

GENOMIC HEALTH (GHDX)

Health Care – Biotechnology

April 10, 2019

Investment Thesis

We recommend a BUY rating on Genomic Health Inc. (GHDX) as the genetic market testing is forecasted to grow at a CAGR of 12.2%¹ from 2018 to 2024 fueled by increasing demand of personalized care and growing incidence of genetic disorders. Genomic Health Inc delivers diagnostic tests for cancer and their current portfolio offers \$1.2B growth opportunity².

Drivers of Thesis

- **Favorable demographics:** As the population ages the risk of developing breast, prostate and colon cancer increases. It is estimated that women in the U.S at risk of developing breast cancer will grow at a CAGR of 1.08% through 2025. Similarly, men in the U.S at risk of developing prostate cancer will grow at a CAGR of 1.81% through the same time period. Both men and women at risk of developing colon cancer will grow at a CAGR of 1.10%.
- **Great momentum for Oncotype DX breast cancer test:** With the publication of the TAILORx trial, exclusive guideline endorsements from National Comprehensive Cancer Network and the Institute for Quality and Efficiency in Germany, as well as an expanded recommendation from the National Institute for Health and Care Excellence in the United Kingdom, this business segment is poised to grow 10% in 2019 and at a CAGR of 9% through 2024.

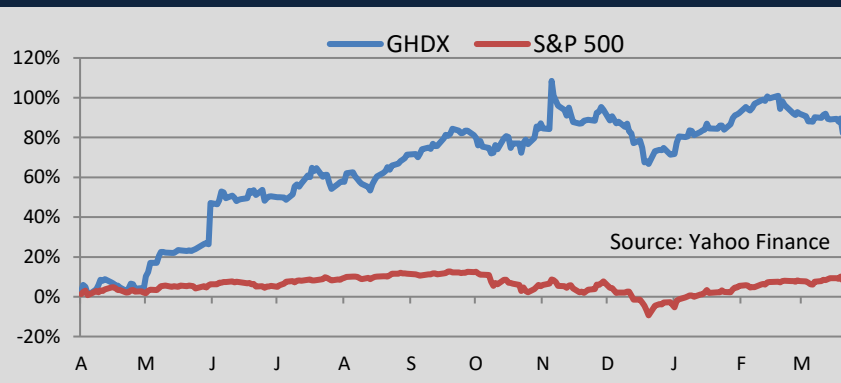
Risks to Thesis

- **Highly dependent in one business segment:** Genomic Health Inc. generated 91% of total revenues from the sale of invasive breast cancer tests. As a result, the company's profitability strongly relies in this business segment to perform well. It can be worrying if other products do not contribute more to total revenues.
- **A change in regulatory environment:** The FDA has not enforced pre-market review on GHDX tests as they are considered laboratory developed tests and as such are regulated under the Clinical Laboratory Improvement Amendment of 1988 instead. If FDA decides to oversee these products operations could be interrupted.

Earnings Estimates

Year	2016	2017	2018	2019E	2020E	2021E
Consensus				\$1.38	\$1.64	\$2.01
EPS	\$(0.42)	\$(0.11)	\$0.72	\$1.29	\$1.41	\$1.54
Growth	145.24%	281.82%	554.55%	79.64%	8.68%	9.66%

12 Month Performance



Stock Rating

Buy

Target Price

\$71.00

Henry Fund DCF	\$70.98
Relative P/E	\$81.21

Price Data

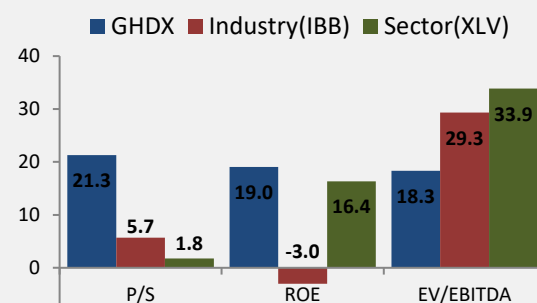
Current Price	\$61.39
52wk Range	\$30.41 – 92.18
Consensus 1yr Target	\$77.38

Key Statistics

Market Cap (B)	\$2.54
Shares Outstanding (M)	\$36.90
Institutional Ownership	86.82%
Five Year Beta	1.12
Dividend Yield	0.00%
Est. 5yr Growth	17.20%
Price/Earnings (TTM)	101.03
Price/Earnings (FY1)	40.89
Price/Sales (TTM)	6.43
Price/Book (mrq)	9.26

Profitability

Operating Margin	6.06%
Profit Margin	83.68%
Return on Assets (TTM)	1.18
Return on Equity (TTM)	1.46



Source: FactSet

Company Description

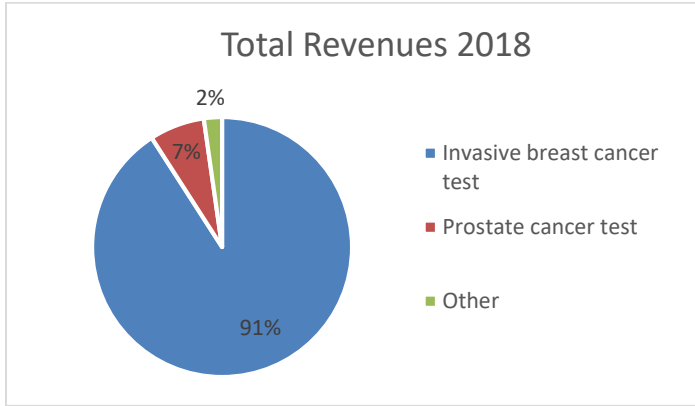
Genomic Health develops genomic-based diagnostic tests to enable personalized cancer treatment decisions. Their technology allows physicians to quantify the likelihood of cancer recurrence and the extent of chemotherapy benefit or other types of therapy. Currently, they commercialize tests for breast, colon and prostate cancer both in the US and internationally. The company offers those tests as a clinical laboratory service, which means that all the tests are processed at their laboratory in Redwood City, California.

