomics is now planning to start its Ph IIb trial on HF in Q2 2019;
- An around €10m refinancing transaction no later than H1 2019, to serve as a bridge until the company signs a deal (under the blue sky scenario) or until another source of financing could be activated (€10m still available via the equity line, €8m potentially through share warrants or a capital increase in an amount that could cover all R&D expenses for the Ph III in HT at least, i.e. €20m). The €10m we anticipated it would raise by H1 2019 at the latest was secured in December 2018 when the company drew on the equity line, thus confirming our base case scenario

### **2. Enough cash to keep operating independently through Q1 2020**

Quantum Genomics ended June 2018 with a cash position of €5.9m. Taking into account the 2,050,000 new shares issued in December 2018 at an average price of €5.02 (total of €10.3m) via the equity line financing facility, and the 120,144 new shares created at the very end of 2018 through the exercise of share warrants listed in July 2017 (estimated proceeds of between €0.4m and €0.5m), we estimate that the company had €14.3m of cash at the end of last year. At 31 January 2019, there were 16,294,349 Quantum Genomics shares in all, as 520,000 additional ones were issued via the equity line after 31 December 2018, representing close to €2.2m by our estimates.

This cash position ensures visibility on the company's finances for one year, long enough to cover all costs associated with its recently unveiled action plan for 2019. Our cash estimate factors in the capital increases of Q4 2018 as well as estimated opex of close to €13.4m in 2018 vs. €9.5m in 2017. This year-on-year increase primarily reflects an acceleration of R&D expenses as the development programmes mature, particularly NEW-HOPE, the Ph IIb trial in HT successfully completed. It should be recalled that this study delivered results six months ahead of schedule after patient recruitment exceeded initial estimates. As a result, expenses forecast for 2019 were incurred in 2018, explaining the €4m rise in R&D costs (almost 60%) between 2017 and 2018 according to our estimates.

## 2. Action plan for 2019

### 1. Two clinical studies to be launched in 2019

On 1 February of this year, the company unveiled its 2019 action plan, centred on the launch of two clinical trials in hypertension (HT) and heart failure (HF):

- 18 February: meeting of the steering committee to elaborate on the design of the study that will be presented to the FDA and EMA for the pivotal trial in HT;
- H2: launch of the pivotal Ph III in HT;
- Q2: results of the study on controlled-release firibastat tablets for once-daily administration (vs. twice daily in current form);
- Q2: launch of Ph IIb QUORUM study for HF. The goal is to evaluate the efficacy and safety of firibastat compared to ramipril (angiotensin-converting-enzyme inhibitor, the standard of care for HF) in patients having suffered acute myocardial infarction.

### News flow in 2019

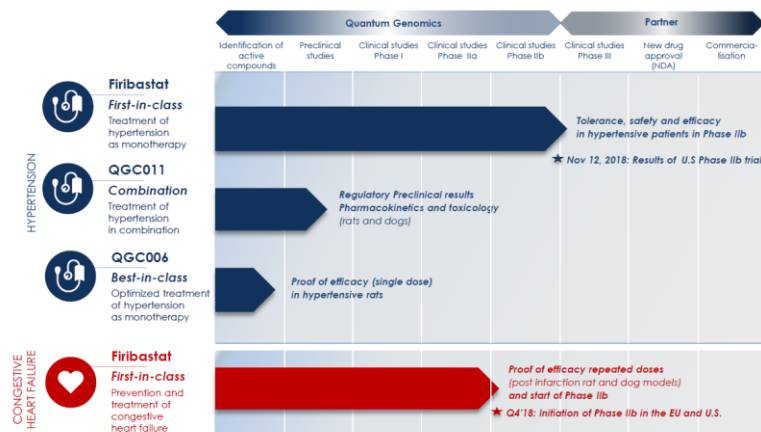
		2018	2019				2020			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Hypertension	Firibastat	Ph IIb results				Launch Ph III US/EU	★			
Congestive Heart Failure				Launch Ph IIb US/EU						

Sources: ALQGC, Gilbert Dupont. Star = announcement of partnership deal according to GD

