BRYAN, GARNIER & CO

INDEPENDENT RESEARCH UPDATE

15th January 2016

QIAGEN

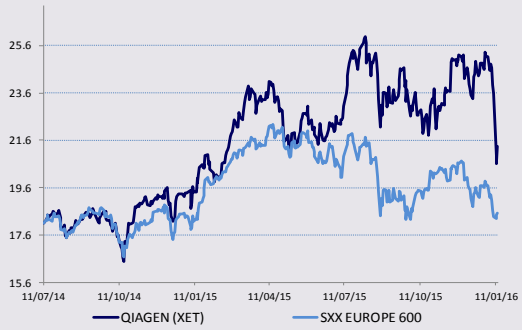
Leverage would have to wait

Healthcare

Fair Value EUR24 vs. EUR19.5 (price EUR21.33) **NEUTRAL** vs. UNDER REVIEW

Bloomberg	QIA GR
Reuters	QGEN.DE
12-month High / Low (EUR)	26.0 / 19.8
Market capitalisation (EURm)	5,113
Enterprise Value (BG estimates EURm)	5,755
Avg. 6m daily volume ('000 shares)	362.3
Free Float	71.0%
3y EPS CAGR	6.0%
Gearing (12/14)	37%
Dividend yield (12/15e)	NM

YE December	12/14	12/15e	12/16e	12/17e
Revenue (USDm)	1,346	1,281	1,329	1,415
EBIT (USDm)	312.52	315.53	329.48	361.48
Basic EPS (USD)	0.48	0.54	0.56	0.66
Diluted EPS (USD)	1.00	1.06	1.09	1.19
EV/Sales	4.85x	4.87x	4.55x	4.15x
EV/EBITDA	15.1x	14.4x	13.5x	12.2x
EV/EBIT	20.9x	19.8x	18.4x	16.3x
P/E	23.2x	21.7x	21.3x	19.4x
ROCE	22.2	17.9	16.0	15.3



While the negative effect from the US-HPV franchise on the group's performance should fade away in 2015, the expansion of QIAGEN's five growth drivers is likely to be overshadowed by significant S&M investments over the first-half of 2016, postponing to late 2016 first signs of operating leverage from both the internalisation of the production of QuantiFERON latent TB test and the company's attractive comprehensive offer covering the full scope of molecular diagnostics. We reinstall coverage on QIAGEN with a NEUTRAL rating and EUR24 fair value.

- **Five growth drivers no longer restrained by the US-HPV drag anymore…** US-HPV headwind should fade away as we expect its contribution to be 3.4% of the group's sales (vs. 6% in 2014). While QIAGEN's five growth drivers represented 30% of total group's sales in 2014, we estimate that their **(i)** combined 19% 2015-2020 CAGR should fuel growth and **(ii)** contribution to the group's turnover should double over the same period. The company's in-depth relationship with pharmas and pioneering position in the liquid biopsy space should enable it to benefit from the raise in PHC. Having recently added its next generation sequencer to its portfolio, the GeneReader should allow QIAGEN to benefit from a comprehensive offering and help it become a major provider to laboratories.

- **…But operational leverage would have to wait.** Back-end loaded effect from the internalisation of the production of QuantiFERON latent TB test which should materialise in 2017e added to the growing contribution of bioinformatics' sales, with gross margin of 90% of sales, is expected to drive a 150bp improvement in the group's gross margin toward 2020e. Added to synergies in G&A, we see a 300bp increase towards 2020e. However, this combined effect are not likely to kick-in before the second half of the year with bulk of S&M expenses to support growth in H1.

- We reinstall coverage on QIAGEN with a NEUTRAL rating and EUR24 fair value.

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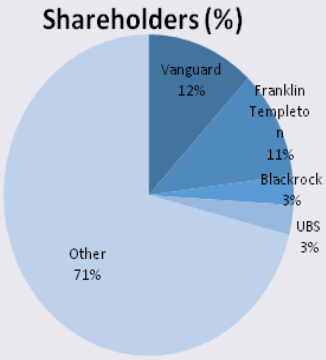

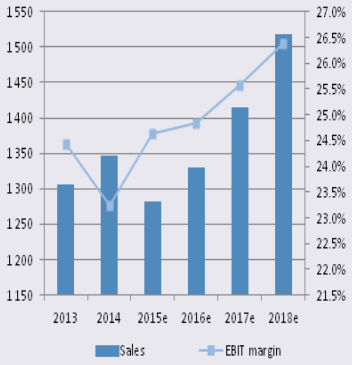

Company description

QIAGEN N.V., a Netherlands-based holding company, is the leading global provider of Sample to Insight solutions to transform biological materials into valuable molecular insights. QIAGEN sample technologies isolate and process DNA, RNA and proteins from blood, tissue and other materials. Assay technologies make these biomolecules visible and ready for analysis. Bioinformatics software and knowledge bases interpret data to report relevant, actionable insights. Automation solutions tie these together in seamless and cost-effective molecular testing workflows. QIAGEN provides these workflows to more than 500,000 customers in Molecular Diagnostics, Applied Testing, Pharma and Academia. QIAGEN employs approximately 4,500 people

Simplified Profit & Loss Account (USDm)	**2012**	**2013**	**2014**	**2015e**	**2016e**	**2017e**	**2018e**	**2019e**
Revenues	1,254	1,306	1,346	1,281	1,329	1,415	1,519	1,635
Change (%)	*7.2%*	*4.2%*	*3.1%*	*-4.8%*	*3.5%*	*6.5%*	*7.3%*	*7.7%*
Adjusted EBITDA	471	431	431	434	448	480	519	563
EBIT	356	318	313	316	329	361	400	445
Change (%)	*11.5%*	*-10.7%*	*-1.8%*	*1.0%*	*4.4%*	*9.7%*	*10.7%*	*11.1%*
Financial results	(24.7)	(26.0)	(42.3)	(30.8)	(38.1)	(42.1)	(43.9)	(47.2)
Pre-Tax profits	331	305	297	311	318	346	383	424
Exceptionals	NM	NM	NM	NM	NM	NM	NM	NM
Tax	(70.6)	(59.0)	(55.0)	(58.3)	(60.4)	(65.7)	(72.7)	(80.5)
Minority interests	(0.03)	(0.03)	(0.57)	(0.32)	(0.33)	(0.39)	(0.46)	(0.55)
Net profit	130	69.1	117	128	133	156	186	219
Restated net profit	261	246	242	253	257	280	310	343
Change (%)	*11.7%*	*-5.5%*	*-1.9%*	*4.6%*	*1.8%*	*8.8%*	*10.7%*	*10.8%*
Cash Flow Statement (USDm)								
Operating cash flows	483	472	485	463	457	469	484	502
Change in working capital	(45.2)	35.6	(83.0)	46.7	(5.7)	(26.9)	(7.1)	(19.4)
Capex, net	(102)	(84.5)	(86.6)	(89.7)	(91.5)	(96.1)	(102)	(108)
Financial investments, net	(301)	(252)	(408)	(306)	(115)	(119)	(123)	(127)
Dividends	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net debt	512	554	986	697	506	332	129	(71.9)
Free Cash flow	336	423	315	420	360	346	376	374
FCF check								
Balance Sheet (USDm)								
Tangible fixed assets	419	445	428	457	494	540	598	668
Intangibles assets	2,614	2,646	2,615	2,522	2,439	2,364	2,299	2,245
Cash & equivalents	394	330	393	433	624	798	1,001	699
current assets	599	591	756	836	856	894	926	970
Other assets	62.3	76.4	263	258	258	258	258	258
Total assets	4,088	4,088	4,454	4,507	4,671	4,855	5,083	4,840
L & ST Debt	1,305	1,326	1,590	1,426	1,441	1,452	1,477	998
Others liabilities	58.7	38.4	207	0.0	0.0	0.0	0.0	0.0
Shareholders' funds	2,724	2,724	2,658	3,080	3,230	3,403	3,606	3,842
Total Liabilities	1,363	1,365	1,796	1,426	1,441	1,452	1,477	998
Capital employed	1,145	1,029	1,145	1,430	1,663	1,911	1,676	1,966
Ratios								
Operating margin	28.4	24.4	23.2	24.6	24.8	25.6	26.4	27.2
Tax rate	(21.3)	(19.3)	(18.5)	(18.8)	(19.0)	(19.0)	(19.0)	(19.0)
Net margin	20.8	18.9	17.9	19.7	19.4	19.8	20.4	21.0
ROE (after tax)	4.8	2.5	4.4	4.2	4.1	4.6	5.1	5.7
ROCE (after tax)	24.5	24.9	22.2	17.9	16.0	15.3	19.3	18.3
Gearing	18.8	20.3	37.1	22.6	15.7	9.7	3.6	(1.9)
Pay out ratio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of shares, diluted	241	242	242	237	236	235	234	233
Data per Share (USD)								
EPS	0.54	0.29	0.48	0.54	0.56	0.66	0.79	0.94
Restated EPS	1.08	1.02	1.00	1.06	1.09	1.19	1.32	1.47
% change	*10.4%*	*-6.1%*	*-1.9%*	*6.7%*	*2.3%*	*9.3%*	*11.2%*	*11.3%*
BVPS	11.32	11.25	11.00	12.99	13.68	14.48	15.41	16.49
Operating cash flows	2.01	1.95	2.01	1.95	1.94	2.00	2.07	2.15
FCF	1.40	1.75	1.30	1.77	1.53	1.47	1.61	1.61
Net dividend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Company Data; Bryan, Garnier & Co ests.

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1. Dawn of a new era in MDx

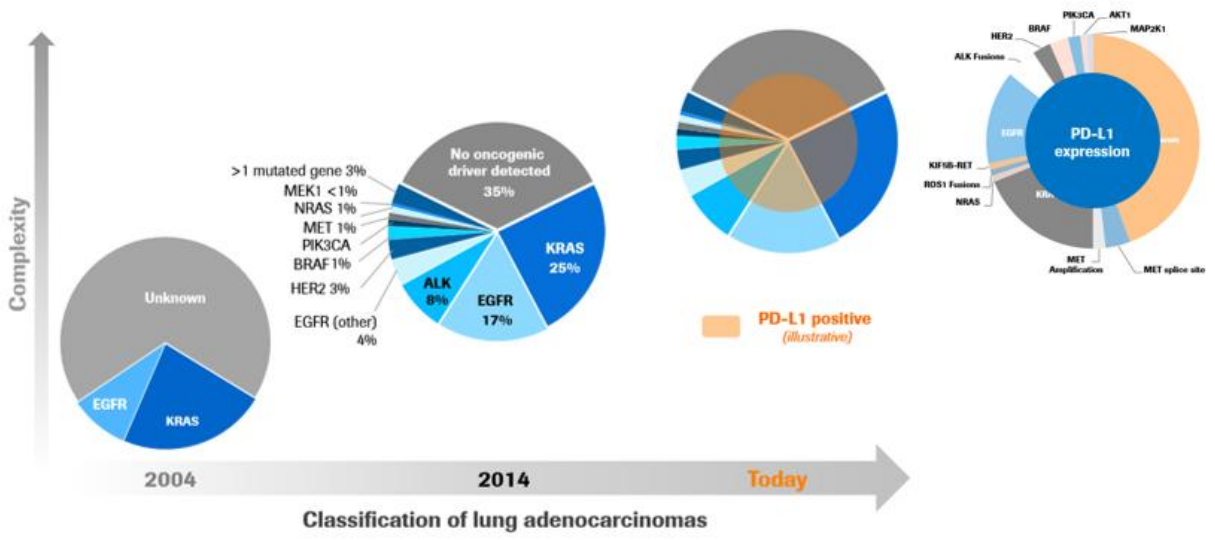
1.1. The uptake of Personalised HealthCare (PHC)

1.1.1. The quest for stratification

Increasing use of biomarkers to stratify patients

The cancer field has undergone significant changes over the last two decades and is still undergoing significant changes as both science and clinics progress towards a better understanding of the underlying disease, with better targeted approaches to cure patients and the availability of innovative drugs. Stratification of the population by gene mutation/biomarker, which is often refined during the clinical development of a product candidate depending on the populations' responses, raises the issue of rapidly identifying patients who would benefit from a drug once being approved. The clearest example being perhaps the new wave of oncology drugs that target specific mutations and have produced dramatic responses in patients.

Fig. 1: Patients' stratification evolution – the example of lung cancer

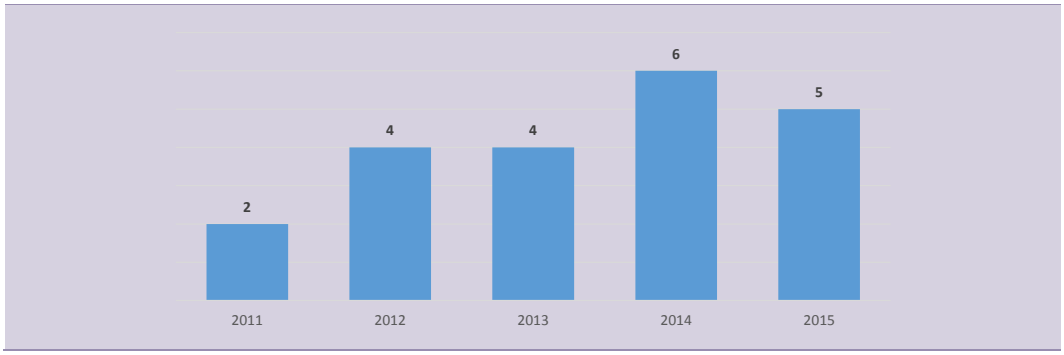


Source: Adapted from Roche 51st ASCO Analyst Event's presentation; Pao & Girard. Lancet Oncol 2011. Johnson, et al. *ASCO 2013; Rosell* et al. *(2012) The Lancet.*

From one drug approved with the use of a CDx in 2011 to six in 2014

Hence, it is not surprising to find this trend reflected in the increasing number of drugs approved by the regulatory authorities. In 2011, two oncology drugs approved by the FDA were indicated in patients' populations presenting a specific mutation: Zelboraf (Roche, BRAFV600E Melanoma) and Xalkori (Pfizer, ALK+ NSCLC). Three years later, in 2014, this number has increased three-fold with six oncology drugs targeting specific mutations being approved: Zykadia (Novartis, ALK+ NSCLC), Keytruda (Merck&Co, BRAFV600 melanoma), Opdivo (BMS, BRAFV600 melanoma; label further expanded to lung cancer and metastatic renal cell carcinoma), Lynparza (AstraZeneca, ovarian cancer with defective BRCA gene), Cyramza (Eli Lilly, EGFR+ gastric cancer) and Vectibix (Amgen, KRAS+ colorectal cancer).

Fig. 2: FDA approved oncology drugs for use in specific mutation cancer-types



Source: Company Data; Bryan, Garnier & Co ests.

Oncology is the area in which we have the best molecular understanding so far but autoimmune diseases could shortly become a field of interest

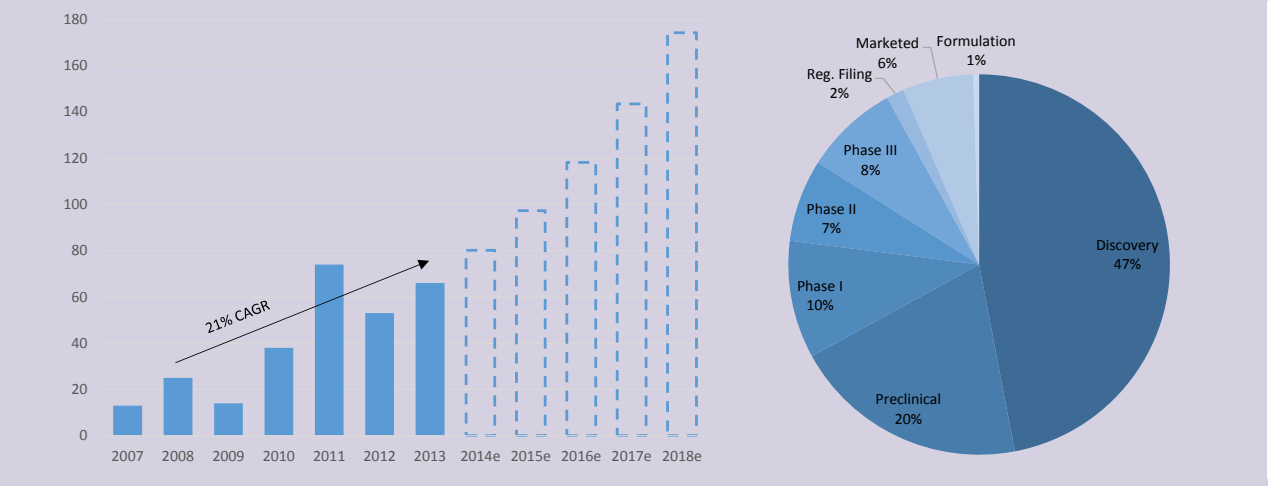
Note that narrowing our discussion to put the spotlight on oncology has been motivated by the fact that it is the area in which we have the best molecular understanding so far. However, we would stress that the stratification of patients can also be found in other therapeutic fields such as diabetes, although the FDA-approved cholesterol drugs do not refer to a particular statin test in their labels, cardiovascular and autoimmune diseases. At the moment, patient's stratification in the latter therapeutic classes refers more to the stage of the disease. The fact that nearly half of patients suffering from rheumatoid arthritis do not respond to anti-TNFα drugs highlights the need for biomarkers for stratification.