EXECUTIVE SUMMARY

Genomic Health Inc. operates in a high growth industry where clinical validation and peer-review publications can set an edge over competitors. Our BUY recommendation is based on high growth prospects for the company in tandem with superior product offerings in relation to peers. We believe that Genomic’s products can improve patient outcomes and experiences as well as provide healthcare cost savings by avoiding unnecessary treatments. With 125 clinical studies, more than 140,000 patients studied, 156 journal publications the company has avoided undertreating or overtreating 1 million patients. We forecast product revenues to grow at a CAGR of 7.94% through 2023 and see a stock upside of 15.65% for the next year.

COMPANY DESCRIPTION

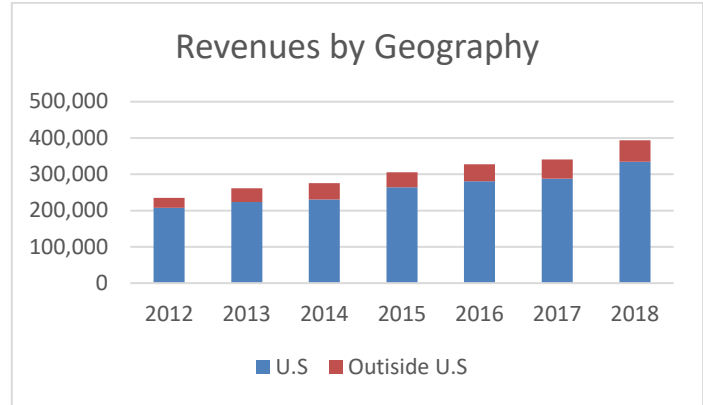
Genomic Health Inc. develops genomic-based diagnostic tests that enable personalized cancer treatment decisions. Those tests help physicians and oncologists guide treatment decisions to find what is more suitable for the patient. Traditional methods of treatment decisions are heavily dependent on human interpretation which leads to both undertreatment and overtreatment. The Oncotype DX tests are offered as clinical laboratory services with multi-gene analysis to assess cancer recurrence and the effectiveness of different treatments such as chemotherapy, surgery or active surveillance.



Source: Genomic Health Inc. 2018 10-K

The company generates the majority of revenues from the sale of invasive breast cancer test segment. In 2018, this segment alone contributed 91% of total revenues by producing \$358 million. Prostate cancer test segment

generated \$27 million which accounts for 7% of total revenues. The last business segment generated 2% of total revenues with almost \$9 million. Product revenues related to Medicare patients for 2018 were \$93.8 million or 24%³. Genomic also engages in contract research arrangements with biopharmaceutical or pharmaceutical companies. Revenues from this segment fluctuate year to year and no revenue was recorded in 2018 for this category.



Source: Genomic Health Inc. 2018 10-K

Genomic has a European headquarters in Geneva, Switzerland and a direct commercial presence with employees in Canada, Japan and other European countries. With this business model, tests are sold in local currency. The company uses forward contracts to mitigate the effect of adverse movements in foreign exchange rates. In contrast, the company sells tests to other international markets through distribution partners in U.S dollars. International test volume increased 4% in 2018, which represented 24% of total test volume, while international product revenues increased 12%. Even though average sale prices in these markets is lower than in the U.S, the company is poised for higher adoption of products in the coming years due to new reimbursement agreements. In addition, the company is planning to commercialize this year an in vitro diagnostic version of the Oncotype DX breast cancer test in partnership with Biocartis.

Timeline of Products

January 2004: launched Oncotype DX test to predict likelihood of cancer recurrence and chemotherapy benefit in early stage of invasive breast cancer.

January 2010: launched Oncotype DX test to assess risk of recurrence in stage II colon cancer.

December 2011: Oncotype DX is now available for patients with ductal carcinoma in situ, a pre-invasive form of breast cancer.

June 2012: extension of Oncotype DX colon cancer test to patients with stage III disease treated with oxaliplatin-containing adjuvant therapy.

May 2013: launched Oncotype DX prostate cancer test to predict disease aggressiveness in men with low and intermediate risk disease.

February 2018: launched Oncotype DX AR-V7 Nucleus Detect test for men with metastatic castration-resistant prostate cancer.

Regulation and Patents

Genomic Health Inc. test are considered laboratory developed tests or LDTs and as such are not currently regulated by the Food and Drug Administration (FDA). Instead, the company is subject to the Clinical Laboratory Improvement Amendment of 1988 (CLIA) regulation which is intended to improve the quality of laboratory practices as well as to applicable state laws. The rise of these products has spurred debate on whether LDTs, especially those that are riskier and more complex, should be regulated under FDA. At various times since 2006, the FDA has issued guidance documents or announced draft guidance regarding initiatives that may require varying levels of FDA oversight on the company's tests¹⁷. However, the FDA has not yet formalized a final position¹⁹ on the oversight of LDTs and it is unclear when and if it would be implemented.

The company will have to adjust to a changing regulation landscape in Europe considering the new in vitro diagnostic product launch in partnership with Biocartis. The new IVD regulation will come into force in 2022 while the company plans on commercializing the IVD version of the invasive breast cancer test sometime this year.