The company is currently exploring treatments for two cardiovascular problems: HT and HF. It is evaluating the therapeutic benefits of firibastat via four programmes:

- QGC001: the first-in-class form of firibastat, which demonstrated very significant results in HT in a Ph IIb study, positive results for which were reported in Q4 2018;
- QGC011: a form combining firibastat with standard treatments for non-resistant HT. The product's pharmacokinetic and toxicological characteristics were validated in preclinical studies;
- QGC006: a best-in-class, optimised treatment of HT as monotherapy, believed to be ten times more potent than the first-in-class drug;
- QGC101: this first-in-class form of firibastat for treating congestive HF showed encouraging results in preclinical studies on different animal models.

### Pipeline



Typically identification and preclinical phases last 2-3 years, a phase I 1-2 years, a Phase IIa 1-2 years, a Phase IIb 1-2 years, a Phase III 2-3 years and new drug approval and commercialization 2-3 years. January 2019

Source: ALQGC

The company is also developing a new formulation of firibastat to optimise the current form. Its goal is to create a version that can be taken once instead of twice a day. A clinical study is being conducted on 12 healthy volunteers who are given five courses of treatment to evaluate the new form's safety and tolerability. The end of the recruitment has been announced February the 25<sup>th</sup>, and results of this first study are anticipated in Q2

2019, with R&D costs expected to be in the €0.5m-€1m range. This new formulation of firibastat would have a hugely positive impact on compliance since it would be taken less often, reducing the risk of patients not receiving the proper doses at the right frequency. We believe this improvement could help lower the number of patients treated but poorly controlled, a non-negligible share of which are probably not strictly following their treatment plan.

## **2. Heart failure, a key programme with considerable upside**

Quantum Genomics announced the successful completion of its Ph IIB study in HT at the American Heart Association annual meeting of 10 November 2018, establishing clinical proof of concept for firibastat in this indication. Firibastat demonstrated its efficacy with a high degree of statistical significance in hypertensive patients known to be difficult to treat. The company plans to launch the pivotal study for this indication in Q2/Q3 of this year. We see firibastat reaching the market as a hypertension treatment in 2023, with sales peaking at more than €3bn in 2031 of which €723m would go to ALQGC.

The company is also exploring how the drug could be used to treat heart failure and will launch a Ph IIB trial in Q2 2019. This indication holds substantial upside for the company. There are currently 25m people worldwide affected by HF. In terms of incidence, it affects 1-5 people per 1,000 in industrialised countries every year taking all age groups together. Prevalence is 3-20 per 1,000 and is rising steadily in the developed world. HF is the leading cause of hospitalisation in those over 65. The HF treatment market was worth \$10.1bn in 2015, and thus represents a real opportunity. A study conducted by Allied Market Research in 2016 suggested that the market's value will rise to \$14.8bn in 2022, implying expansion of close to 5.5% in 2015-2022.

The HF prevention and treatment programme currently developed by Quantum Genomics is evaluating the potential of firibastat to treat the condition. Exploratory work by researchers showed that hyperactivity of the brain renin-angiotensin system and sympathetic system could contribute to the progressive remodelling and dysfunction of the heart following myocardial infarction. Preclinical animal studies showed that when administered to rats having undergone myocardial infarction, firibastat reduced the activity of the sympathetic nervous system and improved the function of the animals' cardiac left ventricle as the drug inhibited APA and the production of AngIII at the level of the brain. The company recently announced the publication of two scientific articles confirming the benefits of firibastat for treating HF:

- A study conducted at the University of Ottawa Heart institute with Collège de France showed that repeated oral administration of firibastat to rats reduced cardiac dysfunction observed following myocardial infarction as efficiently as losartan, the angiotensin II type I receptor agonist chosen as the reference treatment, without inducing hypotension or increasing the risk of degrading renal function.
- Work conducted with Collège de France demonstrated that firibastat, when administered orally in mice for 4 to 8 weeks starting within 48 hours of myocardial infarction, was at least as effective as enalapril, an angiotensin-converting enzyme inhibitor clinically approved for the prevention and treatment of symptomatic heart failure. These observations suggest that chronic treatment with firibastat prevents cardiac dysfunction by normalising brain aminopeptidase A hyperactivity and attenuates cardiac hypertrophy and fibrosis observed after myocardial infarction.