1.1.2. Companion Diagnostics (CDx) becoming key assets

CDx are valuable assets to ensure safety and increase the probability of clinical success

As a corollary to the quest for improved efficacy which relies on stratifying patients, we cannot but acknowledge the development of new technologies able to: **(i)** identify biomarkers to stratify patient populations better, **(ii)** identify patients eligible for the drug once the latter has been approved, and **(iii)** ensure safety as certain mechanisms of action could trigger serious adverse events in some patient populations. The common thread being the companion diagnostic, which is developed alongside the product candidate in most cases. CDx not only tend to increase the probability of clinical success by identifying patients with the presence of biomarkers or disease-specific therapeutic targets that can improve patients' outcome but also decrease costs by: **(i)** identifying populations who are most likely to benefit from a drug and **(ii)** not ruling out therapies that are not likely to be effective.

Fig. 3: Uptake of CDx deals (left) and stage of CDx deal (right)



Source: The current and future state of companion diagnostics 2015 Agarwal et al.; Bryan, Garnier & Co ests.

1.1.3. QIAGEN is a partner of choice…

QIAGEN has 15 master collaborations with pharmaceutical companies

Over the years, QIAGEN has gained recognition within the Pharmaceutical industry, enabling the company to ink 15 master collaboration agreements with pharmaceutical companies. The magnitude of these deals involves many key players: AstraZeneca, Tokai, Clovis, Boehringer Ingelheim, BMS, Pfizer, Novartis Astellas, Eli Lilly or Bayer. In November 2014, QIAGEN inked a master collaboration agreement with Novartis for the development of a CDx that could be paired with the company's existing products or pipeline across all therapeutic areas. Lately, QIAGEN announced in January 2016 its 15th master collaboration agreement with Array BioPharma for the development of a CDx that could be paired with binimetinib. The drug candidate reported positive phase III results in late-stage NRASm melanoma (NEMO trial) with expected filing for approval in the US in H1 2016. Consensus points to USD200-250m peak sales in this indication while two other ongoing phase III trial in BRAF V600m melanoma (COLUMBUS trial) and low-grade serious ovarian cancer (MILO trial) respectively might have the potential to double this sales' potential upon positive readout.

Fig. 4: QIAGEN's ongoing partnerships.

Partner	Deal	Drug	Indication	Mutation	Drug Appr.	CDx Appr.	Comments
Eli Lilly	Q3 2011	various	various	KRAS, JAK2 ect	-	-	new framework since 2013
BMS/LLY	-	Erbitux	CRC	KRAS	Q3 2012 (FDA)	Q3 2012	-
Pfizer	Q3 2011	dacomitinib	NSCL	EGFR/KRAS	-	-	-
Bayer	Q3 2012	various	various	various	-	-	-
Boehringer	Q2 2013	Gilotrif	1L NSCLC	EGFR	Q3 2013 (FDA)	Q3 2013	-
Exosome diag.	Q3 2013	-	-	-	-	-	non-invasive IVD, expanded Q1 2014
Clovis Oncology	Q4 2013	rociletinib	2L NSCLC	EGFR (T790M)	-	-	-
AstraZeneca	Q3 2014	Iressa	1L NSCLC	EGFR	Q3 2015 (FDA)	Q3 2015	Liquid biopsy CE-IVD
Astellas	Q3 2014	various	various	various	-	-	ASP5878 (FGFR), ASP8273 (EGFR)
Novartis	Q4 2014	various	various	various	-	-	-
Amgen	-	Vectibix	1L metastatic CRC	KRAS	Q2 2014	Q2 2014	-
Tokai Pharma	Q4 2014	galeterone	CRPC	AR-V7	-	-	expanded Liquid biopsy CDx Q1 2015
Array BioPharma	2015	binimetinib	melanoma/breast/L-G ovarian	NRASm/BRAF V600m	-	-	

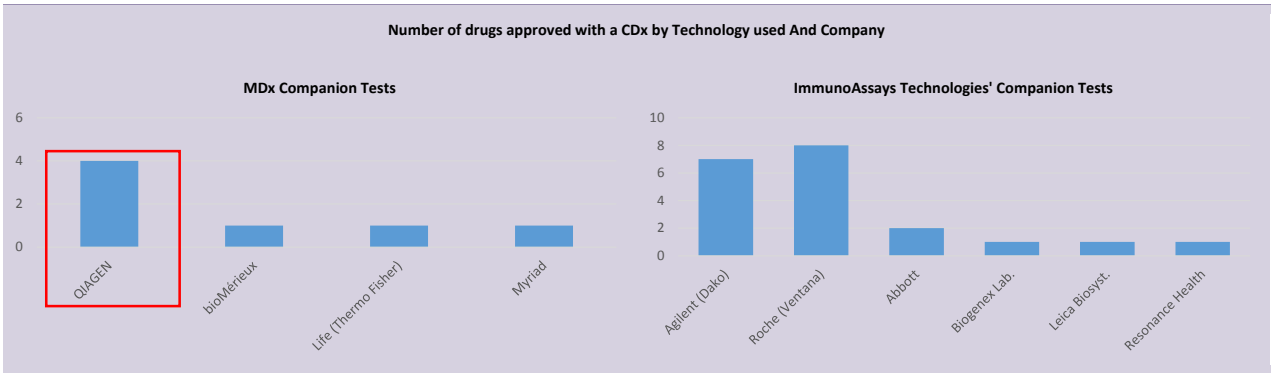
Source: Company Data; Bryan, Garnier & Co ests.

Two CDx kits approved for use with four drugs

Since the approval of Iressa with the use of the therascreen EGFR kit in July 2015, QIAGEN now has two approved CDx kits (EGFR, KRAS) running on the Rotor Gene Q PCR kit and approved for use with four drugs.

- AstraZeneca's Iressa (gefitinb), indicated in EGFR-positive non-small cell lung cancer.
- Erbitux (cetuximab) and Vectibix (panitumumab), marketed by Merck KGaA. Erbitux is indicated in EGFR-positive colorectal (CRC) patients presenting the RAS wild-type mutation in Europe and in EGFR-positive CRC presenting the KRAS mutation in the US.
- Gilotrif (afatinib), marketed by Boehringer Ingelheim and indicated in EGFR-positive NSCLC.

Fig. 5: QIAGEN, a leader in Molecular Diagnostic's Companion Tests



Source: fda.gov.

Two recent setbacks should not overshadow good prospects for approved (or not) CDx

We do not place much hope in the Clovis deal at the moment following the request from the FDA for additional data for use in the efficacy analysis of both the 500mg (n=79) and 625mg (n=170) BID dose groups during its Mid-Cycle Communication Meeting held in early November. This additional review for rociletinib, which has been evaluated in a phase III program (TIGER studies) in patients with mutant EGFR T790M-positive lung cancer, is likely to delay the PDUFA date initially scheduled for March 30th, 2016.

Turning to dacometinib, first developed by Pfizer in NSCLC, we remain sceptical following the failure of the ARCHER1009 trial evaluating the efficacy of the product candidate in second- and third- line NSCLC with the aid of QIAGEN's KRAS companion test and would wait for the readout of the ARCHER1050 phase III trial (1L, head-to-head with gefitinib) expected in late 2015/early2016.

Sales of drugs approved for use with QIAGEN's CDx to growth at 10% CAGR 2014-18

Although these two setbacks might slightly impair QIAGEN's therascreen EGFR's and KRAS test's visibility in the short term, it is unlikely that they will have an impact on kit sales when put back in the context of the ramp-up in sales of drugs already approved with the use of QIAGEN's tests, which should support revenues from the franchise.

Fig. 6: Estimated sales for drugs indicated for use with QIAGEN's CDx

USDm	Product	Kit	2014	2016e	2018e	2020e
AZN	Iressa	Therascreen EGFR	623	553	568	496
Merck KGaA	Erbitux	Therascreen KRAS	1,000	988	1,000	1,000
Amgen	Vectibix	Therascreen KRAS	507	646	750	835
Boehringer	Gilotrif	Therascreen EGFR	75	538	769	1,000
Total sales (USDm)			**2,205**	**2,725**	**3,087**	**3,331**

Source: Bryan, Garnier & Co ests; Bloomberg Consensus; Global Data.

We believe that QIAGEN's closeness to 20 pharma companies, as mentioned by the management, should lead to the signature of new partnerships in 2016 onwards. We have modelled an incremental USD5-10m per year in revenues from milestone recognition based on management's comments but would highlight that, however, they remain hardly predictable as dependant of drugs' development timelines that may vary. Apart from revenues recognised within the PHC franchise, CDx drives USD65m of kits and sample preparation sales, this should bring the total contribution from the franchise to 8% of sales or USD103m in 2015e. Towards 2020e, PHC should represents 11% of sales.

Fig. 7: QIAGEN's PHC sales estimates (USDm)

Personalised HC	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
R&D Recognition	34	36	38	45	52	60	67	74	81	87	91	96	101
% growth	5%	-7%	20%	20%	15%	15%	13%	10%	10%	8%	5%	5%	5%
Kits	32	33	35	42	48	56	62	69	76	81	85	90	94
% growth	5%	5%	5%	20%	15%	15%	13%	10%	10%	8%	5%	5%	5%
Sample Prep & Others	27	29	30	36	41	48	54	59	65	70	73	77	81
% growth	5%	5%	5%	20%	15%	15%	13%	10%	10%	8%	5%	5%	5%
Total PHC	**93**	**98**	**103**	**123**	**141**	**163**	**183**	**201**	**221**	**238**	**250**	**262**	**276**
% cc growth		5%	5%	20%	15%	15%	13%	10%	10%	7%	5%	5%	5%
% of QIA sales	7%	7%	8%	9%	10%	11%	11%	11%	12%	12%	11%	11%	10%

Source: Bryan, Garnier & Co ests.

Regulatory tailwinds to be expected in the US?

While the FDA is responsible for the review process and the label of companion diagnostics tests, the marketing of Laboratory Developed Tests (LDTs) has been historically easier. Indeed, when the FDA began regulating medical devices in 1976 with the Medical Device Amendments, it chose not to include LDTs in the scope of the new regulation as they were, at the time, mostly simple tests used in local labs. However, LDTs now tend to: **(i)** address more complex diseases (cancer, orphan, neurodegenerative) and **(ii)** have a nation-wide reach (Myriad, LabCorp). LDTs are only approved for use in the laboratory they have been installed in, raising the issue of reliability/accuracy leading to erroneous results (false negatives/positives) as well as a lack of appropriate controls. This is supportive for a stricter regulation framework such as PMA, involving large scale clinical trials that cost approximately USD5-20m, to protect patients.

Regulation of LDTs that could materialize in 2016 could place QIAGEN's offer at the center of laboratories' needs

In 2014, the FDA issued a draft guidance, expected to be finalised in 2016, which should enforce premarket review requirements for LDTs. If the agency delivers on its promise to oversee the regulation of LDTs, we would not expect non-FDA-approved tests from QIAGEN's competitors to be withdrawn from the market, but instead their use to be restricted to either research, academic activities or diagnostics of non-complex diseases. Note that QIAGEN is working closely with the FDA to implement a regulatory framework within which we believe it is already well placed to meet requirements when it should come into effect.

We would also stress that in December 2015, the US congress suspended for two years the 2.3% Medical Device Excise Tax mandated by the affordable care act and that manufacturers as well as importers had to pay on medical devices goods since January 2013. Although this should offer respite, especially to smaller medical device companies burdened by the tax, we would not expect a ramp-up in R&D spending as this two-year period should largely be used by lobbyists to advocate for an abolishment of the tax in 2018.

1.1.4. … Well placed to benefit from liquid biopsy uptake

Doing more with less?

In recent years, medical research in the biopsy field has focused on the use of molecular diagnostic technologies to perform liquid biopsies with the aim of overcoming the limitations of tissue biopsies.

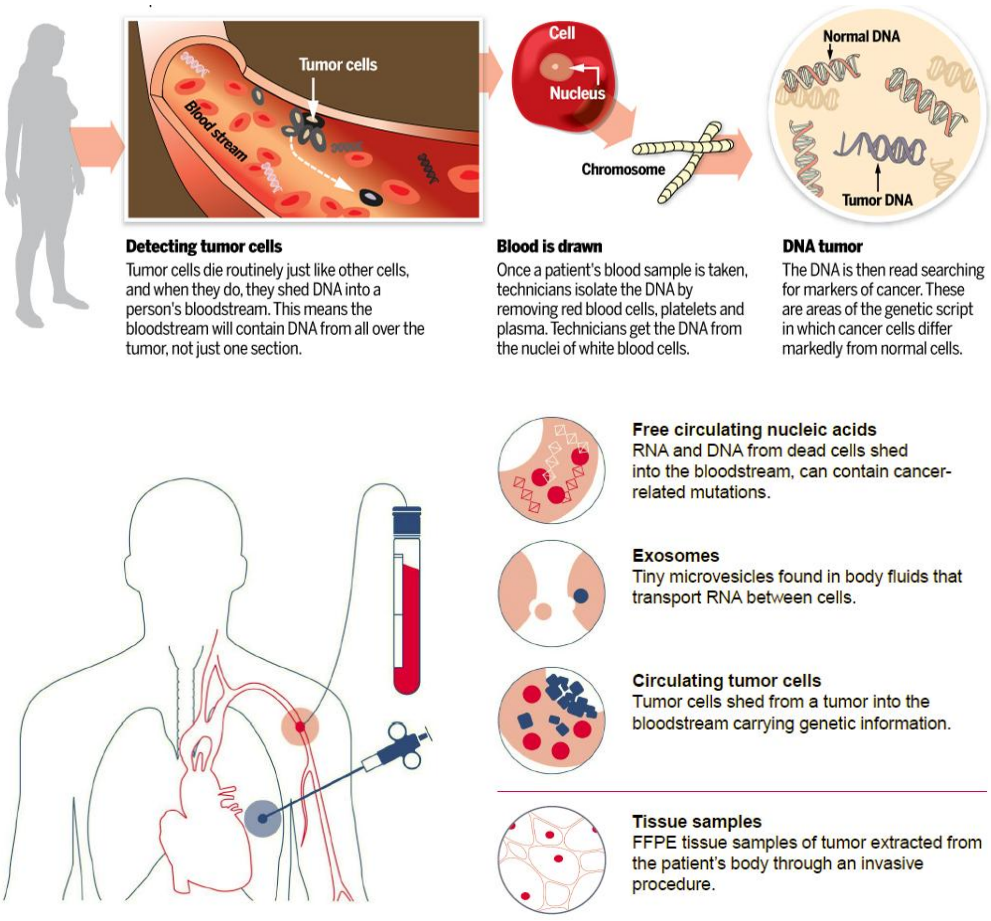
In advanced/metastatic-NSCLC, 31% of patients have inaccessible tissue and 25% of sample tissues cannot be evaluated

In oncology, innovative drugs requiring patients' stratification are often evaluated and approved first as a last-line treatment to potentially move upwards in the treatment paradigm afterwards. However, patients eligible for last-line treatment are also often in poor condition which means a tissue biopsy may not be possible. Indeed, this invasive procedure carries infections, hence the need for mini- to non-invasive procedures which might lead to a less costly assessment of the patient's eligibility and stage of the disease. Moreover, it is worth highlighting that, in some cases, either the patient has inaccessible tissue or the sample cannot be evaluated because of its heterogeneity, e.g. in advanced or metastatic NSCLC, 31% of patients have inaccessible tissue and 25% of sample tissues cannot be evaluated (heterogeneity, conservation and stabilisation).

Liquid biopsy as a non-invasive alternative allowing for an ongoing picture of the patient's disease

From a simple blood sample, a liquid biopsy allows for the detection and analysis of biomarkers in the blood and body fluids. Hence, the technologies developed in this field hold great promise as they offer: **(i)** non-invasive alternatives to tissue biopsies and **(ii)** an ongoing picture of the patient's disease, enabling physicians to adapt treatments (drug and dosage) accordingly with the disease's evolution.

Fig. 8: Liquid biopsy in diagnostics



Source: Company Data.

A liquid biopsy targets one of the following:

- **Circulating tumour cell (CTC)** was one of the first fields investigated by researchers. These are cells shed from the primary tumour that may constitute seeds for metastasis. Hence, they are more likely to be identified in patients with malignant diseases. Nevertheless, some challenges remain as CTCs have to be processed rapidly after extraction (logistics) and are rare in healthy patients and those with non-malignant diseases (e.g. early stage of disease and/or non-diagnosed patients). It is likely that these tests will be paired to drugs indicated in last-line of treatment.

- **Cell free DNA (cfDNA or ctDNA)** is being investigated in various clinical fields (cancer, pre-natal testing and transplant rejection Dx). This approach focuses on the analysis of cell free nucleic acids which are thought to originate from dead cells and which have been shown to contain cancer-related mutations. Although being more abundant in than CTC, the cfDNA concentration in the bloodstream of cancer patients may vary, resulting in a challenge for enrichment of the sample and sensitivity of the platform, however to a lesser extent that for CTC.