As of December 31, 2017, Genomic Health Inc. had issued 40 patents in the U.S and 349 patents outside the U.S covering genes and methods that are part of their Oncotype DX breast, colon and prostate cancer tests as well as research methods and platform technologies. The

issued U.S patents expire at various times between 2023 and 2033. We believe that the ability to protect their intellectual property is crucial in order to remain competitive and profitable.

COMPANY ANALYSIS

The company makes money through the sale of tests and in some periods from contract research agreements. As of February 28, the list price of their tests in the United States is as follows:

Oncotype DX invasive breast cancer and DCIS	\$4,620
Oncotype DX colon cancer	\$4,420
Oncotype DX prostate cancer	\$4,520
Oncotype DX AR-V7 Nucleus Detect	\$3,950

Source: GHDX 2018 10K

All the tests are internally processed at their laboratory in Redwood City, California, except the Nucleus Detect test that is performed by Epic Sciences at their laboratory in San Diego. Both laboratories are accredited under the Clinical Laboratory Improvement Amendment of 1988 (CLIA) and certified by the College of American Pathologists (CAP).

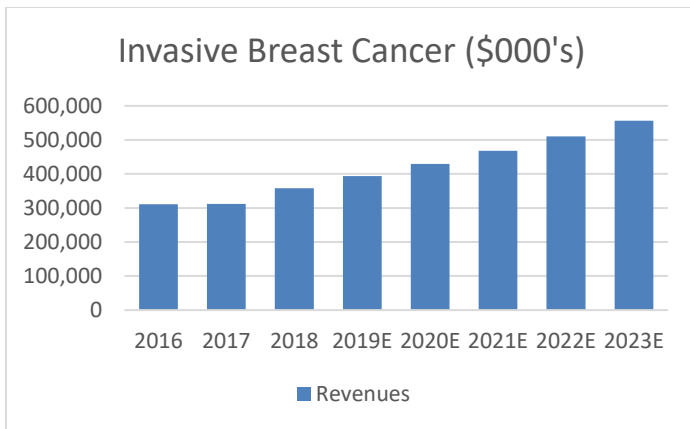
The sale of tests in the United States and other countries depends on coverage decisions and reimbursement policies established by private and public third-party payors. In the U.S. there is Medicare coverage for the Oncotype DX invasive breast cancer test since 2006, for the Oncotype DX colon cancer test since 2011, for the Oncotype DX DCIS test since 2013, and for the Oncotype DX prostate cancer test for low and very low risk patients since 2015 plus an extension to favorable intermediate risk in 2017.

Since healthcare systems vary from country to country, the company needs to adjust operational requirements thus spending a substantial amount of resources in this area. Genomic Health Inc. has a direct commercial presence with employees in Canada, Japan and certain European countries, including their headquarters in Geneva, Switzerland. In addition, they have exclusive distribution agreements for the sale of breast and colon cancer tests with more than 90 countries. Internationally, the majority of test revenues come from direct payor reimbursement, payments from their distributors, patient self-pay and

clinical collaborations. The Oncotype DX breast cancer test has some coverage in Argentina, Canada, Czech Republic, Germany, Greece, Hungary, Ireland, Israel, Saudi Arabia, Spain, Switzerland and the United Kingdom.

Invasive Breast Cancer Test

The Oncotype DX for early stage invasive breast cancer identifies those patients with high risk disease that can benefit from chemotherapy and those patients with lower risk disease who may receive minimal benefit from chemotherapy. The test assigns a score from 0-100, indicating low to high risk of recurrence. Similarly, the Oncotype DX test can also be applied for ductal carcinoma in situ (non-invasive breast cancer) to predict the 10-year risk of local recurrence which can then help decide the appropriate course of treatment. Breast cancer is the most diagnosed cancer in women worldwide and it is estimated that one out of five new cases of breast cancer are classified as DCIS.



Source: GHDX 10-K 2018 and Henry Fund Estimates

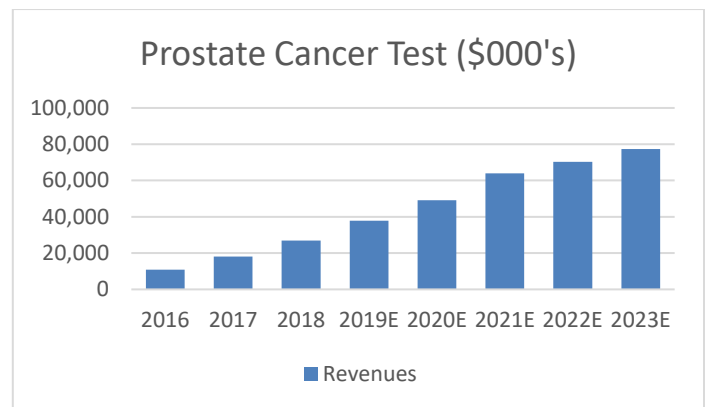
GHDX strongly relies on this business segment to derive product revenues. As of 2018, 91% of product revenues were generated by the sale of invasive breast cancer tests. The company believes to have penetrated 59% of the invasive breast market and 8% of the DCIS in the U.S, while internationally, only 11% has been penetrated. We believe that the company is poised for growth in the next few years thanks to the positive results from TAILORx that were followed by endorsements from the National Comprehensive Cancer Network (NCCN) and the Institute of Quality and Efficiency in Health Care (Germany). In addition, we expect more cases of breast cancer to be diagnosed globally as the population grows older.

Factoring in all those variables, we forecast revenues for this segment to grow 10% next year, 9% CAGR through 2024, 5% CAGR through 2027 and then 3% by the CV year. Most of this growth will be taking place in international markets.

Prostate Cancer Test

The Oncotype DX for early-stage prostate cancer test helps physicians identify low and intermediate risk patients that can avoid prostatectomy or radiation (and their side effects), and other patients who need surgery. Several studies published in Urology Practice have validated that using this test leads to a decrease in treatment intensity and an increase in the use of active surveillance.