Meanwhile, a pan-European Ph IIa randomised study on heart failure was launched in June 2016. Called QUID-HF (QUANTUM Genomics Incremental Dosing in Heart Failure), the double-blind study was conducted in approximately ten university hospitals in eight countries. It started at a time when very little data was available for firibastat in treating humans. As this was the first HF study Quantum Genomics had conducted, it chose to recruit patients whose cases were severe enough to demonstrate the effects of the treatment, but who were "healthy" enough to limit the risk to patients. The selection criteria applied were so strict that recruitment proved difficult. Quantum Genomics thus decided not to continue the study, opting instead to develop a new programme for this indication relying on data that was already available for firibastat thanks to the Ph IIa and IIB studies done on hypertension as well as the safety data obtained through QUID-HF.

Its next step will be the Ph IIb study, QUORUM, to be conducted on patients having recently undergone myocardial infarction. This target will allow the company to expand its selection criteria without creating more risks for patients vs. QUID-HF, since firibastat's safety profile is now clearly established. In other words, the shift from QUID-HF to QUORUM is not a repurposing in the strict sense of the term since the goal is still to treat HF with reduced ejection fraction (HFrEF), but this time specifically targeting post-infarction patients. This choice is underpinned by several factors:

- Infarction is the leading cause of HFrEF (at least 50%);
- Patients having had at least one episode of infarction are easy to identify and thus to select, since they are treated in known specialised centres;
- Lastly, this medical profile is the closest model to the animal models that showed very good results in preclinical phases.

It is also interesting to note that the announcement of the QUORUM study is quite timely since it coincides with the launch in France of a major project: various healthcare players, from the public and private sectors, are teaming up with big pharma and start-ups to drive a €14m project of which €7m will come from BpiFrance through the "Invest in the Future Programme" (*Programme d'investissements d'avenir*). [PACIFIC](#), a five-year project launched on 21 January and spearheaded by Sanofi, aims to redefine Heart Failure with Preserved Ejection Fraction (HFpEF), an increasingly common form of HF that is still poorly diagnosed and treated today. Noting that this is a heterogeneous syndrome, project investigators say the goal of PACIFIC is to identify subgroups and develop medicines suited to them or to identify the profiles of patients who respond well to existing treatments, the efficacy of which is difficult to establish due to heterogeneity within the disease. A longer-term goal of this project partly run/financed by public institutions (Inserm, AP-HP and BpiFrance) is to improve the quality of life and life expectancy of patients in order to reduce the disease's impact on public health spending. Indeed, heart failure is a very debilitating condition (50% of patients die within five years of diagnosis) and hospitalisation costs are very high: the cost to France's public healthcare system is estimated at €1.1bn a year. HFpEF affects 500,000 people in France, and it accounts for 1 to 3% of total hospital costs since rehospitalisation rates are high (25 to 30% a year).

Regarding the HF programme, since prevalence is much lower than for HT, the cohorts required for clinical trials will probably be relatively small and thus within the means of a company like Quantum Genomics. We estimate that the company ended 2018 with more than €14m of cash, which should cover all costs associated with its action plan for 2019:

- Ph IIb for HF: estimated cost of €8m over two years;
- Ph III for HT: estimated cost of €20m over two years.

With these two studies expected to start in 2019, the bulk of expenses will likely be concentrated in 2020, when most operating costs will be incurred, particularly for clinical work. This R&D spending timeline fits with our cash flow estimates and assumptions about visibility on the company's finances, underpinning our scenario calling for a deal to be reached in H1 2020:

- Within 18 months of its results announcement;
- As permitted by the company's cash situation and refinancing needs;
- At a time when clinical development will be far enough along to make it easier for the partners currently in talks with Quantum Genomics to decide to make a move.