- **Exosome** is a field that has been growing significantly in recent years. Exosomes carry RNA, DNA and protein, and function as intercellular messengers. As extracellular vesicles, they carry highly stable packages of RNA from the cell of origin and hence tumour-specific mutations. They are very abundant and can be isolated from all biofluids that may be stored for years in the freezer. As exosomes are released by all cells, their analysis could also be used to profile inflammatory, metabolic, cardiovascular and neurodegenerative diseases.

Fig. 9: Comparing liquid biopsy technologies

Analysis capability	e.g.	CTCs	cfDNA	Exosomes
Mutations	Point mutations, amplifications	Yes	Yes	Yes
inflammatory response, stromal or other systemic changes	Inflammatory RNA and proteins markers	No	No*	Yes
Biobanked samples	Frozen plasma, urine and other biofluids	No	Yes	Yes
Abundance in bloodstream		+	++	+++

**Brain-blood barriers inhibit the emission of cfDNA in the bloodstream.*

Source: Company Data; Brock et al., Liquid biopsy for cancer screening, pts stratification and monitoring, 2015.

With exosome and cf/ctDNA being present in the living and dying process respectively, it now appears clearer that mutations might be easily detected by a platform combining both approaches, notably for use in patients who do not have large amounts of mutated nucleic acid circulating in the bloodstream.

Already one approved test and five ongoing collaborations

QIAGEN focusing on latest scientific advances to develop liquid biopsy tests. AZN's Iressa test already approved in Europe

Out of the collaborations listed in Fig. 4, we highlight that QIAGEN already has one approved test in liquid biopsy. In Europe, Iressa, marketed by AstraZeneca, was approved in January 2015 with the use of QIAGEN's Therascreen liquid biopsy CDx in NSCL to assess EGFR mutation status based on plasma samples (ctDNA) when a tissue sample is not available.

Also, in 2015, QIAGEN acquired AdnaGene, adding to its portfolio a technology enabling the enrichment and molecular analysis of CTCs. This technology will be used for the co-development and commercialisation of galoterone, developed by Tokai Pharmaceutical with whom QIAGEN entered

into an agreement. Galeterone is being investigated in phase III in castration-resistant prostate cancer patients expressing the Androgen receptor variant-7 (AR-V7) biomarker. The phase III readout from the ARMOR3-SV study is expected by late 2016. We see room for Tokai to push galeterone earlier in the treatment paradigm. As a 2L treatment, consensus points to a peak sales close to USD2bn.

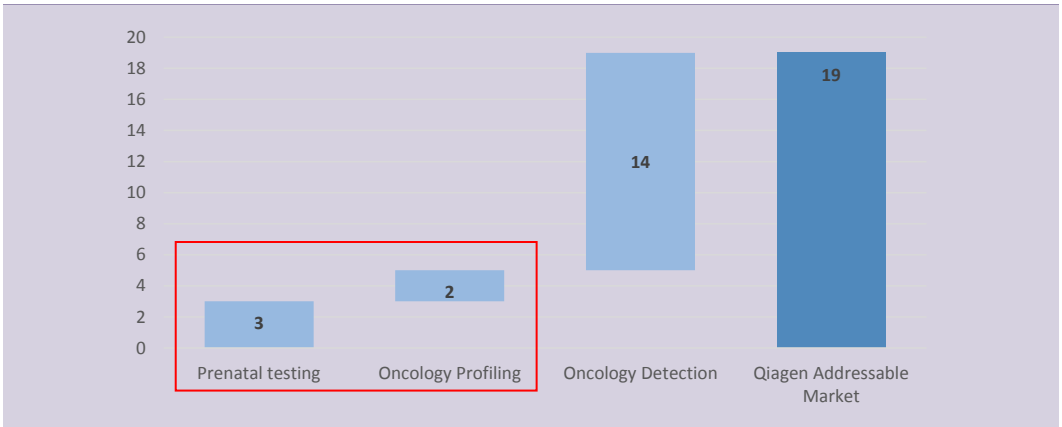
More recently, QIAGEN has pushed its liquid biopsy portfolio further with the publication of a study highlighting the reliability of its exoRNeasy Serum/Plasma Maxi Kit for the extraction of RNA from exosomes.

Market potential holds great promise

Oncology detection to be the next sweetspot

The liquid biopsy market is poised to grow at a 30% CAGR towards 2020 to potentially reach USD19bn (excluding reproductive health diagnostics). While we estimate that QIAGEN derives around USD30m of its revenues from liquid biopsy-related technologies, we do not rule out that as a first mover, it could keep the lion's share in this growing field. Note that, although more players are becoming active in the field, they consist mainly of small innovative companies which might face headwinds from: **(i)** discussions with the regulatory authorities, **(ii)** building a sales force, or **(iii)** building or densifying their KOL network which is a prerequisite when it comes to innovative diagnostic's methods. Illumina's recent decision to spin-out GRAIL highlights the gap that lays in-between the company's business model directed towards research labs and the needs from clinical labs in oncology detection. Moreover, there is still a long path to the development of a universal solution for pan-cancer screening.

Fig. 10: Liquid biopsy diagnostic market in 2020e (USDbn)



Source: Sequenom Laboratories; Bryan, Garnier & Co ests.

QIAGEN liquid biopsy sales poised to growth at over 20% CAGR 2015-20.

Currently, QIAGEN is developing in both the non-invasive pre-natal testing (NIPT) and oncology profiling testing markets. However, we do not rule out that oncology detection might become the hotspot for liquid biopsy. Our sales estimates only include NIPT and oncology profiling sales for Iressa which could be viewed as conservative as this does not include any sales from projects under development. However, this leads us to USD85m in sales in 2020e or 5% of the group's turnover. To note is that with **(i)** the abolition of the Chinese one child policy and **(ii)** the rapid development of liquid biopsy tests, we do not rule out that our estimates might be revised upwards.

Fig. 11: QIAGEN's liquid biopsy-related sales

	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
NIPT													
Regions Offering NIPT (m births)	80	81	82	84	85	86	87	89	90	91	93	94	96
NIPT penetration %	1,9%	3,4%	4,9%	6,4%	7,9%	9,4%	10,9%	12,4%	13,9%	15,4%	16,9%	18,4%	19,9%
Qiagen Market Share	30%	33%	36%	39%	41%	44%	47%	50%	50%	50%	50%	50%	50%
NIPT tests (in m)	**0,5**	**0,9**	**1,4**	**2,1**	**2,8**	**3,6**	**4,5**	**5,5**	**6,3**	**7,0**	**7,8**	**8,7**	**9,5**
Oncology													
Lung Cancer incidence (m patients)	0,60	0,59	0,58	0,57	0,56	0,55	0,54	0,53	0,52	0,51	0,51	0,50	0,49
NSCLC	85%												
patients non tested for EGFR mutation	25%												
Qiagen Market Share	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
NSCLC tests (in m)	**0,19**	**0,19**	**0,18**	**0,18**	**0,18**	**0,18**	**0,17**	**0,17**	**0,17**	**0,16**	**0,16**	**0,16**	**0,16**
Sample Prep Kit price (USD)	**20**	**19**	**19**	**18**	**17**	**16**	**16**	**15**	**15**	**15**	**15**	**15**	**15**
%growth		-4%	-4%	-4%	-4%	-4%	-4%	-5%	0%	0%	0%	0%	0%
Total Liquid Biopsy	**13**	**21**	**30**	**40**	**51**	**62**	**73**	**85**	**96**	**108**	**120**	**132**	**145**
% cc growth		64%	43%	33%	26%	22%	19%	16%	13%	12%	11%	10%	10%
% of QIA sales	1%	2%	2%	3%	4%	4%	4%	5%	5%	5%	5%	5%	5%

Source: Bryan, Garnier & Co ests.

Outside the oncology and NIPT fields, we would put the spotlight on autoimmune-diseases, a field in which we see potential for the application of liquid biopsy. Indeed, it is worth noting that in rheumatoid arthritis for example, over 40% of patients are non-responders to anti-TNF treatment, hence the need for stratifying populations. In the case of an expansion into new fields which is a development strategy stressed by CFO, Roland Sackers, at our 3rd Bryan, Garnier & Co. Healthcare Conference in November, a key prerequisite for success would be the footprint in data analysis, already strong at QIAGEN (cf. *section 2.2.*).

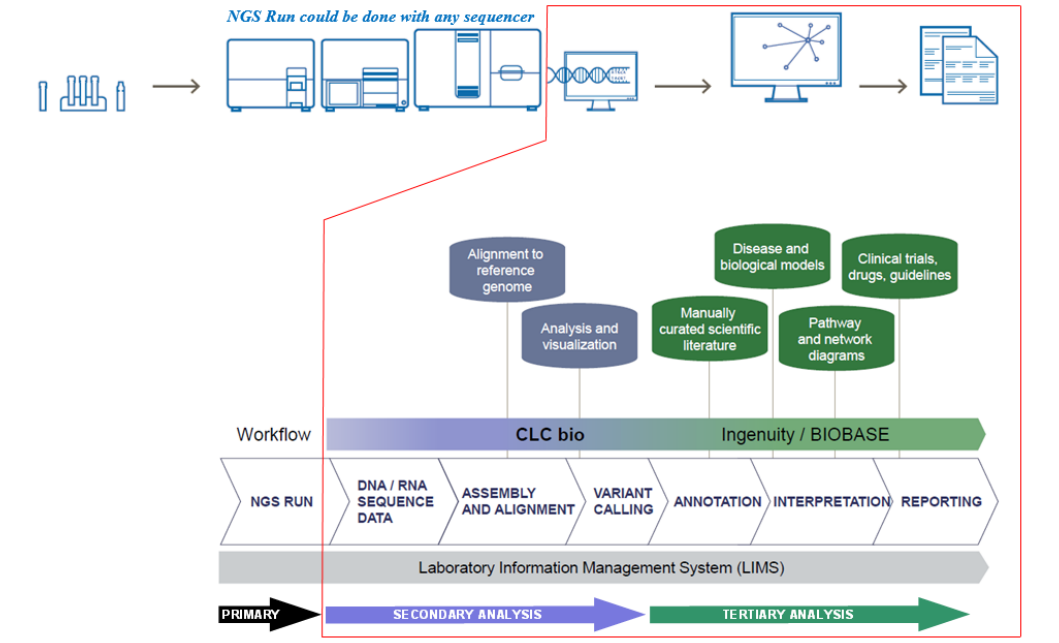
1.2. Strong expertise in Bioinformatics

1.2.1. Integrated offering

QIAGEN's has an extensive knowledge and expertise in bioinformatics

Bioinformatics refers to the methods and software tools for understanding biological data, combining engineering, computer science and statistics. We believe that the ability of a diagnostic company to process and analyse data generated by Next-Generation Sequencers should be key to success in this bubbling area. Hence, the footprint and control of the entire bioinformatics value chain should be a key asset for QIAGEN, enabled by its dual approach of a bioinformatics solution that could process raw data generated by either a competitor's Next-Generation Sequencers (universal approach) or its GeneReader.

Fig. 12: QIAGEN's universal bioinformatics portfolio



Source: Company Data; Bryan, Garnier & Co ests.

Amount of data generated by the raise of sequencing highlights the need for integrated bioinformatic workflow

With the NGS run being done (the primary analysis), data has to be processed through secondary and tertiary analyses (see above) to provide the user with a valuable molecular insight. While secondary analysis collects together DNA variants, tertiary analysis focuses on the interpretation of the data ("thinking and analysis"). In other words, secondary analysis is in charge of the heavy powerful analysis and tells what is wrong, while tertiary analysis tell what is significant or not. Over the past three years, QIAGEN has expanded its bioinformatics franchise with three main acquisitions.

Strong footprint built through acquisitions in all the stages of the analysis

- **CLC Bio**, a Danish private company specialised in handling biological data generated by a sequencer (secondary analysis), was acquired by QIAGEN in October 2013. While reports from several sources have mentioned CLC as being profitable since 2010 with sales growth of 30% in 2012 we would stress that at the time of the acquisition, CLC Bio had more than 500 customers, enabling QIAGEN to leverage its bioinformatics offer. This acquisition was highly complementary to the Ingenuity offer with the two companies already having a partnership agreement at the time of the acquisition.

- **Ingenuity** was one of the first acquisitions by QIAGEN in the bioinformatics field, announced in April 2013 for USD105m. Ingenuity is a leader in applications to analyse and accurately interpret genomic data rapidly (tertiary analysis). In 2012, the company had sales of USD20m. This acquisition was highly strategic not only considering the importance of genomic data in MDx but also to prepare the launch of a comprehensive data analysis offer.

- **BIOBASE** completed QIAGEN's bioinformatics portfolio aiming at offering a comprehensive data analysis system. Acquired in May 2014, BIOBASE is a German-based company commercialising a large database in human inherited disease mutations. The BIOBASE system has been integrated into the Ingenuity offering which was more focused on somatic mutations.

QIAGEN's cloud-based bioinformatics solution, QIAGEN Clinical Insight, could be used with any NGS instrument manufactured by QIAGEN or not. Ahead of the launch of its GeneReader NGS platform in Q3 2015, the company expanded its relationship with the Beijing Genome Institute, the world's leading institute in genomics, which now integrates QIAGEN's platform into its sequencing services provided to global pharmaceutical companies, research projects and industrial companies. It is also partnered with GATC Biotech, a NGS service provider, further broadening its customer base.

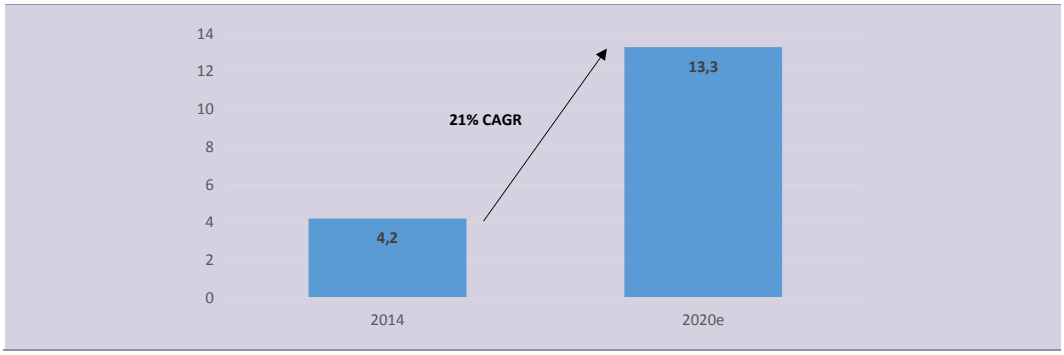
QIAGEN's partners, SAP and IBM, should enable the company to maintain its competitive profile

Moreover, the company has developed valuable relationships with big players in the data management field as it is currently working with SAP and IBM. While QIAGEN is working with SAP on improving the efficiency of its database, i.e. processing the data faster; it is working with IBM on the interpretation of the data, i.e. "thinking and reading", as the latter has deep expertise in algorithms. In the long run, we believe that QIAGEN could benefit from the extensive knowledge of these partners to improve the time to results and decrease costs per insight.

1.2.2. A market growing at over 20% CAGR

The global bioinformatics markets was estimated to be slightly above the USD4bn mark in 2014 and is poised to reach USD13.3bn towards 2020e, growing at a 21% CAGR.

Fig. 13: Bioinformatics market (in USDbn)



Source: MarketsAndMarkets; Bryan, Garnier & Co ests.

Bioinformatics' franchise: from 3% to 8% of sales towards 2020e

QIAGEN's management mentioned that the net sales of Ingenuity and CLC Bio were north of USD30m in 2013, growing at a strong double-digit growth rate. During the FY2014 conference call, it stated that bioinformatics contributed to 3% to 4% of group's total sales (BGe 3.1%). Our projections point a contribution of USD55m for FY2015.

Fig. 14: QIAGEN's bioinformatics sales

BioInformatics	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
Sales	30	42	55	68	82	98	118	142	163	179	197	217	238
% cc Growth		40%	30%	25%	20%	20%	20%	20%	15%	10%	10%	10%	10%
% of QIA sales		3%	4%	5%	6%	6%	7%	8%	9%	9%	9%	9%	9%

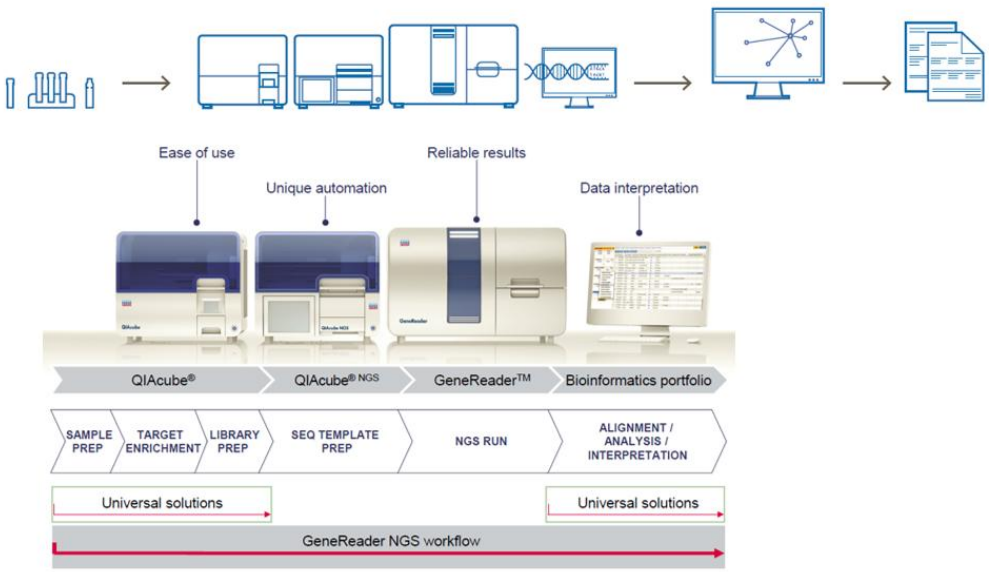
Source: Bryan, Garnier & Co ests.