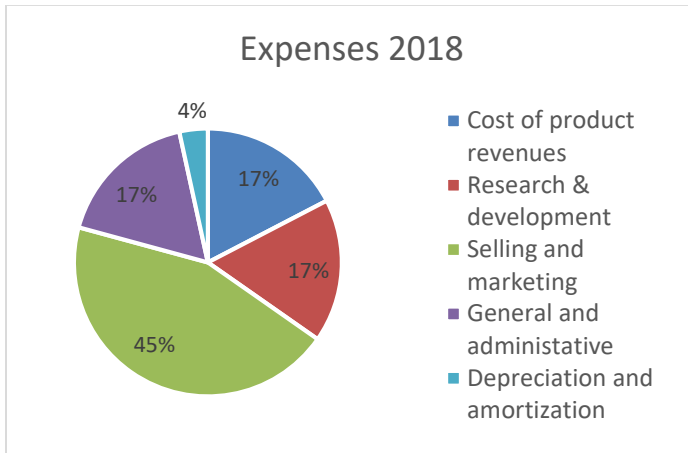
The Oncotype DX AR-V7 Nucleus Detect test for late-stage prostate cancer is a blood-based test performed by Epic Sciences that helps guide treatment selection in patients with metastatic castration-resistant prostate cancer. If the test identifies AR-V7 protein, then the patient is resistant to traditional ARSI (androgen receptor signaling inhibitor) therapies and should switch to chemotherapy to prolong survival.



Source: GHDX 10-K 2018 and Henry Fund Estimates

We forecast this business segment to grow by 40% in 2019 as the Oncotype DX AR-V7 now receives coverage by Medicare and more clinical trials reinforce the effectiveness of Genomic Prostate Score at assessing the level of cancer aggressiveness. Then the segment grows at 30% for 2020 and 2021, 10% CAGR through 2024, 7% CAGR through 2027 and at 2% for the CV year. The company has only penetrated 12% of the available market for GPS test and 2% for the AR-V7 prostate test in the U.S.

Operating Expenses



Source: GHDX 10-K 2018

Selling and marketing accounts for 45% of total operating expenses and within this category personnel related expenses accounts for the biggest portion. As a result, the company's profitability is very sensitive to changes in this category. Having a strong sales force in addition to promotional and marketing materials is imperative for achieving an increased adoption of tests. We believe the company will devote time and money in this area, but we have also forecasted economies of scale for total expenses during the 10-year forecasted horizon. By 2028, cost of product revenues as a percentage of sales will decrease 2%, selling and marketing will decrease 6%, general and administrative will decrease 3% while R&D will remain the same.

RECENT DEVELOPMENTS

Fourth Quarter and Annual Earnings Results

On February 20, 2019 the company reported 2018 fourth quarter and year-end financial results. Total revenue for the year was \$394.1 million, resulting in 18% growth YoY and beating management's guidance of \$366-\$382 million and street consensus of \$391.2 million⁴. Invasive breast cancer test revenue grew 18% in the U.S. to generate \$299.4 million for the year. Revenues for U.S. prostate cancer test generated \$26.8 million, an increase of 50% YoY. International product revenue for 2018 was \$59.4 million, an increase of 14% compared to the previous year. Reported basic EPS were \$0.72 which resulted in a -12.60% surprise as street consensus was \$0.78⁴.

For the fourth quarter, the company reported \$104.6 million in total revenues, thus beating street consensus of \$101.8 million³. On the contrary, reported basic EPS of \$0.25 missed street consensus of \$0.26⁴. Total revenues represent a 22% increase YoY, mainly driven by a 22% increase in invasive breast cancer tests, 48% increase in prostate cancer tests and 19% increase in international revenues. With this, the company has delivered 14 consecutive quarters of improved non-GAAP profitability⁵.

The company also provided the following guidance for full year 2019:

Metric	Guidance	YOY Growth
Revenue	\$436M-\$448M	11%-14%
GAAP Net Income	\$48M-\$54M	86%-110%
GAAP EPS	\$1.23-\$1.38	
Non-GAAP Net Income	\$54M-\$60M	35%-50%
Non-GAAP EPS	\$1.38-\$1.54	

Source: Corporate Presentation

In our model top line revenues are \$441 million, thus in line with management's guidance. Net income of \$46 is below that range because we believe the company needs to maintain operating expenses in line with last year in order to maintain and expand coverage for existing products, in addition to discrepancies with the marginal tax rate. Finally, our model estimates EPS of \$1.29 for 2019 which fall in the range of guidance provided by the company.

TAILORx

The biggest breast cancer treatment trial initiated by ECOG-ACRIN with funding from the National Cancer Institute provides the highest level of clinical evidence for Oncotype DX breast cancer test. In 2015 early results demonstrated that women with a Breast Recurrence Score of 10 or less had a less than 1% chance of recurrence in five years when treated with hormonal therapy alone. June 3, 2018 final results were presented at the ASCO Annual Meeting and published in the New England Journal of Medicine. The study established that the test effectively identifies those women with early stage breast cancer who receive no benefit from chemotherapy, and also the minority for whom chemotherapy can be life-saving. In addition, TAILORx confirmed that 25% of patients will be

overtreated while 43% would be undertreated when decisions are based on clinical risk features alone. The TAILORx study definitively established that chemotherapy can be spared in at least 70 percent of invasive breast cancer patients. Tumor size or tumor grade did not predict chemotherapy benefit. Thus, the TAILORx trial established that chemotherapy treatment should be guided using the Oncotype DX breast cancer test as the genomic classifier⁶.