### **3. Buy, TP €12.5 vs. €9.3 (SOP)**

#### **1. Business development strategy**

The company's business development strategy involves entering into a partnership by mid-2020 at the latest. It should be recalled that Quantum Genomics still has €10m it can tap through the €24m equity line set up in March 2018, after drawing €4m in October and €10m in December 2018. We estimate that its opex reached about €14m in 2018 (opex = close to €7m and cash = less than €6m at 30 June 2018 per company reporting). According to our estimates opex should approach €17m in 2019, with most of this being covered by a cash situation that could be bolstered by the amount still available via the equity line set up for three years until March 2021 (between €7m and €8m undrawn as of 31/01/19) and the share warrants listed in 2017 for up to €8m.

Quantum Genomics's standalone strategy allows it to retain value for itself and will help it negotiate a more advantageous value-sharing agreement with an industrial partner. It now seems this partnership could happen while the Ph III is ongoing, by mid-2020 at the latest. Pharma companies are increasingly willing to start talks with biotechs that have a high-potential product with an established PoC in their pipeline before the pivotal phase is completed. Based on the excellent results from the Ph IIb study in HT, we see a good chance that the company will strike a deal for an option that can be exercised during the Ph III, and that a milestone will be reached around the time of publication of the interim results in 2020.

Given the product's great potential, Quantum Genomics is considering subsequently extending its target market to all hypertensive patients. The cohorts required by regulators for this type of programme would be much larger, so it would have to team up with a pharma company to absorb study costs. It is not planning to launch such a programme before the completion of the one under way for resistant patients, except if a pharma company shows an interest based on results already obtained with the NEW-HOPE study.

#### **2. Partnership factored into our model from H1 2020 vs. 2022**

Management says it is already in talks with several companies interested in cardiovascular disease. The CEO remains confident that a deal will be signed within the coming months. It should be recalled that the company originally said it would announce a partnership within 18 months of publishing the results of the Ph IIb study (November 2018).

We have left our estimates unchanged but factored in the €10m cash secured through the equity line in December 2018, which makes visibility on the company's finances good through Q1 2020 and will allow it to continue to operate until the deadline it set for itself to find a partner.

Our model now takes on board:

- a deal in H1 2020 (vs. 2022 previously);
- an upfront of €10m in 2020;
- a 15% WACC before deal;
- a 10,5% WACC after deal.

Consequently, our TP moves up by €3.2, from €9.3 to €12.5 ([see report published on 21 November 2018](#)).

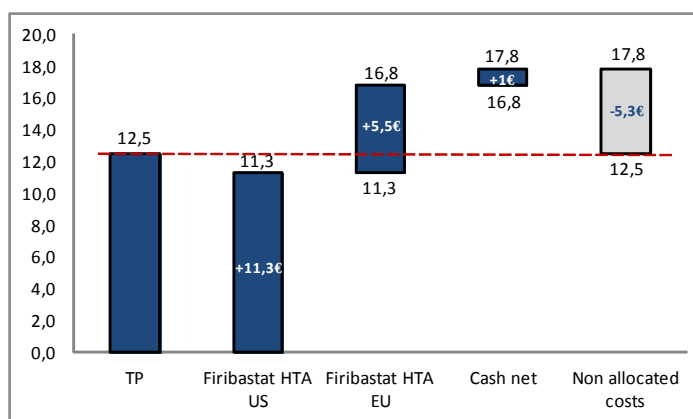
### TP of €12.5 (SOP)

Estimated Capitalization (€M)	Program	Peak Sales (€M)	Indication	NPV (€M)	Discount	rNPV (€M)	/share (€)	%TP
<b>Valuation</b>						273,7	16,8	
Europe	Firibastat	1 069,5	Hypertension	358,3	75%	89,8	5,5	31%
USA/Canada	Firibastat	2 010,3	Hypertension	732,9	75%	183,9	11,3	63%
Debt 2019						0,0	0,0	
Cash 2019						16,3	1,0	
Debt net						-16,3	-1,0	6%
Non allocated costs						-86,5	-5,3	
						<b>203,5</b>	<b>12,5</b>	<b>100%</b>
							12,5	
Number of shares (M)							16,29	