1.3. GeneReader (finally) kicking in!

QIAGEN is a one stop shop for laboratories

Having delayed the launch of its NGS platform, the missing part to its comprehensive NGS workflow, QIAGEN unveiled at the Association for Molecular Pathology (AMP) Meeting in November 2015 its GeneReader Next Generation Sequencer, a significant step forward for the company.

Fig. 15: GeneReader in the NGS workflow



Source: Company Data.

The GeneReader has a low-to-mid throughput which has been designed to work seamlessly with QIAGEN's front-end sample preparation and back-end bioinformatics technologies. This would allow laboratories to purchase all the instruments they need from one single vendor. We would highlight that comments from management teams at QIAGEN and BioMérieux **(BUY – FV EUR121)**, which also have a global offer in clinical microbiology, put emphasis on the benefits of having a broad portfolio. Indeed, favouring vendors with a broad offer is a key criterion for large to mid-sized labs in their purchasing decision for obvious administrative reasons.

The first feedback from users exceeded expectations, as stressed by Roland Sackers (CFO). Clinicians appreciate the ease of use of the platform which allows for continuous loading that features numerous QIAGEN instruments as well as its integration into the lab's workflow. The GeneReader is intended to be used by low-to-mid throughput clinical labs, i.e. point of need, which have either been reluctant to adopt an NGS platform so far due to their complexity of use or have been neglected by NGS providers (focused on academics and pharma customers).

Although QIAGEN did not extensively comment on pricing, the first indications point toward USD150-200k per instrument, we would not expect meaningful sales if not any to be derived from direct instrument sales with regards to the reagent/rental model used by QIAGEN (e.g. QIAsymphony).

It only took four years for Illumina to place more than 3,300 MiSeq, although it is worth noting that: **(i)** Illumina addresses mainly research labs which are known for being early adopters, and **(ii)** its sequencers are mainly used for microbial DNA analysis rather than oncology analysis. QIAGEN, however, aims to address small- to mid- sized labs, hence we have modelled a slower penetration rate with a run rate of 150 placements per year to 2020e. The installed base could pass the 500 instrument placed threshold toward the same year. Note that QIAGEN has an installed base of 6,000 QIACubes which could be leveraged to accelerate the penetration of the GeneReader.

First pricing indication pointing towards a Pay per Insight model which ties in well with reimbursement policies

While we expect the company to provide more details on its pricing strategy for the GeneReader, it has already announced that the GeneReader will follow a pay per insight model which could be a highly competitive model for reimbursement, also driving the utilisation rate of the sequencers.

In our estimates, we assume a minimum number of 500 insights per year per sequencer. As soon as 2017e, we believe that the ease of use of the sequencer, which is a feature that has been stressed by beta users might drive an increased number of insights generated per sequencer. In the longer run, the roll-out of panels should drive this trend. All in all, we estimate that toward 2025e, 750 insight could be generated per year, per sequencer, vs. 500 in 2016. Note that we have taken a conservative stance in the light of the GeneReader's capacity to process more than 5,000 insights per year as we would wait for **(i)** more details on pricing model and **(ii)** the product to be fully launched before eventually revising upward our assumptions.

Fig. 16: QIAGEN's NGS sales

	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
GeneReader System placed				25	56	88	119	150	160	170	180	190	200
Installed base				25	81	169	288	438	598	768	948	1138	1338
min nb of insights/GeneReader/year				500	500	500	500	500	500	500	500	500	500
Additional insights/lab					5	36	66	97	128	158	189	219	250
% growth						613%	86%	46%	32%	24%	19%	16%	14%
Price per insight (USD)				500	494	489	483	478	472	467	461	456	450
% growth					-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
GeneReader NGS sales (USDm)				**6**	**20**	**44**	**79**	**125**	**177**	**236**	**301**	**373**	**451**
% growth					225%	118%	78%	59%	42%	33%	28%	24%	21%
% of QIA sales				0%	1%	3%	5%	7%	9%	11%	13%	15%	17%
Other NGS consumables sales (USDm)	**25**	**30**	**36**	**43**	**50**	**58**	**66**	**74**	**82**	**90**	**97**	**103**	**109**
% growth		20%	20%	19%	17%	16%	14%	13%	11%	10%	8%	7%	5%
Total NGS	**25**	**30**	**36**	**49**	**70**	**102**	**144**	**199**	**259**	**326**	**398**	**476**	**560**
% cc growth		20%	20%	36%	44%	45%	42%	38%	30%	26%	22%	20%	18%
% of QIA sales	2%	2%	3%	4%	5%	7%	9%	11%	14%	16%	18%	20%	21%

Source: Bryan, Garnier & Co ests.

In the meantime, QIAGEN has launched its first oncology kit for use on the GeneReader, the QIAGEN Actionable Insight Tumour Panel (QIAact Panel). The kit competes with Illumina's TruSight or Thermo Fischer Scientific's Oncomine. Differentiation comes from the 12 targeted genes across five cancers, being breast, lung, colorectal, melanoma and ovarian. This more focused approach ties in well with: **(i)** the company's strategy to offer a complete solution at the point of need, and **(ii)** reimbursement.

1.3.1. QIAGEN could reshuffle the cards in the NGS field

QIAGEN's competitors' offer lack of a complete workflow

While other companies such as Thermo Fischer or Illumina have placed their sequencers as the backbone of their development strategies, QIAGEN has proceeded in a reverse manner. This now enables the company to be one of the only integrated players which could benefit from having a complete offering in the NGS workflow, i.e. sample prep to insight. Hence, we believe that the company could leverage its visibility in the molecular cancer diagnostic market through its FDA-approved Therascreen RotorGene Q PCR kits to penetrate the NGS area. Importantly, 80% of all NGS runs are enabled by QIAGEN's sample preparation tools following the acquisition of the Enzyme Solutions unit of Enzymatics in January 2015.

Fig. 17: Lab workflow by providers

Sample Prep. →	Target Enrichment →	Library Construction →	Sequencing →	Secondary Analysis →	Tertiary Analysis
QIAGEN	**QIAGEN**	**QIAGEN**	**QIAGEN**	**QIAGEN**	**QIAGEN**
Thermo Fischer	Thermo Fischer	Thermo Fischer	Thermo Fischer	Thermo Fischer	Thermo Fischer
		Illumina	Illumina	Illumina	
Roche				Roche	

Source: Company Data; Bryan, Garnier & Co ests.

Life Technologies's (acquired by Thermo Fischer in 2014) NGS platform, Ion S5 and Ion S5 XL, uses an Ion Torrent Sequencing technology (i.e. pH changes) which has limitations in achieving great read length and has a lower throughput than other sequencing techniques. This allowed Illumina to capture a ~60% market share despite not being an integrated player.

Regarding reliability and accuracy, a head-to-head study presented at the AMP compared favourably QIAGEN's GeneReader vs. Illumina's MiSeq (its direct competitor). Conducted by the Broad Institute of MIT and Harvard, the study showed a 100% concordance in results obtained from both platforms. The main point of interest from the presentation was that QIAGEN's workflow provided a comparatively more accurate reflection of somatic mutations present in the Formalin-Fixed, Paraffin-Embedded (FFPE) tissue tumour sample by mitigating the effects of FFPE artefacts.

Although Illumina is trying to counter QIAGEN's strong footprint in Europe with the opening of its headquarters in Cambridge, UK, its presence is still marginal in the region. Furthermore, Illumina faces a big challenge in our view as it only addresses research labs either in the US or in Europe at the moment while QIAGEN's customer base ranges from academia to clinical labs, not to mention pharmaceutical companies. The launch of MiniSeq this month which is the cheapest NGS offering on the market with a list price <USD50k and a small lab footprint (44% smaller than MiSeq) targets the low-end of the market. Nevertheless, the sequencer does not come with a complete workflow offer nor it is scalable. In smaller labs, we believe that QIAGEN's offer might be competitive as labs would not have to pay for failed runs.

2. Two other strong platforms

2.1. QIAsymphony

QIAsymphony is one of QIAGEN's flagship products accounting for 10% of sales or close to USD130m FY2015 (BGe) which addresses a laboratory's need for complete automation from sample preparation through to assay setup. The QIAsymphony platform consists of three instruments: 1/ (SP) for sample preparation, 2/ (AS) for Assay Setup and 3/ the Rotor-Gene Q for real time PCR.

Fig. 18: QIAsymphony workflow

Source: Company Data.

2.1.1. QIAGEN well placed among competitors

We believe that the QIAsymphony platform has strong competitive advantages compared to Roche's cobas 4800 and Abbott's m200sp which are its main competitors. As depicted in the table below, the QIAGENs platform's main features are automation and a broad menu of tests.

Automation and compatibility

QIAsymphony has one of the broadest menu available and is fully automated

Efficiency is a key preoccupation for labs in their purchasing decisions and preference will always be given to a solution that requires the least hand-on time, i.e. highly automated. We highlight that QIAsymphony's medium throughput molecular processing platform can handle Laboratory Developed Tests (LDT) and Regulated tests, allowing for an increased penetration in small- to mid-sized labs.

During the Q2 2015 conference call, management mentioned that although being a medium throughput platform as mentioned above, QIAsymphony is also being used in both large and NGS labs (e.g. NIPT labs) due to its ability to process up to four batches or 96 samples in a highly automated way.

Fig. 19: QIAsymphony vs. the competition

Company	Instrument	Samples	Loading	LDT	Menu	Automation
QIAGEN	QIAsymphony	blood/urine/stool/swab	flexible (24 samples)	Yes	EU14/US6	fully automated
ROCHE	cobas4800	blood/urine/stool/swab	flexible (1 sample)	No	8	manual pipetting + manual transfer from SP to PCR
ABBOTT	m2000sp/rt	blood/urine/stool/swab	not flexible	Yes	6	separated System Control Centre for PCR

Source: Company Data; Bryan, Garnier & Co ests.

2.1.2. Expansion of menu is key

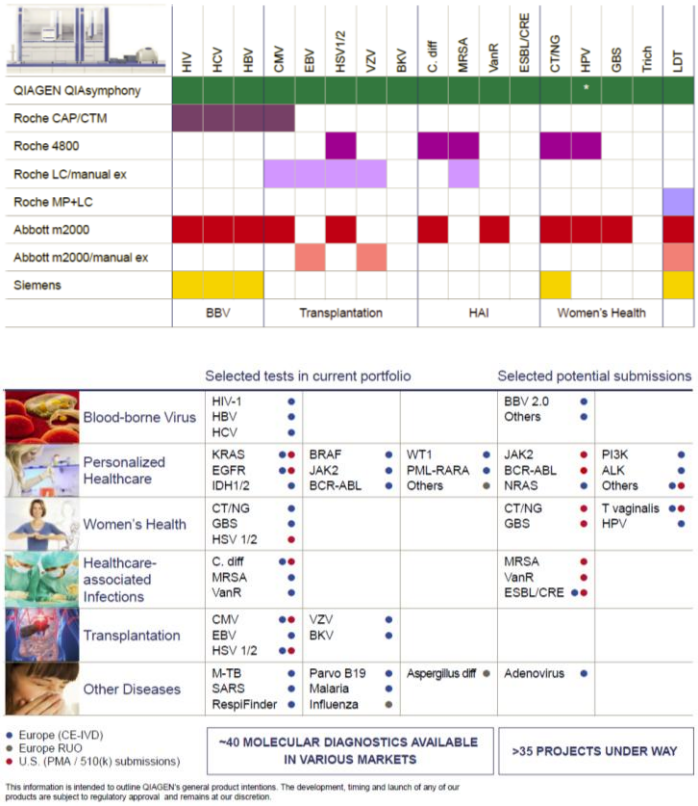
QIAGEN's CFO, Roland Sackers, made it clear during our 3rd BG Healthcare Conference that "expansion of menu panels is what you get paid for". While we anticipate continuous roll-outs in Europe where QIAGEN has the broadest available menu with more than 17 tests available, leverage from the US should not be overlooked.

Upside in Europe could come from the RespiFast RG Panel, the first multiplex assay to run on the QIAsymphony RGQ, which received the CE-IVD mark in June 2015. The panel marks the detection and differentiation of 22 pathogens, 18 viruses, and four bacteria that cause respiratory tract infections in humans. Another example is the Artus cytomegalovirus kit (CMV), also approved in June, which is optimised for low- to mid-throughput testing of CMV and has a faster turnaround time (3 hours) than other approved tests.

Expansion of the menu in the US should be critical in the next 2 years

In the US, we highlight that there is a growing interest from labs whatever their size to equip with QIAGEN's platform, despite only 6 tests being available at the moment. The expansion pace for the menu is set to grow rapidly, e.g. the recent PMA on the CMV kit and 510(k) on HSV, which are the bigger volume assays, or the MRSA kit submission expected in the coming weeks. This should enable the company to broaden its customer base in the country where it realises one-third of its instruments' sales at the moment.

Fig. 20: European test menu (top) and non-exhaustive pipeline of tests (bottom)



Source: Company Data.

2.1.3. Path to triple QIAsymphony's revenues toward 2020e

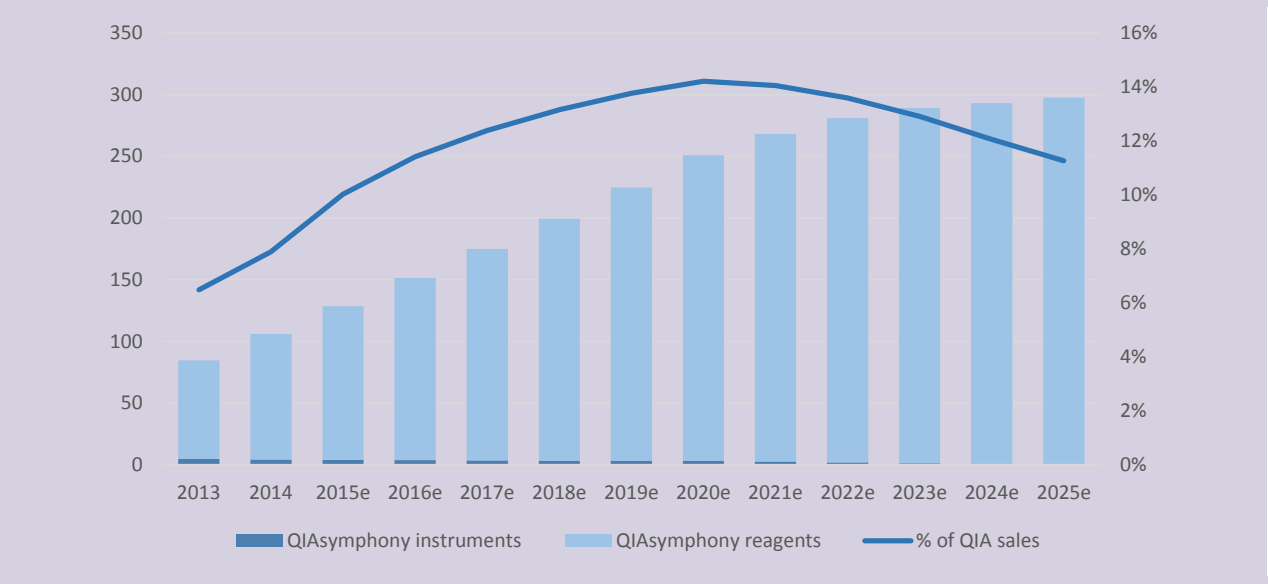
Low rate of replacements and sustained trend of placements should drive a three-fold increase in QIAsymphony's sales towards 2020e

The company recently reiterated its goal to have an installed base of 2,500 instruments by the end of the year with over 250 placements in FY2015. We believe that the trend of 250 new placements should be sustainable until 2020e, and then dropping to around 50 placements per years. While 60% of placements happen in Molecular diagnostics, Life sciences make up the remaining 40%, driven by Applied Testing. We estimate that the percentage of instruments sold for an average price of USD72k in 2015e should decrease from 25% in 2015e to 20% towards 2020e. Note that the company estimates that 85% of instruments' sales are new placements while only 15% are replacements.