MARKETS AND COMPETITION

Genomic Health Inc. operates in a highly competitive market with a mix of private and public firms fighting for market share. Due to the nature of its business Genomic faces competition from a variety of companies. There are those that sell traditional diagnostic equipment, others that have developed the technology to profile gene expression and/or have conducted the research to do so, and commercial laboratories with distribution networks for diagnostic tests. The market is constantly evolving as new discoveries of gene expression for different cancers take place. Competitive advantages are created through superior quantitative information that tests can provide, clinical validation of its utility, the level of adoption and the extent of reimbursement coverage.

Companies that compete directly with Genomic’s Oncotype DX tests for colon, breast and prostate cancer include:

Agendia Inc	Private	
Biotheranostics	Private	
Exact Sciences Corp.	Public	EXAS
GenomeDx Biosciences Inc.	Private	
Guardant Health Inc.	Public	GH
Myriad Genetics Inc.	Public	MYGN
NanoString Technologies Inc.	Public	NSTG
NeoGenomics Inc.	Public	NEO
OpkoHealth Inc.	Public	OPK
Qiagen N.V	Public	QGEN

Source: Bloomberg

Considering the human genome was first sequenced in 2000, this is a relatively new market with high growth prospects and the potential to alter the status quo of diagnostics.

Peer Comparisons

Exact Sciences Corp. (EXAS) has developed a very sensitive colorectal cancer screening test that can identify precancerous and cancerous DNA in blood samples. In addition, they are pursuing a similar test for lung and liver cancer. The company is headquartered in Madison, WI and has a collaborative relationship with Mayo Clinic.

Guardant Health (GH) sells a liquid biopsy test that analyzes tumor DNA in blood for late-stage cancer patients, thus providing information on therapy selection. The test is reimbursed for non-small cell lung cancer testing under Cigna, Priority Health, multiple regional Blue Cross Blue Shield plans and Medicare. They have recently launched a product for research use to identify cancer recurrence and are in the process of developing a version for early detection in high risk individuals.

Myriad Genetics Inc. (MYGN) is a molecular diagnostic laboratory headquartered in Salt Lake City, Utah. The company offers: a test that assesses the risk for hereditary cancer (breast, ovarian, colon, uterine, melanoma, pancreatic, prostate and gastric); a test to optimize psychotropic drug selection for neuroscience patients; a test for assessing the disease activity of rheumatoid arthritis; a test for assessing the aggressiveness of prostate cancer; a test for assessing the aggressiveness of breast cancer; a test for diagnosing melanoma and a test to assess DNA repair deficiencies. Approximately 85% of their revenue comes from private third party payors⁷.

Nanostring Technologies Inc. (NSTG) sells a product platform with an assay called Prosigna that analyzes the risk of recurrence in breast cancer patients. As of December 31, 2018, the company had approximately 730 installed systems. Prosigna has coverage from Medicare, Cigna, Aetna and Humana.

Neogenomics Inc. (NEO) operates a network of cancer-focused genetic testing laboratories in the U.S, Switzerland and Singapore. They offer a range of testing methodologies to study chromosomes and their relationship to diseases, detect and locate the presence or absence of specific DNA sequences and genes on chromosomes, measure the characteristics of cell populations and localize proteins in cells.

OpkoHealth Inc. (OPK) operates in the diagnostics business through the acquisition of BioReference, a clinical laboratory in the U.S. They offer the 4Kscore test which measures the levels of four prostate-derived protein in the blood which is then combined with patient's age, the presence of nodules and biopsy status to calculate the risk of finding a likely to grow and spread cancer. The 4Kscore test can risk stratify the 20-year risk for development of prostate metastases and mortality in men who present at age 50 or 60 years old with an elevated PSA⁸(one of the four proteins). The test is covered by one national private payor, although Novitas Solutions has determined to halt reimbursement for the test.

Qiagen N.V (QGEN) offers a broad range of products including sample kits, assay kits, instruments and automation systems. The Molecular Diagnostics segment focused on oncology offers diagnostic kits to detect mutations of genes related to cancer and assess the efficacy and safety of medicines.

	Market Cap (\$M)	Total Debt (\$M)	Net Income (\$M)
EXAS	11,331	943	-175.15
GH	6,024	7.6	-85.06
MYGN	2,356	0.96	131.1
NSTG	827	58	-77.40
NEO	1,960	105	2.64
OPK	1,564	213	-153.04
QGEN	9,253	2,174	190.4
GHDX	2,458	0	25.68

Source: FactSet

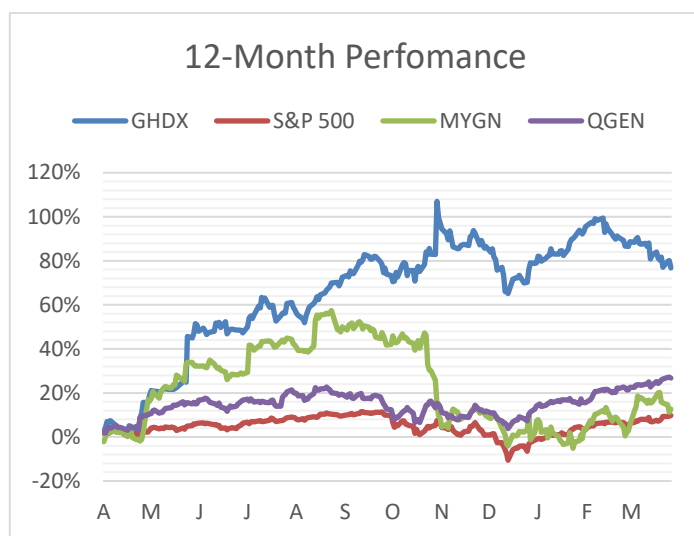
EXAS is the biggest company in terms of market cap followed by QGEN, while NSTG is the smallest. QGEN has the most amount of debt followed by EXAS. GHDX is low to mid-size compared to its peers and the only company to hold no debt. Only MYGN, NEO, QGEN and GHDX reported positive net income in 2018, with QGEN being the most profitable followed by MYGN.