Source: Gilbert Dupont

As regards its most advanced programme, the company is currently targeting the resistant HT patient population, i.e. those showing resistance to currently available treatments, who represent 15% of the total hypertensive population. One other firm is currently developing a drug to target this population: Idorsia, in partnership with J&J, launched a Ph III study in May 2018 on 600 resistant hypertensive patients. The Ph II was conducted on HT patients but with no specific profile. As a result, it is difficult at this stage to identify the relative benefits of the therapies developed by Quantum and Idorsia, even via a meta-analysis comparison. It is nonetheless worth noting that the firibastat study involved hypertensive patients known to be difficult to treat, which supports the rationale for targeting patients with resistant HT. The excellent results of the NEW-HOPE study published in November 2018 were applauded by the entire scientific and medical community, causing the stock to soar by as much as 135% (it is up by 45% today).

### Breakdown of €12.5 TP (SOP)



Source: Gilbert Dupont

## QUANTUM GENOMICS

### Activity

Biotech specializing in the development of drugs for the treatment of cardiovascular diseases, especially high blood pressure and heart failure.

### Competitors

Idorsia, Novartis, Ionis

### Staff

13 persons

### Address

33 Avenue du Maine  
Tour Maine Montparnasse  
75015 Paris

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### Schedule

28/03/19: Annual NR (After mkt)

03/10/19: H1 NR (After mkt)

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### Strengths

- The Management
- Unique mechanism of action, Combination strategy
- Addresses a sub-population without a therapeutic solution
- Intellectual protection until 2036

### Weaknesses

- Risk inherent in clinical developments
- Competitive risk in the Heart Failure segment
- Very high pivotal phase costs in the Heart Failure segment

<b>PROFIT , LOSS STATEMENT (M€)</b>	<b>12/16</b>	<b>12/17</b>	<b>12/18e</b>	<b>12/19e</b>	<b>12/20e</b>	<b>CAGR 17/20</b>
Sales	0.0	0.0	0.0	0.0	10.0	R+
Current operating income	-6.2	-10.3	-13.6	-17.5	-12.5	R-
EBIT	-6.2	-10.5	-13.4	-17.4	-12.4	R-
Net interest income	0.0	-0.1	0.0	0.0	0.0	R+
Pre-tax Profit from recurring activities	-6.2	-10.5	-13.4	-17.4	-12.4	R-
Tax	0.0	-0.7	-1.0	-1.1	-1.1	R-
Income from associates	0.0	0.0	0.0	0.0	0.0	R-
Net result	-5.2	-9.4	-12.3	-16.3	-11.3	R-
Net attributable profit	-5.2	-9.4	-12.3	-16.3	-11.3	R-
Adjusted net attributable profit	-5.2	-9.2	-12.3	-16.3	-11.3	R-

<b>BALANCE SHEET (m€)</b>	<b>12/16</b>	<b>12/17</b>	<b>12/18e</b>	<b>12/19e</b>	<b>12/20e</b>
Equity + Minorities	11.8	10.1	3.3	5.2	2.2
Long term debt	0.0	0.0	0.0	0.0	0.0
Equity + Long term liabilities	11.8	10.1	3.3	5.2	2.2
- Total Fixed assets	0.7	0.4	0.4	0.4	0.4
= Working capital	11.1	9.7	2.9	4.8	1.8
Working capital requirement	-0.1	-1.4	-1.3	-2.4	0.7
Net cash	11.2	11.1	14.3	6.5	-0.5
Net debt	-11.2	-11.1	-14.3	-6.5	0.5

<b>CASH FLOW STATEMENT (m€)</b>	<b>12/16</b>	<b>12/17</b>	<b>12/18e</b>	<b>12/19e</b>	<b>12/20e</b>
Cash flow	-5.2	-9.2	-12.1	-16.1	-11.1
Capital expenditure	-0.2	0.1	0.1	0.1	0.1
Change in WRC	-0.3	1.3	0.1	-1.1	3.1
Free cash flow	-4.7	-10.6	-12.4	-15.1	-14.3
Financial invest.	0.0	0.0	0.0	0.0	0.0
Dividends paid	0.0	0.0	0.0	0.0	0.0