Fig. 21: Sales estimates (through 2025e) in USDm (unless otherwise indicated)

QIAsymphony	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
New placements	250	250	250	250	250	250	250	250	200	150	100	50	50
% sold	25%	24%	23%	22%	21%	20%	20%	20%	20%	20%	20%	20%	20%
Price (USDm)	0,075	0,074	0,072	0,071	0,069	0,068	0,066	0,065	0,064	0,063	0,061	0,060	0,059
% growth	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%
QIAsymphony instruments	**5**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**3**	**2**	**1**	**1**	**1**
% growth		-6%	-6%	-6%	-6%	-7%	-2%	-2%	-22%	-27%	-35%	-51%	-2%
Installed Base	1000	1250	1500	1750	2000	2250	2500	2750	2950	3100	3200	3250	3300
Pullthrough (USDk/instrument)	80	81	83	84	86	87	89	90	90	90	90	90	90
% growth		2%	2%	2%	2%	2%	2%	2%	0%	0%	0%	0%	0%
QIAsymphony reagents	**80**	**102**	**124**	**148**	**171**	**196**	**221**	**248**	**266**	**279**	**288**	**293**	**297**
% growth		27%	22%	19%	16%	14%	13%	12%	7%	5%	3%	2%	2%
Total QIAsymphony	**85**	**106**	**128**	**151**	**175**	**199**	**225**	**251**	**268**	**281**	**289**	**293**	**298**
% cc growth		25%	21%	18%	16%	14%	13%	12%	7%	5%	3%	1%	2%
% of QIA sales	6%	8%	10%	11%	12%	13%	14%	14%	14%	14%	13%	12%	11%

Source: Company Data; Bryan, Garnier & Co ests.



Source: Company Data; Bryan, Garnier & Co ests.

QIAsymphony-related revenues are mainly driven by reagents and consumables. We model a 22% and 19% increase in reagents and consumables sales in 2015e and 2016e respectively, driven by: **(i)** an increased installed base, and **(ii)** an uptake in consumable and reagent use per instrument as a result of menu expansion.

We estimate that each instrument should generate a USD83k pull through effect in 2015e, set to increase to roughly USD90k per instrument towards 2020e with the expansion of panels. To note is that our assumptions lead us to USD251m in sales in 2020e or 14% of the company's turnover, i.e. a 2.5-fold increase compared to USD106m in 2014.

2.2. QuantiFERON-TB

Tuberculosis is still a major disease as there are 1.3 million TB deaths annually worldwide and roughly 2 billion people with latent TB. More than 10% of these will develop active TB. Therefore, monitoring latent TB is a key element of prevention as underlined by the willingness of the World Health Organization to release guidelines for latent TB testing at the end of 2014. Worldwide, more than 50m latent TB tests are carried out each year.

Latent TB market represents a USD1bn opportunity…

Setting a new standard in TB testing

The current standard of care is the Tuberculin Skin Test (TST), a 120-year old test, which presents several limitations compared to new tests known as Interferon-Gamma Release Assays (IGRAs) such as QuantiFERON-TB. We believe that a switch from TSTs to IGRAs is set to continue mainly due to the fact that TST requires several doctors' visits and has a much lower specificity (65.9% vs. 99.2% for IGRAs). Despite its lower price (USD2 versus USD20 estimated for QuantiFERON-TB), case studies have reported that using new generation TB blood testing has lowered costs for the healthcare system compared with TSTs.

… in which QIAGEN could take a >30% market share

QuantiFERON-TB sales exceeded USD100m (BGe USD107m) in 2014 with a market share that we estimate north of 10%. Management has shown confidence in increasing its market share in the global USD1bn TB market, we estimate that this could translate in an incremental 225-250bp market share gain per year.

Fig. 22: QuantiFERON-TB sales

QuantiFeron TB	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
Nb Test Performed WW	53	54	55	57	58	59	61	62	64	66	67	69	71
% growth	2,5%	2,5%	2,5%	2,5%	2,5%	2,5%	2,5%	2,5%	2,5%	2,5%	2,5%	2,5%	2,5%
price (USDk)	19,2	18,8	18,4	18,1	17,7	17,4	17,0	16,7	16,3	16,0	15,7	15,4	15,1
% growth	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%
market share %	8,0%	10,5%	12,8%	15,3%	17,8%	20,3%	22,8%	25,3%	27,8%	30,3%	32,8%	34,8%	35,8%
Market Share Gain (bp)	100	250	225	250	250	250	250	250	250	250	250	200	100
QuantiFERON-TB Sales	**81**	**107**	**130**	**156**	**182**	**209**	**236**	**263**	**290**	**318**	**346**	**368**	**381**
% cc growth		31%	21%	20%	17%	15%	13%	11%	10%	9%	9%	7%	3%
% of QIA sales		8%	10%	12%	13%	14%	14%	15%	15%	15%	15%	15%	14%

Source: Garnier & Co ests.

Opportunities in China and the US

Note that there is room for QIAGEN to seek growth in both the Emerging Markets, mainly China, and the US.

Extensive publications and launch of the 4th generation in the US

- China is a major opportunity for TB testing, as it is the second market in terms of active TB prevalence, and latent TB is estimated to affect 41% of the population, out of which 5% to 10% left untreated might develop the active disease during their lifetime. QuantiFERON-TB was approved by the Chinese authorities in March 2014. Earlier this year, in February 2015, QIAGEN released results from the largest-ever pivotal study (n=21,000) conducted in China which compared QuantiFERON-TB favourably to TST, highlighting the higher false positive rate created by the TST test. Overall, the TB infection rate was found to be 18.8% as measured by QuantiFERON-TB test vs. 28% when using TST. We believe that the results from this study should support the ramp up of the QuantiFERON-TB test in the country. Sales for FY2015 are estimated to be USD2m.

- In the US, QIAGEN submited the 4th generation of its test for approval in 2015. Already launched in Europe, it has greater sensitivity and specificity as well as improved IP and handling.

Concurrence is rising. Oxford Immunotec has also developed its proprietary TB test, the T-SPOT TB test. However, we would highlight that its sensitivity is slightly lower than the QuantiFERON-TB test (98.8% vs. 99.2% although not being statistically significant).

Applications outside TB should drive penetration further and protect from new entrants

While we do not see a particular short-term threat from large diagnostics companies entering the TB market, we do not rule out that the USD1bn market might trigger some interest as has been the case in the HPV or Vitamin D market for QIAGEN and DiaSorin respectively. Nonetheless, we would point out the strategic development opportunities followed by QIAGEN to support the growth of its QuantiFERON platform.

The QuantiFERON Monitor (QFM) was launched in January 2015 in Europe and leverages QuantiFERON-TB and QuantiFERON-CMV, launched in 2009, which monitor changes in cell-mediated immunity to cytomegalovirus (CMV) the most common and problematic viral infection in solid organ transplant recipients. QFM is used in Europe as a monitoring application of immune function in solid organ transplant recipients. While it is still confined to research use in the US and other markets (excluding Europe), we would stress that an average of 30,000 people undergo organ transplants per year in the US.

3. Pivotal year would have to wait

3.1. US-HPV headwind fading away

The current cervical cancer screening and diagnostic market is about USD6bn and is expected to grow at an estimated 7% CAGR to surpass USD8bn towards 2020. Within this, the HPV test and diagnostic market represents a ~USD500m opportunity, growing at a faster pace in Asia-Pacific and Latin America where 80% of new HPV cases worldwide are reported annually.

While QIAGEN was roughly the sole supplier of HPV tests in the US with a penetration rate close to 90%, the emergence of competitors willing to gain market shares by following an aggressive pricing strategy drove sales down as soon as Q4 2011. Roche (BUY – CHF327) entered the HPV testing market in 2011 with the FDA approval of the Cobas HPV test running on the Cobas4800 system. After two failures to penetrate the HPV market with both the Cytyc merger (2007, USD6.2bn) and the Third Wave Technologies acquisition (2008, USD580m) which resulted in impairments, Hologic acquired GenProbe in 2012. The company put a lot of resources into marketing and aggressively decreased its prices which dropped from USD20 per test in 2011 to USD8 per test four years later. In June 2013, Hologic and Quest announced a non-exclusive distribution agreement for the distribution of Hologic's APTIMA HPV test. As QIAGEN was until this date the primary provider of this test to Quest, we believe that this accelerated the decrease in US-HPV sales. Note that there are no meaningful difference in terms of performance accross the different tests available.

However, we would highlight that the emergence of competition alongside new guidelines issued in March 2012 by the USPSTF (United States Preventive Services Task Force) recommending co-testing for PAP and HPV in women had a positive impact on public awareness and volumes of tests performed. This resulted in a "soft landing" for QIAGEN's US-HPV business sales while a much faster drop had initially been anticipated.

Fig. 23: US-HPV sales "soft landing"

	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
HPV US	131	81	44	41	39	37	35	33	31	30	28	27	26
% CER		-40%	-38%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%
% growth	-13%	-38%	-46%	-7%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%
% of sales	10%	6,0%	3,4%	3%	3%	2%	2%	2%	2%	1%	1%	1%	1%

Source: Company Data; Bryan, Garnier & Co ests.

US-HPV to represent 3.4% of sales in 2015. Negative impact on the group's performance now marginal

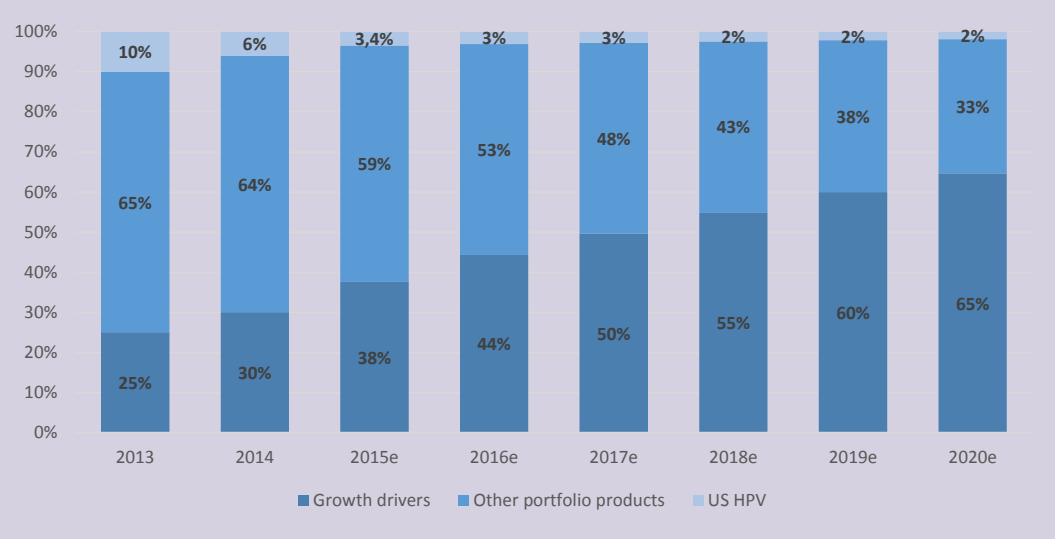
While QIAGEN's US-HPV business used to be a strong leg for growth with a double-digit annual growth rate until 2011 alongside a 15% contribution to the group's sales (US only), Hologic's aggressive pricing strategy weighed on QIAGEN's overall performance. Growth prospects for the HPV market are good, however, we do not believe that QIAGEN should benefit from this trend anymore, notably in the US. We expect sales of USD44m for FY2015 (BGe) and a pace of decline slowing from 2016 onwards (BGe -5% reported). In other territories, we would expect investments to support sales to be relatively limited. All in all, the headwinds from the US-HPV business should fade away as soon as 2016, enabling topline performance to fully benefit from the expansion of its five growth drivers.

3.2. Growth drivers' expansion…

QIAGEN's five growth drivers to represent 55% of sales in 2018e vs. 38% in 2015e

From a top-line perspective, while US-HPV has been a drag on the group's performance over the past five years, the negative contribution from the latter should fade away as soon as 2015e, representing 3.4% of the group's total sales. QIAGEN's sales should grow at 7% CAGR2015-2020e, driven by an 19% CAGR from the five growth drivers over the same period.

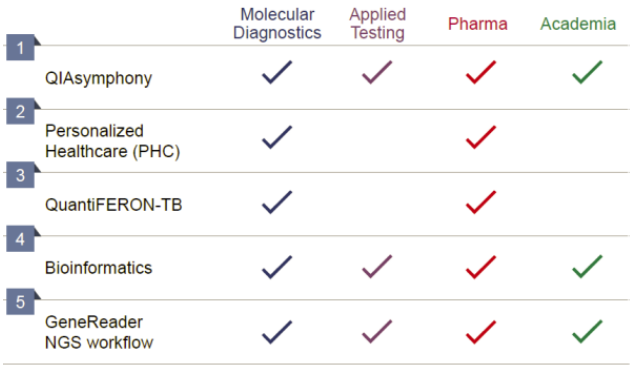
Fig. 24: US-HPV now behind



Source: Company Data; Bryan, Garnier & Co ests.

Across all business areas, these five growth drivers will progressively take over a major contribution to sales. In the Molecular Diagnostics and Pharma divisions, we see leverage from QIAGEN's ability to provide customers with a comprehensive offer.

Fig. 25: Growth Drivers by Business segments



	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
Growth drivers	**327**	**404**	**481**	**587**	**702**	**833**	**979**	**1140**	**1298**	**1449**	**1600**	**1749**	**1897**
% growth	18%	24%	19%	22%	19%	19%	18%	16%	14%	12%	10%	9%	8%
% of sales	25%	30%	38%	44%	50%	55%	60%	65%	68%	70%	71%	72%	72%
Other portfolio products	**849**	**862**	**756**	**698**	**673**	**647**	**619**	**591**	**579**	**588**	**613**	**656**	**720**
% growth	4%	1%	-12%	-8%	-4%	-4%	-4%	-5%	-2%	1%	4%	7%	10%
% of sales	65%	64%	59%	53%	48%	43%	38%	33%	30%	28%	27%	27%	27%
US HPV	**131**	**81**	**44**	**41**	**39**	**37**	**35**	**33**	**31**	**30**	**28**	**27**	**26**
% growth	-20%	-38%	-46%	-7%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%
% of sales	10%	6%	3,4%	3%	3%	2%	2%	2%	2%	1%	1%	1%	1%

Source: Company Data; Bryan, Garnier & Co ests.

3.3. … over shadowed by delayed leverage

3.3.1. Gross margin

While QIAGEN's gross margin already compares favourably to peers (see Figure 30), the company should be able to improve it by 150bp towards 2020e, benefiting from: **(i)** the internalisation of the production of QuantiFERON latent TB test and **(ii)** the expansion of bioinformatics' sales which is a highly profitable business (in terms of gross margin). However, this is likely to be back-end loaded to late 2016/2017e.

Internalisation of QuantiFERON latent TB: full effect in 2017e

According to management's comments, the gross margin of QuantiFERON ranges from 65% to 70% of sales (BGe 67.5%) and full effect from the re-internalisation of production should materialise in 2017e. We have modelled a 100bp and 250bp increase in 2016e and 2017e respectively.

Fig. 26: Internalisation of QuantiFERON production

QuantiFERON	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e
Revenues	81	107	130	156	182	209	236	263
% growth		31%	21%	20%	17%	15%	13%	11%
Gross Margin	55	72	88	107	129	148	167	187
% of revenues	**67,5%**	**67,5%**	**67,5%**	**68,5%**	**71,0%**	**71,0%**	**71,0%**	**71,0%**
Gross Margin gains (bp)	0	0	0	100	250	0	0	0
% of QIA gross margin	6%	8%	10%	11%	13%	14%	14%	15%

Source: Company Data; Bryan, Garnier & Co ests.

Bioinformatic business has gross margin close to 90% but marginal Short term contribution

Looking at other sources of leverage, we see long-term potential from the raise of the bioinformatics division. Peers' to QIAGEN in bioinformatics report gross margins at around 85%-90% of sales.

Fig. 27: Bioinformatics' contribution to gross margin

Bioinformatics	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e
Revenues	30	42	55	68	82	98	118	142
% growth		40%	30%	25%	20%	20%	20%	20%
Gross Margin	27	38	49	61	74	88	106	127
% of revenues	90,0%	90,0%	90,0%	90,0%	90,0%	90,0%	90,0%	90,0%
% of QIA gross margin	3%	4%	5%	6%	7%	8%	9%	10%

Source: Company Data; Bryan, Garnier & Co ests.

Fig. 28: QIAGEN's gross margin evolution

in USDm (otherwise indicated)	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e
Net sales Reported	**1302**	**1345**	**1281**	**1327**	**1413**	**1517**	**1633**	**1764**
% CER	5,0%	4,0%	3,3%	6,0%	6,6%	7,4%	7,8%	8,2%
% growth	4,2%	3,1%	-4,8%	3,5%	6,5%	7,3%	7,7%	8,0%
Adjustements	4	1		3	2	2	2	2
Net Sales Adjusted	1306	1346	1281	1329	1415	1519	1635	1766
COGS	**-486**	**-480**	**-458**	**-481**	**-492**	**-520**	**-550**	**-581**
% net sales	-37%	-36%	-36%	-36%	-35%	-34%	-34%	-33%
Gross Profit Reported	**815**	**865**	**824**	**848**	**924**	**999**	**1085**	**1186**
% margin	63%	64%	64%	64%	65%	66%	66%	67%
Business integration	43	8	8	20	12	13	15	14
Purchased intangibles amortization	78	82	82	80	81	81	81	81
Non cash interest expenses	0	0	0	0	0	0	0	0
Other special incomes and expenses	0	0	0	0	0	0	0	0
Gross Profit Adjusted	**936**	**955**	**914**	**949**	**1017**	**1094**	**1181**	**1280**
% margin	**71,9%**	**71,0%**	**71,3%**	**71,5%**	**72,0%**	**72,1%**	**72,3%**	**72,6%**
Gain in bp			30	20	44	17	21	25
Cumulative gain in bp			30	50	94	111	132	156

Source: Company Data; Bryan, Garnier & Co ests.