	P/S LTM	P/S FY1	Operating Margin (%)	Gross Margin (%)
EXAS	25.00	16.00	-35.09	74.04
GH	22.19	42.31	-102.54	52.33
MYGN	3.09	2.79	7.44	77.06
NSTG	6.64	7.05	-72.97	65.96
NEO	6.91	5.12	4.46	41.10

OPK	1.44	1.60	-16.29	32.08
QGEN	6.42	5.82	19.90	64.31
GHDX	6.47	5.64	7.26	83.68

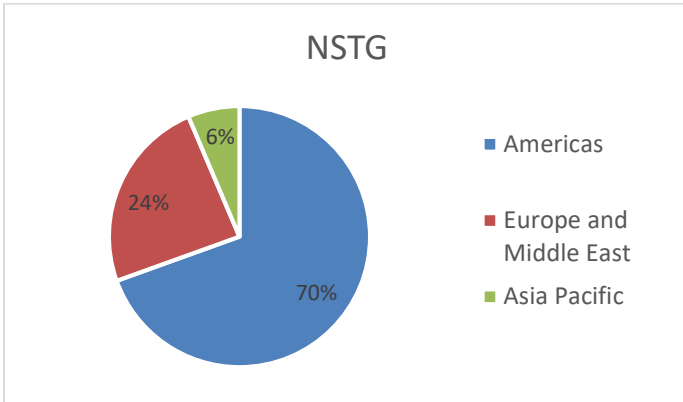
Source: FactSet

GHDX has the healthiest gross margin among its peers, which means that they retain a bigger portion of each dollar of revenue. They also have a healthy operating margin in relation to its peers and it is priced relatively in line with competitors, nor cheap neither expensive. Based on these ratios, we believe MYGN, QGEN and GHDX to be best positioned among their peers. As shown on the graph below, GHDX has considerably outperformed MYGN, QGEN and the S&P500 in the last 12 months and we believe they can maintain that trend in the next twelve months.

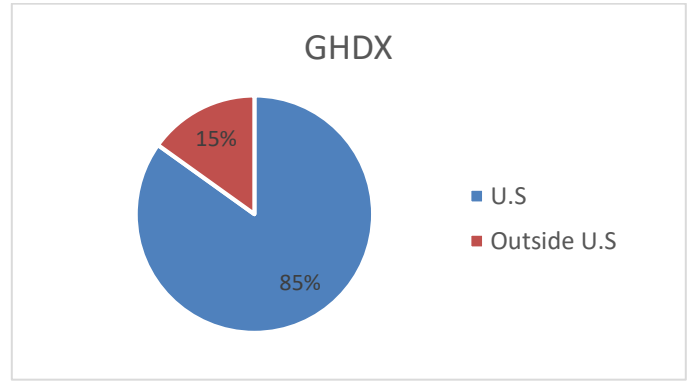


Source: Yahoo Finance

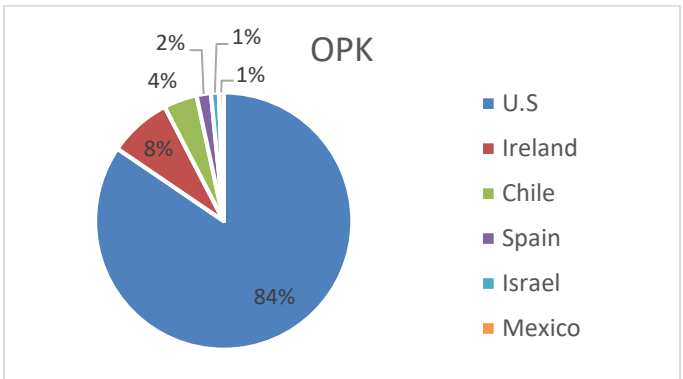
EXAS, GH, MYGN and NEO operate exclusively in the U.S while NSTG, OPK, QGEN and GHDX operate both in the U.S and internationally. Here is a breakdown of their 2018 revenues by geography:



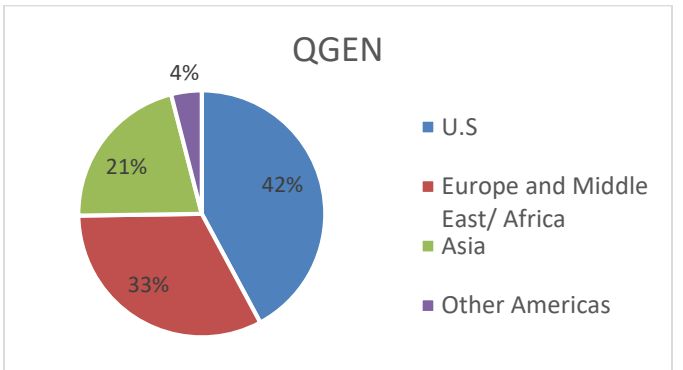
Source: Bloomberg



Source: Bloomberg



Source: Bloomberg



Source: Bloomberg

QGEN is the only internationally based company among this group with headquarters in Germany. It is more geographically dispersed than peers and has the biggest presence in Asia. GHDX and OPK have similar breakdowns of revenue and therefore are exposed to currency exchange risk in a similar way. We believe that being able to compete in different markets can be a challenge to companies as they are exposed to different regulations and currencies, but it can also be an edge on peers. OPK, QGEN and GHDX engage in foreign exchange hedging transactions to cushion the impact of adverse exchange rates.

Mergers and Acquisitions Activity

M&A activity among these companies for the last twelve months is as follows:

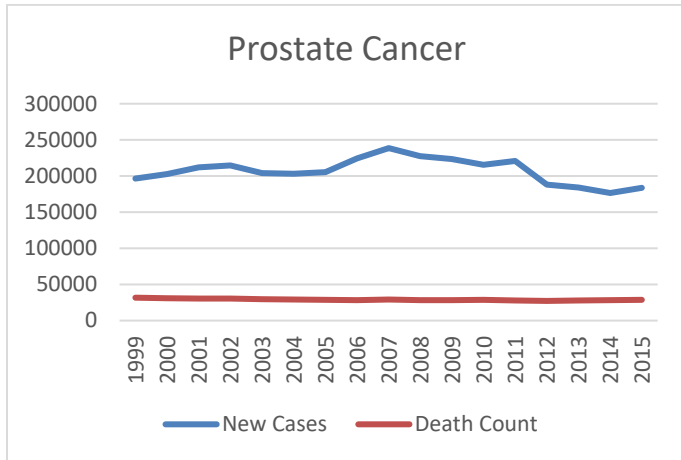
- EXAS acquired Biomatrix, a company that provides innovative products for stabilizing biological samples and assays at ambient temperatures.
- GH has entered a definite agreement to acquire Bellwether Bio Inc to strengthen portfolio of service offerings. The company develops cell free DNA based diagnostic technologies and the deal will close this month.
- MYGN acquired Counsyl Inc. for \$395 million in cash and stock. The company provides pre-pregnancy genetic testing services
- NEO acquired Genoptix for \$139.2 million and stock to enhance service offerings since the company provides personalized medicine.
- QGEN acquired N-of-One Inc, a company that provides clinical evidence to translate molecular test results

into therapeutic options. In addition, QGEN acquired the remaining 80.1% stake in NeuMoDx for \$234 million to strengthen expertise and product offering in providing molecular diagnostic services.

MACROECONOMIC OUTLOOK

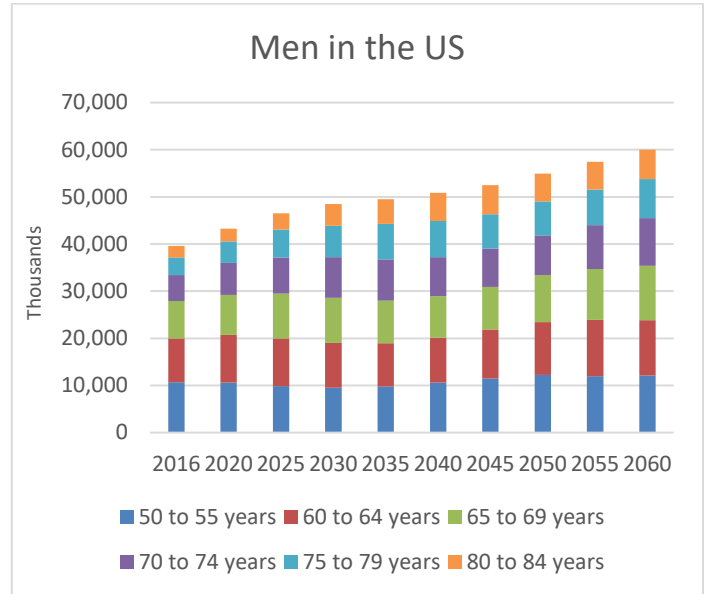
Prostate Cancer

About 1 man in 9 will be diagnosed with prostate cancer during his lifetime. Prostate cancer is the most common cancer and the second leading cause of cancer death among men in the US. The American Cancer Society estimates that 176,650 new cases and 31,620 deaths will occur in 2019⁸. In relation to the graph below, this represents a decline in new cases recorded in 2015 (183,529), and an increase in death count for the same year (28,848). The direction of this variable is hard to predict since the cause of the disease is unknown. However, an important risk factor is age. The average age at the time of diagnoses is about 66, while the development of this cancer is rare before the age of 40. Five-year survival rate was 98.2% between 2008 and 2014⁹.



Source: Centers of Disease Control and Prevention

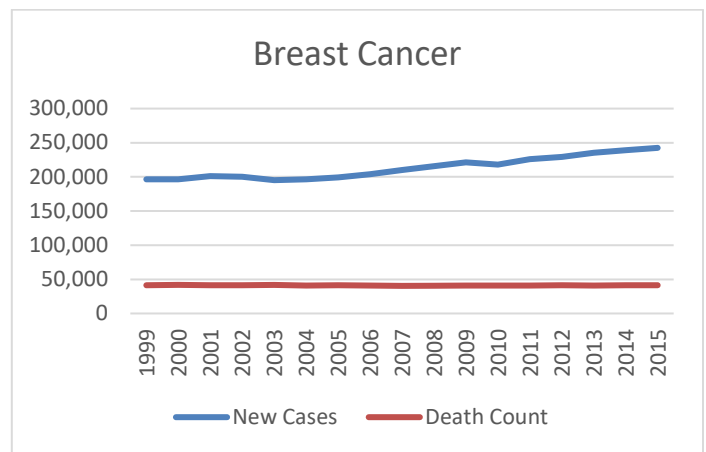
It is hard to predict the direction of this variable since the cause of prostate cancer is unknown. However, we consider reasonable to expect higher incidence rates in the years to follow as the population at risk also increases. Through 2025, the number of men in the ages shown in the graph will grow at a CAGR of 1.81%.