3.3.2. Leverage not likely to kick-in this semester

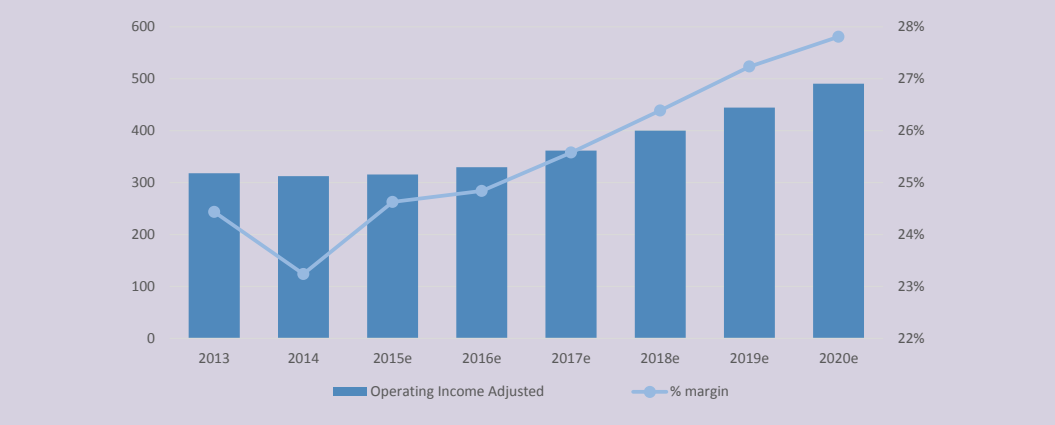
Room to improve Operating margin by 300bp towards 2020e

Although 2015 and 2016 should be characterised by continuous investments in sales force to support: **(i)** the launch of the GeneReader, and **(ii)** the growth of the four other growth drivers, we should also see additional leverage at the operating margin level which, we believe, could improve by almost 300bp toward 2020e. A significant part of this progression should come from the decrease in G&A expenses while Selling and Marketing expenses should continue to expand significantly in H1 to support the launch of the GeneReader, offsetting any potential leverage in H1 2016.

Fig. 29: QIAGEN's operating margin

	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e
R&D	-146	-164	-147	-146	-155	-167	-180	-194
% net sales	-11%	-12,2%	-11,5%	-11,0%	-11,0%	-11,0%	-11,0%	-11,0%
S&M	-372	-377	-359	-371	-396	-421	-441	-472
% net sales	-29%	-28,0%	-28,0%	-28,0%	-28,0%	-27,8%	-27,0%	-26,8%
G&A	-199	-127	-115	-113	-120	-118	-122	-128
% net sales	-15%	-9,4%	-9,0%	-8,6%	-8,5%	-7,8%	-7,5%	-7,3%
SG&A	-571	-503	-474	-485	-516	-538	-563	-600
% net sales	-43,7%	-37,4%	-37,0%	-36,6%	-36,5%	-35,5%	-34,5%	-34,0%
Acquisition-related intangible amort.	-35	-37	-38	-40	-42	-45	-49	-53
% net sales	-2,7%	-2,8%	-3%	-3%	-3%	-3%	-3%	-3%
Total OPEX	-752	-704	-660	-671	-714	-751	-792	-847
% net sales	-58%	-52%	-51%	-51%	-51%	-50%	-49%	-48%
Operating Income Reported	**63**	**161**	**164**	**178**	**210**	**249**	**293**	**339**
% margin	4,9%	12,0%	12,8%	13,4%	14,8%	16,4%	17,9%	19,2%
Business integration	142	33	33	33	33	33	33	33
Purchased intangibles amortization	113	119	119	119	119	119	119	119
Non cash interest expenses	0	0	0	0	0	0	0	0
Other special incomes and expenses	0	0	0	0	0	0	0	0
Operating Income Adjusted	**318**	**313**	**316**	**330**	**362**	**400**	**445**	**491**
% margin	**24%**	**23%**	**24,6%**	**24,8%**	**25,6%**	**26,4%**	**27,2%**	**27,8%**
gain in bp		**-119**	**139**	**21**	**74**	**81**	**84**	**57**
cumulative gain in bp					95	176	261	318

Source: Company Data; Bryan, Garnier & Co ests.

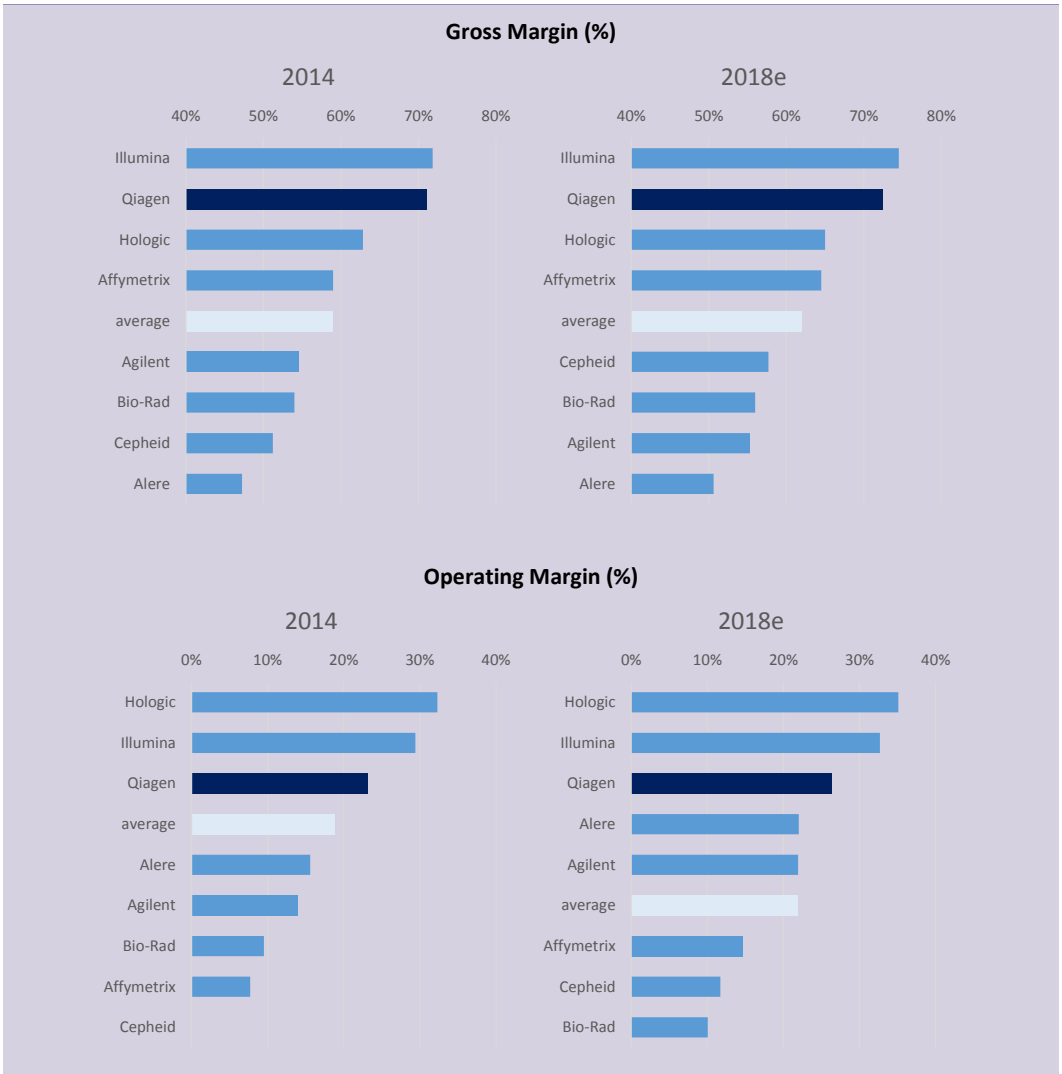


Source: Company Data; Bryan, Garnier & Co ests.

We would highlight that QIAGEN has good profitability albeit no slight margin expansion anticipated in 2016. Roche Diagnostics and Thermo Fischer Scientific have lower gross margins of 44% to 57% respectively in 2014. We see this gap widening in 2018e. While QIAGEN's operating margin of 23.2% in 2014 is slightly lower than Thermo Fischer Scientific's at 27.4%, it is expected to be above Thermo Fischer Scientific's in 2018e at 26.4% vs 24.7% (Bloomberg consensus).

When compared to pure players in the molecular diagnostic field, QIAGEN's profitability compares well to peers.

Fig. 30: QIAGEN's margins vs. peers



Source: Company Data; Bloomberg; Bryan, Garnier & Co ests.

4. Strong presence in molecular workflow

4.1. MDx, fastest-growing segment in the IVD sector

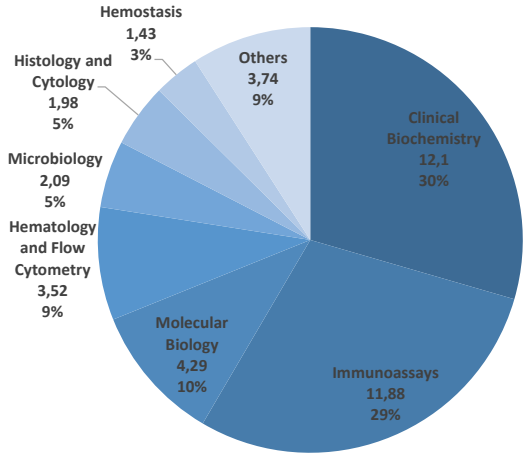
IVD tests are used to detect, identify or quantify pathogens as well as biological biomarkers produced by the body in response to a disease or an infection. The early diagnosis and better monitoring response to a disease or an infection provided by IVD tests improve the patients' outcome and reduce healthcare costs.

MDx segment to growth at 11% CAGR towards 2020e, the fastest-growing segment in the IVD sector

Over the last century, research progress allowed for a better understanding of the human body and the development of increasingly efficient and accurate diagnostic tools. However, it is only over the last 20 years that the identification of newly-discovered genes and new DNA sequencing techniques led to the rise of molecular and genomic laboratory medicine.

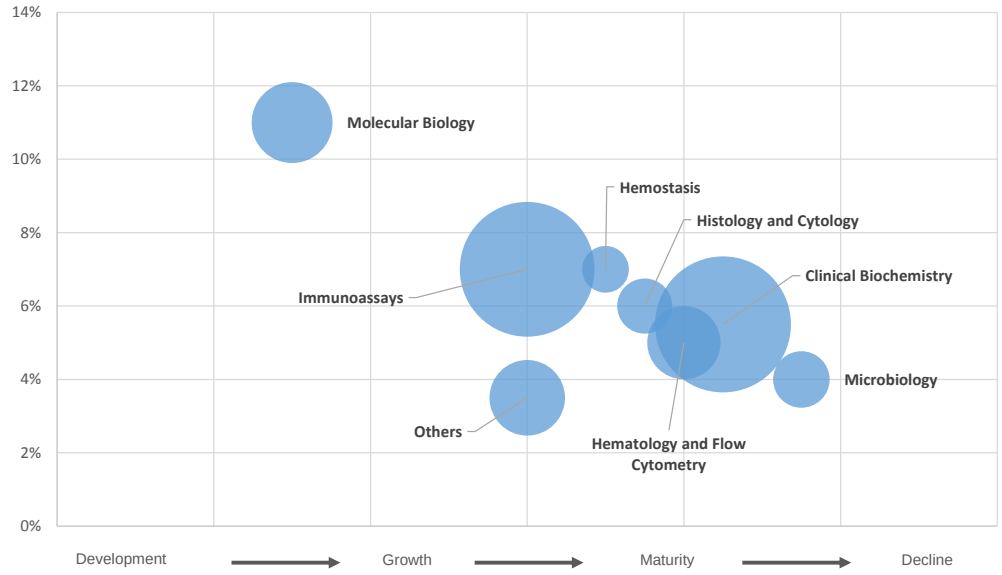
The global IVD market for clinical applications was estimated to be worth more than USD41bn in 2014 (excluding USD2bn for industrial applications), of which 10% or slightly more than USD4bn was represented by molecular diagnostic sales. While the overall IVD market is expected to grow at 6% CAGR towards 2020e to reach USD58bn, the molecular diagnostic segment, in which QIAGEN is involved, is poised to grow at 11% CAGR to exceed USD8bn.

Fig. 31: Clinical IVD market by segments in 2014 (USDbn)



Source: Bryan, Garnier & Co ests.

Fig. 32: IVD market, segment lifecycle analysis (2014)

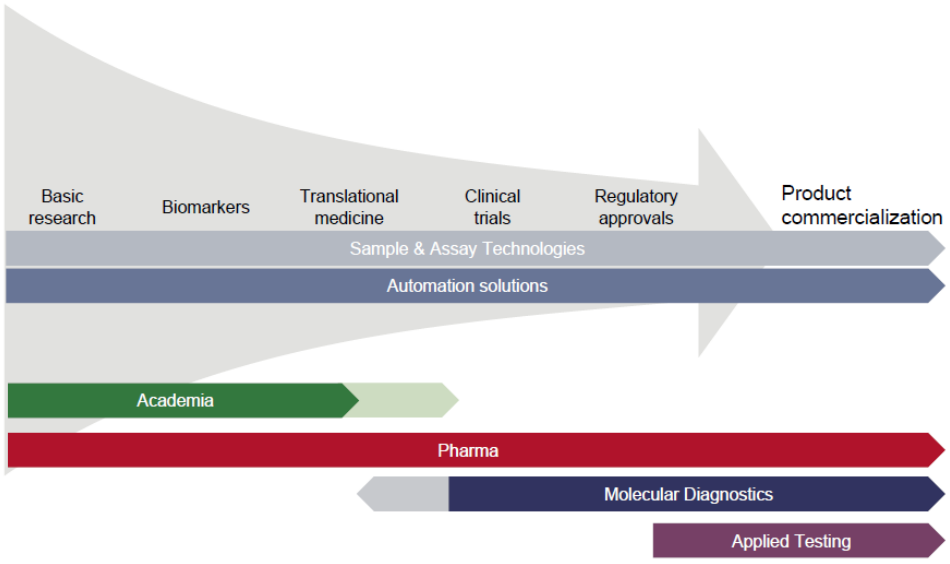


Source: Company data; Bryan, Garnier & Co ests.

4.2. Covering the R&D continuum

QIAGEN is one of the only integrated players covering the whole spectrum of the IVD field from R&D through to commercialisation involving two main customer classes, namely Molecular Diagnostics Laboratories and the Life Sciences. The latter includes academic and research laboratories, pharmaceutical companies and industrials in need of applied testing methods (e.g. food safety).

Fig. 33: QIAGEN's customer classes



Source: Company Data.

4.2.1. Molecular Diagnostics

This segment addresses a wide range of customers whether by their size or their needs but all of which have a focus either on disease prevention or support to diseases. We identify hospital laboratories, clinical laboratory providers (e.g. Quest Diagnostics LabCorp in the US) as well as physicians as highlighting QIAGEN's ability to provide integrated solutions from the central lab to the point of need. Molecular Diagnostics covers all the areas of healthcare. These break down into four categories: prevention, profiling, PHC and point of need.

- Prevention refers to the early detection of diseases such as tuberculosis (QuantiFERON latent TB test) and cervical cancer (HPV test). Not only does prevention allow for early, appropriate and improved patient care but also significantly reduces the economic burden of disease.

- Profiling encompasses the use of molecular testing for the detection of pathogens whose development might lead to life-threatening diseases (HIV, Hepatitis C) or not (flu…), hence the need for reliable and quick diagnostic methods.

- Personalised healthcare (PHC) at QIAGEN is associated with the emerging companion diagnostic field which relies on the use of molecular diagnostics to guide for treatment options for patients according to their own human genetic material.

- Point of need answers the need for diagnostic tools when physicians do not benefit from the logistic infrastructure to ship samples to specialised laboratories as is often the case in emerging countries or urgent situations.

Fig. 34: Molecular Diagnostic sales (USDm)

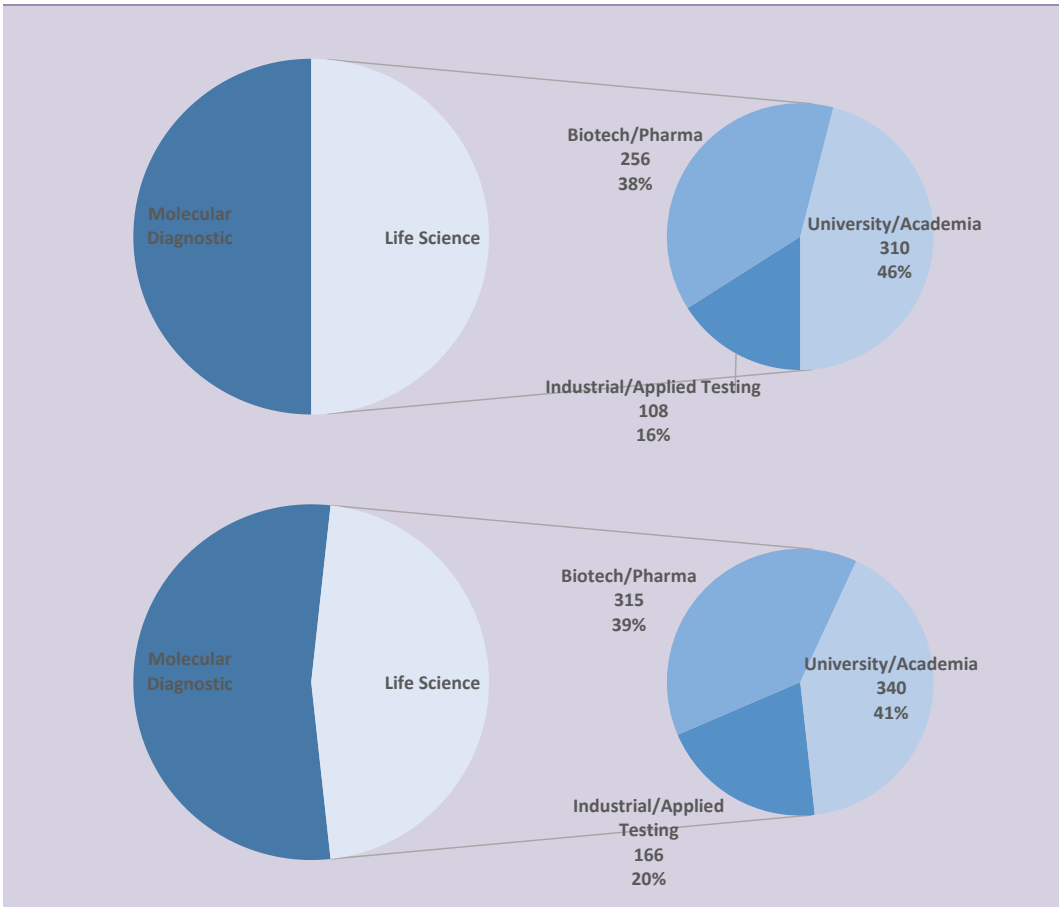
	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e
MD - Molecular Diagnostics	**653**	**673**	**633**	**660**	**713**	**779**	**855**	**943**
% CER	7%	4%	4,4%	6,7%	8,2%	9,3%	9,9%	10,4%
% growth	6%	3%	-6,0%	4,3%	8,1%	9,2%	9,8%	10,3%
% of sales	50%	50%	49%	50%	50%	51%	52%	53%
Core MDx Portfolio	**444**	**592**	**589**	**619**	**675**	**742**	**820**	**910**
% CER	12%	16%	7,5%	7,5%	9,0%	10,0%	10,5%	11,0%
% growth	7%	33%	-0,6%	5,1%	9,0%	10,0%	10,5%	11,0%
% of sales	34%	44%	46%	47%	48%	49%	50%	52%
HPV US	**131**	**81**	**44**	**41**	**39**	**37**	**35**	**33**
% CER		-40%	-38%	-5%	-5%	-5%	-5%	-5%
% growth	-13%	-38%	-46%	-7%	-5%	-5%	-5%	-5%
% of sales	10%	6,0%	3,4%	3%	3%	2%	2%	2%
HPV ex-US	78							
% CER								
% growth	56%	0%						
% of sales	6%	3%						

Source: Company Data; Bryan, Garnier & Co ests.

4.2.2. Life Sciences

While we see the contribution of the Molecular Diagnostics business growing from 50% to 53% towards 2020e and reaching almost USD1bn in sales. Industrial and Applied Testing sales should grow significantly over the period on the back of academia with uncertainties and political risks regarding NIH spending despite a clear positive expected for 2016 (BGe +4.5% CER). Note that this customer class is key for QIAGEN as it enables the company to widen its reach to key opinion leaders as well as early adopters

Fig. 35: Sales split 2014-2020e (USDm and in % of Life Sciences' sales)



Source: Company Data.

Pharma

The contribution from Biotech and Pharma customers should stay at below 40% of Life Sciences, or 20% of QIAGEN's turnover towards 2020e. The company aims to accompany laboratories to develop drugs more efficiently from the identification of genes responsible for the disease through clinical trials (patients' stratification) or commercialisation in some cases (see section 1.1. The Uptake of Personalised HealthCare) with companion diagnostics.

Fig. 36: Pharma sales (USDm)

	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e
LS - Pharma	**248**	**256**	**245**	**250**	**264**	**280**	**297**	**315**
% CER	3%	3%	4,0%	4,5%	5,5%	6,0%	6%	6%
% growth	4%	3%	-4,1%	2,1%	5,5%	6,0%	6%	6%
% of sales	19%	19%	19%	19%	19%	18%	18%	18%
/w Growth Drivers	25	32	39	49	60	75	93	116
% CER		28%	31%	26%	24%	25%	24%	24%
% growth		28%	23%	24%	24%	25%	24%	24%
/w Others	223	224	206	202	204	205	204	199
% CER			0%	0%	1%	0%	-1%	-2%
% growth		0%	-8%	-2%	1%	0%	-1%	-2%

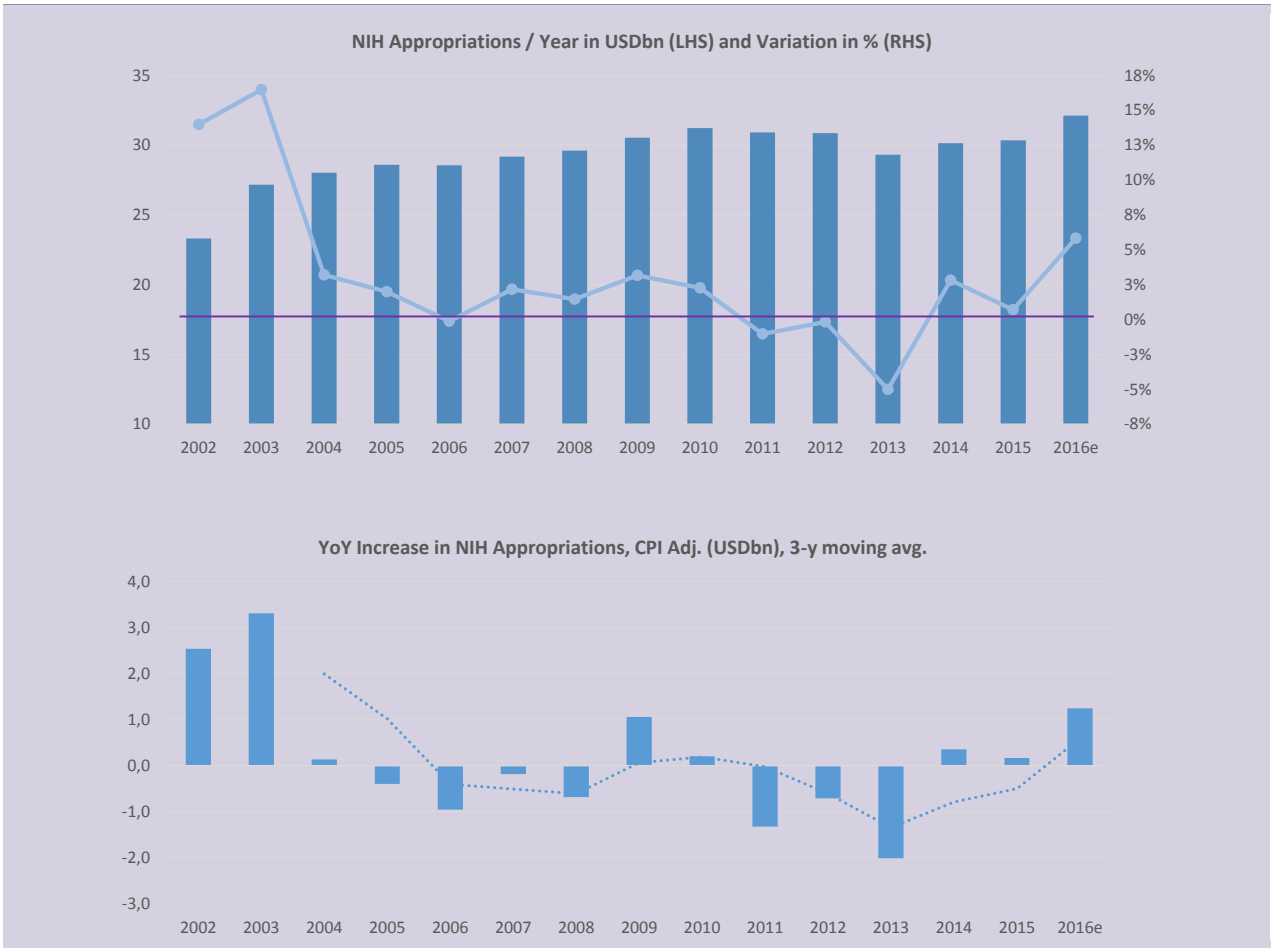
Source: Company Data; Bryan, Garnier & Co ests.

Academia

QIAGEN's sales for academic laboratories which account for 23% of the company's total sales relies primarily on funding from State Institutions, e.g. the National Institutes of Health in the US. The budget of the latter, of which more than 80% funds extramural research through grants, contracts and other awards, is voted by Congress on an annual basis and has direct implications for the growth outlook of academic labs. The NIH drives roughly 3% of QIAGEN's sales and, hence, could be a good indicator, among others, for the overall outlook of the division.

Since 2004, the increase in NIH appropriations did not allow research labs to face inflation, although the latter was not galloping. 2016 might well be the cornerstone of a more thriving period for the NIH as US President Barack Obama recently signed into law a bill that would increase the NIH budget by USD2bn (+5.8%) in 2016, after more than 10 years of diminished research funding capacity due to budget cuts, sequestration and inflationary losses.

Fig. 37: Trends in NIH appropriations by year 2002-2016e



Source: NIH, Bryan, Garnier & Co ests.

To note also is that the European Commission, as part of its Horizon 2020 plan, should allocate 17%, or EUR13.1bn out of EUR77bn, to the European Research Council, i.e. the pan-European funding body. Looking to Asia, the region's major funding provider is the Chinese government which approved a 6-7% increase in R&D funding for FY2016.

QIAGEN's Academia sales should benefit from the NIH and Chinese research budgets in 2016

For 2016, we estimate that the company should benefit from both the increase in NIH and Chinese government funding to research budgets, driving 4.5% growth or USD312m in sales, while Academia sales have grown at a 2.3% CAGR over 2010-2014. In the long run, uncertainties in 2017 especially with US presidential elections next year, and on a more general basis on R&D funding budgets, which are often the first to be cut, lead us to normalise our growth rate to 3%.

Fig. 38: Academia sales (USDm)

	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e
LS - Academia	**300**	**310**	**295**	**302**	**311**	**320**	**330**	**340**
% CER	1%	2%	3,5%	4,5%	3,0%	3,0%	3%	3%
% growth	0%	3%	-4,6%	2,1%	3,0%	3,0%	3%	3%
% of sales	23%	23%	23%	23%	22%	21%	20%	19%
/w Growth Drivers	21	27	33	41	51	65	82	103
% CER			32%	28%	25%	26%	26%	25%
% growth		28%	24%	25%	25%	26%	26%	25%
/w Others	280	283	263	261	259	255	247	236
% CER			1%	2%	-1%	-2%	-3%	-4%
% growth		1%	-7%	-1%	-1%	-2%	-3%	-4%

Source: Company Data; Bryan, Garnier & Co ests.

Applied Testing

In its efforts to diversify the customer base, QIAGEN concentrated on developing Applied Testing which aims at providing the benefit of molecular diagnostics to food-quality monitoring, forensic analysis and veterinary. We believe that forensic analysis has been among the first areas to switch to molecular diagnostic methods which have greater sensitivity while the main monitoring and diagnostic techniques in food quality monitoring and veterinary are still microbiological diagnostic methods. However, we see an increasing interest from industrials, especially for molecular diagnostic based tests, as highlighted by bioMérieux's recent US launch of GENE-UP, its new PCR-based molecular diagnostic system for the detection of microorganisms (bacteria and viruses, please see our comment issued on Nov 4th, 2015: bioMérieux - Fresh air for Industrial Applications). In this field, QIAGEN sells the QIAsymphony Rotor-Gene Q workflow, which allows for sample preparation in real time PCR cycles to result and features more than 70 different tests.

For years, there has been a discrepancy between the Applied Testing market driven by volumes and marketing techniques which have long followed traditional approaches. However, we would highlight that QIAGEN has adapted and now uses a more effective internet-based direct-marketing approach through a so-called PunchOut solution that allows shopping from the customer's own procurement system.

Fig. 39: Applied Testing sales (USDm)

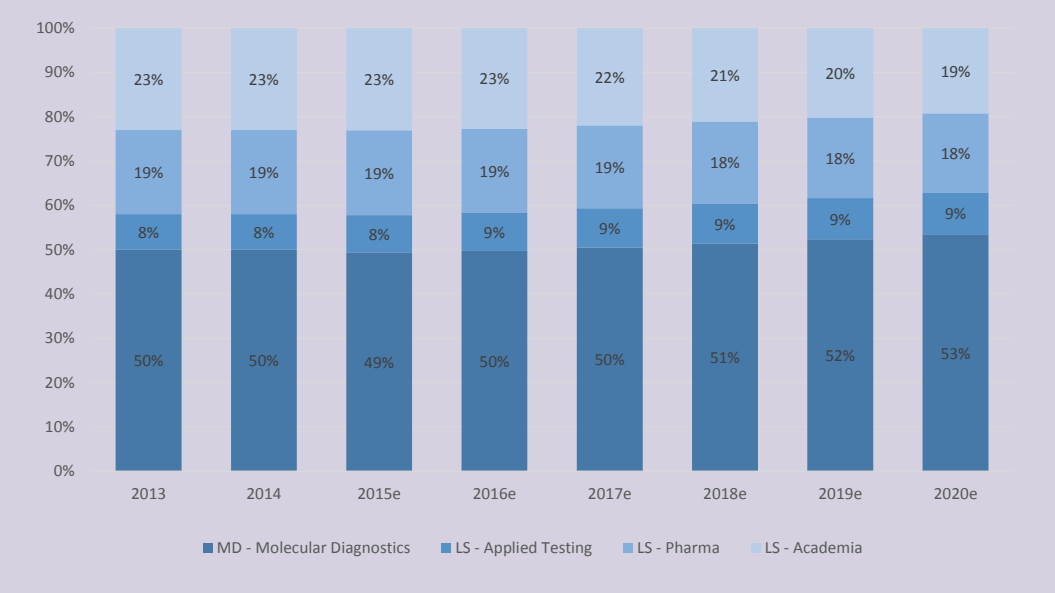
	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e
LS - Applied Testing	**105**	**108**	**108**	**115**	**125**	**138**	**151**	**166**
% CER	6%	9%	8,5%	8,5%	9,0%	10,0%	10%	10%
% growth	4%	3%	0,4%	6,1%	9,0%	10,0%	10%	10%
% of sales	8%	8%	8%	9%	9%	9%	9%	9%
/w Growth Drivers	16	20	25	30	34	40	46	52
% CER			31%	22%	17%	15%	14%	14%
% growth		28%	23%	19%	17%	15%	14%	14%
/w Others	89	88	83	85	91	98	106	115
% CER			3%	5%	6%	8%	8%	8%
% growth		-1%	-5%	2%	6%	8%	8%	8%

Source: Company Data; Bryan, Garnier & Co ests.

4.2.3. Sales by customer

All in all, Molecular Diagnostics' sales should grow at a 9.5% CAGR15-20, accounting for more than half of the company's turnover, i.e. 50% in 2014 to 53% in 2020e. Within the Life Sciences' business, our estimates show a contribution from academia to the group's revenues decreasing from 23% in 2014 to 19% towards 2020e implying a 2.8% CAGR15-20. Lastly, we see Applied Testing's and Pharma's sales remaining at their 2014 levels in terms of contribution to sales with a CAGR15-20 of 9% and 5% respectively.

Fig. 40: QIAGEN's sales by customer class



Source: Company Data; Bryan, Garnier & Co ests.

Regarding QIAGEN's five growth drivers, we have assumed the following break-down of sales by customer class. Note that: **(i)** although the company indicates that Pharma customers contribute to PHC sales, revenues are negligible with upfront payments recognised over three years, **(ii)** we have assumed that QuantiFERON-TB sales are derived from molecular diagnostic labs, and **(iii)** despite an interest from industrials, significant penetration of the GeneReader NGS workflow in Applied Testing is not likely to materialise in the short- to mid-term.

Fig. 41: Growth drivers by business segments

	Molecular Diagnostics	Applied Testing	Pharma	Academia
1 QIAsymphony	✓	✓	✓	✓
2 Personalized Healthcare (PHC)	✓		✓	
3 QuantiFERON-TB	✓		✓	
4 Bioinformatics	✓	✓	✓	✓
5 GeneReader NGS workflow	✓	✓	✓	✓

	Molecular Dx	Life Sciences		
		Applied Testing	Pharma	Academia
QIAsymphony	60%	15%	15%	10%
PHC	100%	0%	0%	0%
Quantiferon TB	100%	0%	0%	0%
Bioinformatics	50%	10%	20%	20%
GeneReader NGS workflow	50%	0%	25%	25%

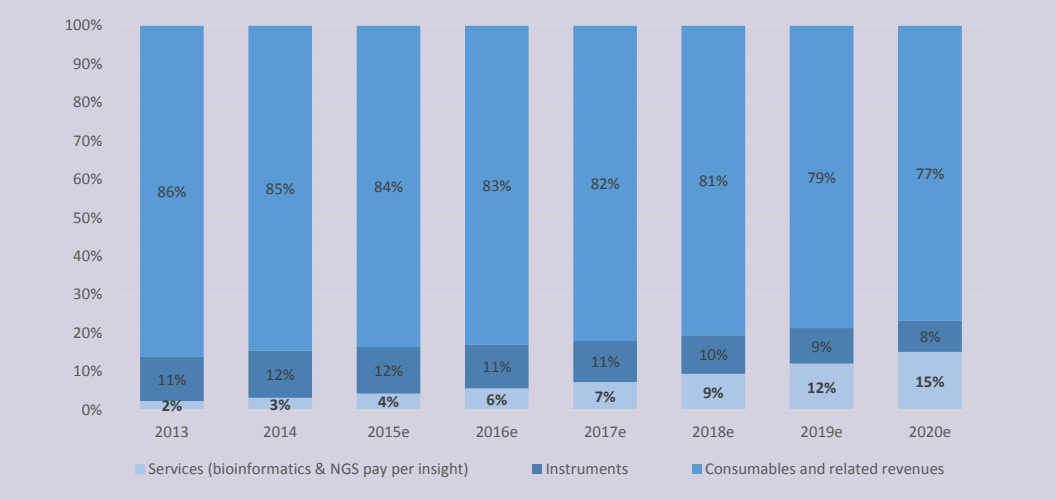
Break-down by Business Segments	2013	2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
in MDx	**266**	**326**	**385**	**468**	**555**	**653**	**758**	**870**	**980**	**1085**	**1186**	**1285**	**1379**
% growth	273%	23%	18%	22%	19%	18%	16%	15%	13%	11%	9%	8%	7%
% Growth Drivers sales	81%	81%	80%	80%	79%	78%	77%	76%	75%	75%	74%	73%	73%
in Applied Testing	**16**	**20**	**25**	**30**	**34**	**40**	**46**	**52**	**56**	**60**	**63**	**66**	**68**
% growth		28%	23%	19%	17%	15%	14%	14%	9%	6%	5%	4%	4%
% Growth Drivers sales	5%	5%	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%
in Pharma	**25**	**32**	**39**	**49**	**60**	**75**	**93**	**116**	**138**	**159**	**182**	**206**	**232**
% growth		28%	23%	24%	24%	25%	24%	24%	19%	16%	14%	13%	13%
% Growth Drivers sales	8%	8%	8%	8%	9%	9%	10%	10%	11%	11%	11%	12%	12%
in Academia	**21**	**27**	**33**	**41**	**51**	**65**	**82**	**103**	**124**	**145**	**168**	**192**	**217**
% growth		28%	24%	25%	25%	26%	26%	25%	20%	17%	15%	14%	13%
% Growth Drivers sales	6%	7%	7%	7%	7%	8%	8%	9%	10%	10%	10%	11%	11%
Total Growth Drivers	**327**	**404**	**481**	**587**	**702**	**833**	**979**	**1140**	**1298**	**1449**	**1600**	**1749**	**1897**
% growth		24%	19%	22%	19%	19%	18%	16%	14%	12%	10%	9%	8%

Source: Company Data; Bryan, Garnier & Co ests.

4.3. Offering a complete workflow

To all customers, QIAGEN aims at offering a complete molecular workflow from the biological sample to the result. To this end, the company provides laboratories with instruments, consumables or reagents and data interpretation services. To assess the importance of the analysis services provided by QIAGEN better, we have split the group's revenues into the three categories mentioned above. We estimate that both the sales of instruments and reagents should decrease over the years on the back of sales derived from services. Indeed, one should bear in mind that the GeneReader is likely not to be sold but made available to laboratories against a payment for a clinical insight, while the contribution of bioinformatics should double. Towards 2020e, we have modelled a contribution to sales from the GeneReader and bioinformatics of 7% and 8% respectively vs. 3% and 0% in 2014.

Fig. 42: QIAGEN's sales by product group

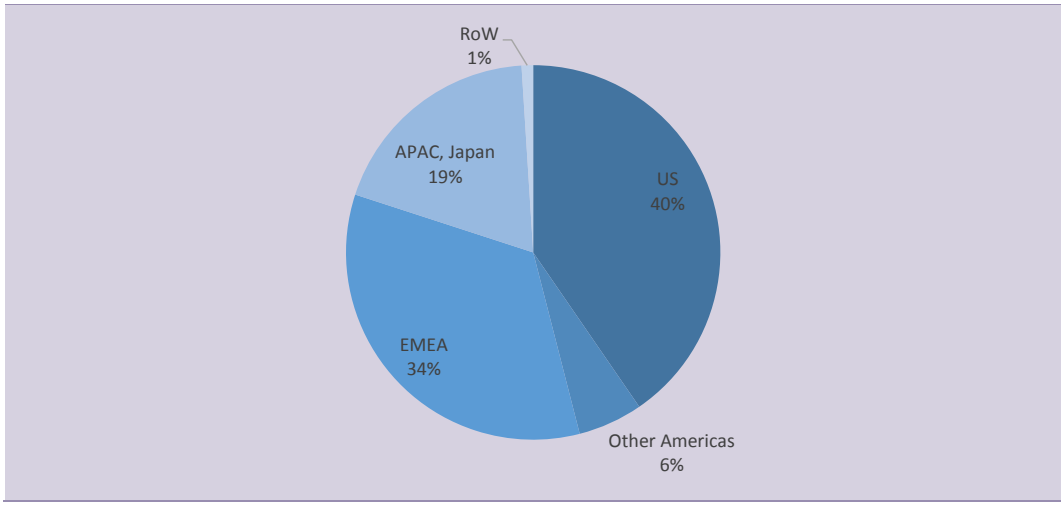


Source: Company Data; Bryan, Garnier & Co ests.

From a geographical standpoint, QIAGEN realises 40% of its sales in the US and 6% in Canada and LatAm. Note that the company reports in USD. Hence, the share price is negatively impacted when the EUR strengthens against the USD and vice versa.

The company realises 19% of its sales in Asia Pacific. While this region has widely adopted immunoassays and microbiology diagnostics methods, we believe that QIAGEN could benefit from the increasing recognition of molecular diagnostic technologies in the upcoming years, which are mainly use for research at the moment. Following a weak Q3 2015 in Japan (~5% of sales), management warns again in its Q4 2015 preliminary announcement on the situation in the country. Consumption tax put in place to offset demographic issues favor nationalist consumption amplified by family-owned distributors. However, visibility is increasing slightly in China (~6-7% of sales) where commercial infrastructure is ramping-up. We would highlight that the fundamentals are good in the country with ongoing healthcare reforms, a rising middle class and determination by the governments to fight infectious disease. On this matter, we recall that QIAGEN introduced the QuantiFERON-TB test in China in 2014 with good sales growth though small at the moment (USD2m). Finally, the company derives 34% of its sales from EMEA.

Fig. 43: Sales by geography (2014)



Source: Company Data; Bryan, Garnier & Co ests.

5. Reinstalling coverage with a NEUTRAL rating

5.1. DCF-based fair value pointing to EUR24

Fig. 44: DCF model for QIAGEN

DFCF (in USDm otherwise indicated)	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	∞
Sales	1326	1413	1516	1633	1764	1908	2067	2241	2432	2642	2838	3014	3163	3281	3363	
% growth	*3,5%*	*6,5%*	*7,3%*	*7,7%*	*8,0%*	*8,2%*	*8,3%*	*8,4%*	*8,5%*	*8,6%*	*7,4%*	*6,2%*	*5,0%*	*3,7%*	*2,5%*	*2,5%*
Adj. EBIT	329	361	400	445	491	534	575	622	673	729	782	830	871	903	925	
% Sales	*24,8%*	*25,6%*	*26,4%*	*27,2%*	*27,8%*	*28,0%*	*27,8%*	*27,8%*	*27,7%*	*27,6%*	*27,6%*	*27,5%*	*27,5%*	*27,5%*	*27,5%*	*27,5%*
D&A	162	147	130	111	88	95	103	112	122	132	142	151	158	164	168	
% Sales	*12,2%*	*10,4%*	*8,6%*	*6,8%*	*5,0%*	*5,0%*	*5,0%*	*5,0%*	*5,0%*	*5,0%*	*5,0%*	*5,0%*	*5,0%*	*5,0%*	*5,0%*	*5,0%*
Change in WC	-6	-27	-7	-19	-23	-20	-25	-28	-29	-33	-36	-38	-40	-42	-44	
% Sales	*-0,4%*	*-1,9%*	*-0,5%*	*-1,2%*	*-1,3%*	*-1,1%*	*-1,2%*	*-1,2%*	*-1,2%*	*-1,2%*	*-1,3%*	*-1,3%*	*-1,3%*	*-1,3%*	*-1,3%*	*-1,3%*
CAPEX	-92	-96	-102	-108	-115	-124	-134	-146	-158	-172	-176	-178	-177	-174	-168	
% Sales	*-6,9%*	*-6,8%*	*-6,7%*	*-6,6%*	*-6,5%*	*-6,5%*	*-6,5%*	*-6,5%*	*-6,5%*	*-6,5%*	*-6,2%*	*-5,9%*	*-5,6%*	*-5,3%*	*-5,0%*	*-5,0%*
Taxes	-60	-66	-73	-81	-89	-96	-103	-111	-120	-129	-139	-148	-156	-162	-166	
% Tax Rate	*19%*	*19%*	*19%*	*19%*	*19%*	*19%*	*19%*	*19%*	*19%*	*19%*						
% adj. EBIT	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*	*-18%*
FCF	**334**	**320**	**349**	**348**	**353**	**389**	**416**	**450**	**487**	**527**	**573**	**617**	**656**	**689**	**715**	**12417**
variation %	*-15%*	*-4%*	*9%*	*0%*	*1%*	*10%*	*7%*	*8%*	*8%*	*8%*	*9%*	*8%*	*6%*	*5%*	*4%*	
Discount	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Discounted FCF	308	272	274	252	236	240	236	236	236	235	236	234	230	223	213	3416

DFCF	**3 661**
+ Sum DFCF	3 661
+ Terminal Value	3 416
+ LT Financial Assets	
- Net Debt	-697
- Provisions	-29
- Minority Interests	-0,32
= EV	**6 351**
FX	1,085
= EV in EUR (spot FX)	**5 853**
NoS	236
Fair Value (spot FX)	**24,8**

Source: Bryan, Garnier & Co ests.

Our DCF based Fair Value for the QIAGEN stocks stands at EUR24. Our model is based on estimates until 2025, and then ion linear interpolation over a 5-year period between our estimates for 2025 and our long-term assumptions: perpetual growth rate (g) stands at 2.5% (the same we use for bioMérieux), operating margin of 27.5%, tax rate of 19% and capex as well as D&A of 5% of sales.

Our WACC assumption of 8.4% is based on a risk free rate of 2% (BG&Co ests.), market risk premium of 6.4% (Bryan, Garnier & Co ests.), and beta of 1.0 (two-years adjusted vs. STOXX600).

Fig. 45: WACC assumptions

LT Debt/ (LT Debt + Book Equity) %	0,0%
Cost of debt before tax	3,5%
Tax rate	24,5%
Effective Cost of Debt	2,6%
Risk free rate	2,0%
Equity risk premium	6,4%
Beta	1,0
Cost of equity	8,4%
WACC	**8,40%**

Source: Bryan, Garnier & Co ests.

As for the balance sheet, it is healthy despite some regular bolt-on acquisitions, with gearing estimated at 16% at the end of 2016e. Note that QIAGEN does not intend to pay a dividend.

Fig. 46: Sensitivity tables

		WACC								
		7,40%	7,65%	7,90%	8,15%	**8,40%**	8,65%	8,90%	9,15%	9,40%
	4,0%	41,1	37,9	35,1	32,6	30,5	28,6	26,9	25,3	23,9
	3,5%	36,9	34,3	32,1	30,0	**28,2**	26,6	25,1	23,7	22,5
	3,0%	33,7	31,6	29,6	27,9	**26,3**	24,9	23,6	22,4	21,3
g	**2,5%**	31,1	29,3	**27,7**	**26,2**	**24,8**	**23,5**	**22,4**	21,3	20,3
	2,0%	29,1	27,5	26,0	24,7	**23,5**	22,4	21,3	20,4	19,5
	1,5%	27,3	25,9	24,7	23,5	**22,4**	21,4	20,4	19,5	18,7
	1,0%	25,9	24,6	23,5	22,4	21,4	20,5	19,6	18,8	18,1

		WACC								
		7,40%	7,65%	7,90%	8,15%	**8,40%**	8,65%	8,90%	9,15%	9,40%
	30,5%	33,7	31,6	29,8	28,2	26,6	25,3	24,0	22,8	21,8
	29,5%	32,8	30,9	29,1	27,5	**26,0**	24,7	23,5	22,3	21,3
	28,5%	32,0	30,1	28,4	26,8	**25,4**	24,1	22,9	21,8	20,8
Adj. EBIT	**27,5%**	31,1	29,3	**27,7**	**26,2**	**24,8**	**23,5**	**22,4**	21,3	20,3
% of sales	26,5%	30,3	28,5	27,0	25,5	**24,2**	23,0	21,9	20,8	19,9
	25,5%	29,5	27,8	26,2	24,8	**23,6**	22,4	21,3	20,3	19,4
	24,5%	28,6	27,0	25,5	24,2	22,9	21,8	20,8	19,8	18,9

		WACC								
		7,40%	7,65%	7,90%	8,15%	**8,40%**	8,65%	8,90%	9,15%	9,40%
	-2,0%	34,2	32,1	30,3	28,6	27,1	25,6	24,4	23,2	22,1
	-3,0%	33,2	31,2	29,4	27,8	**26,3**	24,9	23,7	22,6	21,5
	-4,0%	32,2	30,3	28,5	27,0	**25,5**	24,2	23,0	21,9	20,9
CAPEX	**-5,0%**	31,1	29,3	**27,7**	**26,2**	**24,8**	**23,5**	**22,4**	21,3	20,3
% of sales	-6,0%	30,1	28,4	26,8	25,4	**24,0**	22,8	21,7	20,7	19,8
	-7,0%	29,1	27,4	25,9	24,5	**23,3**	22,1	21,1	20,1	19,2
	-8,0%	28,1	26,5	25,1	23,7	22,5	21,4	20,4	19,5	18,6

Source: Company Data; Bryan, Garnier & Co ests.

Fig. 47: Multiple table vs. Peers

Company	EV/Sales 2016e	EV/EBIT 2016e	P/E 16	P/E 17	Sales CAGR15-18	EPS CAGR15-18
European DX						
QIAGEN	3,7	14,8	20,9	19,1	5,8%	7,5%
BioMérieux	2,2	16,4	24,6	21,8	5,5%	12,0%
DiaSorin	4,9	16,3	26,4	24,0	7,4%	12%
average	**3,6**	**15,8**	**24,0**	**21,6**	**6,3%**	**10,4%**
MDx Players						
Hologic	4,6	13,5	19,2	17,4	5,3%	9,8%
Illumina	11,1	36,2	51,2	45,6	17,0%	16,3%
Alere	2,8	15,2	16,3	14,5	5,5%	21,9%
Agilent	2,9	14,5	19,8	17,1	4,3%	65,1%
Bio-Rad	1,6	17,7	31,9	27,4		
average	**4,6**	**19,4**	**27,7**	**24,4**	**8,0%**	**28,3%**

Source: Company Data; Bryan, Garnier & Co ests.

Price Chart and Rating History

Qiagen

Ratings		
Date	**Ratings**	**Price**
08/01/15	Under review	EUR18.95
04/05/12	BUY	EUR13.11

Target Price	
Date	**Target price**
08/01/15	Under review
26/11/13	EUR19.5
19/11/13	Under review
17/01/13	EUR17
28/11/12	EUR16.4

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Bryan Garnier stock rating system

For the purposes of this Report, the Bryan Garnier stock rating system is defined as follows:

Stock rating

BUY — Positive opinion for a stock where we expect a favourable performance in absolute terms over a period of 6 months from the publication of a recommendation. This opinion is based not only on the FV (the potential upside based on valuation), but also takes into account a number of elements including a SWOT analysis, positive momentum, technical aspects and the sector backdrop. Every subsequent published update on the stock will feature an introduction outlining the key reasons behind the opinion.

NEUTRAL — Opinion recommending not to trade in a stock short-term, neither as a BUYER or a SELLER, due to a specific set of factors. This view is intended to be temporary. It may reflect different situations, but in particular those where a fair value shows no significant potential or where an upcoming binary event constitutes a high-risk that is difficult to quantify. Every subsequent published update on the stock will feature an introduction outlining the key reasons behind the opinion.

SELL — Negative opinion for a stock where we expect an unfavourable performance in absolute terms over a period of 6 months from the publication of a recommendation. This opinion is based not only on the FV (the potential downside based on valuation), but also takes into account a number of elements including a SWOT analysis, positive momentum, technical aspects and the sector backdrop. Every subsequent published update on the stock will feature an introduction outlining the key reasons behind the opinion.

Distribution of stock ratings

BUY ratings 58% NEUTRAL ratings 32.8% SELL ratings 9.2%

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Please see the section headed "Important information" on the back page of this report.

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