Source: United States Census Bureau

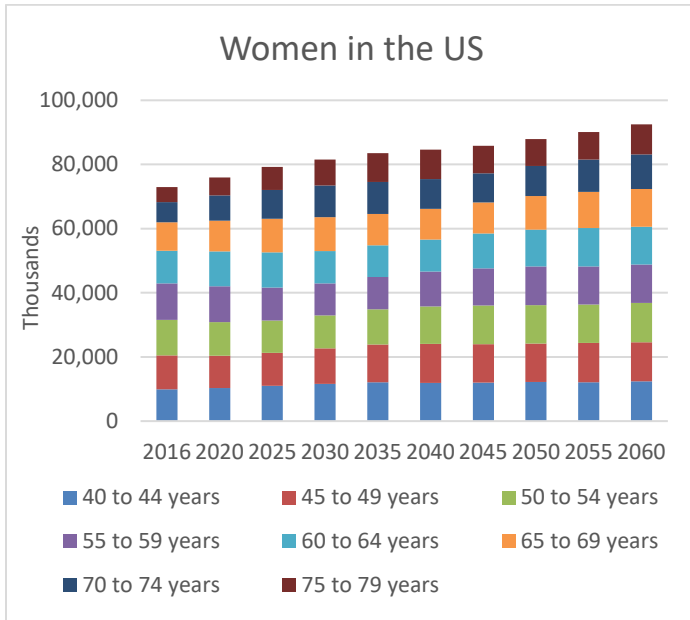
Breast Cancer

About 1 in 9 American women will develop breast cancer in her lifetime. According to estimates by the American Cancer Society, 268,600 new cases of invasive breast cancer will be diagnosed in 2019 in addition to 62,930 of non-invasive breast cancer¹⁰. In relation to the graph below this represents a very significant increase in both variables as new cases reported in 2015 were 242,476 and deaths were 41,523. Breast cancer cases have been rising each year by approximately 1.98% for the last ten years and we expect this trend to continue in the future. Five-year survival rate between 2008 and 2014 was 89.7%¹¹.



Source: Centers of Disease Control and Prevention

The risk of developing this cancer also increases with age. Even though it is most commonly diagnosed in women aged between 55 and 74, the population at risk includes more age groups. We forecast new cases to increase in the future as more women enter into risk groups due to an aging demographics. Through 2025, women in the U.S represented in the age groups below will be growing at 1.05% CAGR.

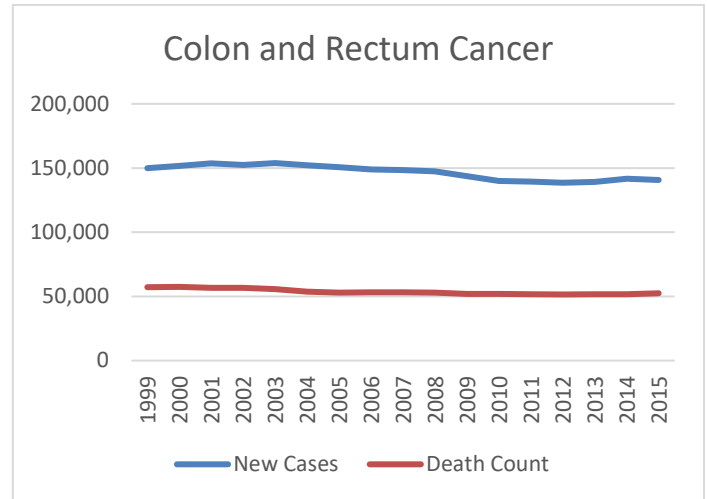


Source: United States Census Bureau

Colon Cancer

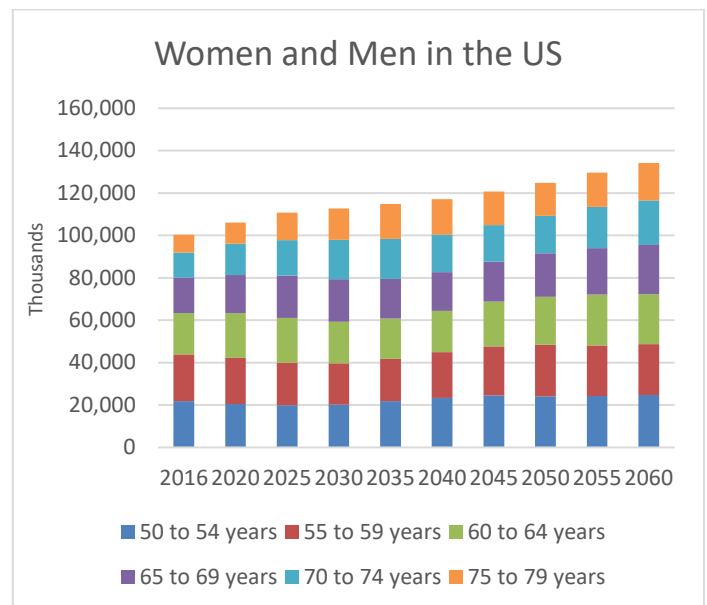
The American Cancer Society forecasts 101,420 new cases of colon cancer to be diagnosed and 51,020 related deaths in 2019¹². The risk of developing this cancer is about 1 in 22 for men and 1 in 24 for women. As shown in the graph below, new cases have been decreasing at a CAGR of 0.68% and death count has also decreased at a rate of 0.10%. Some risks for developing this cancer include being overweight, physical inactivity, alcohol abuse, smoking, presence of colorectal polyps and age. The average age of

diagnosis for this cancer is 67 and the five-year survival rate from 2008 to 2014 was 64.5%¹³.



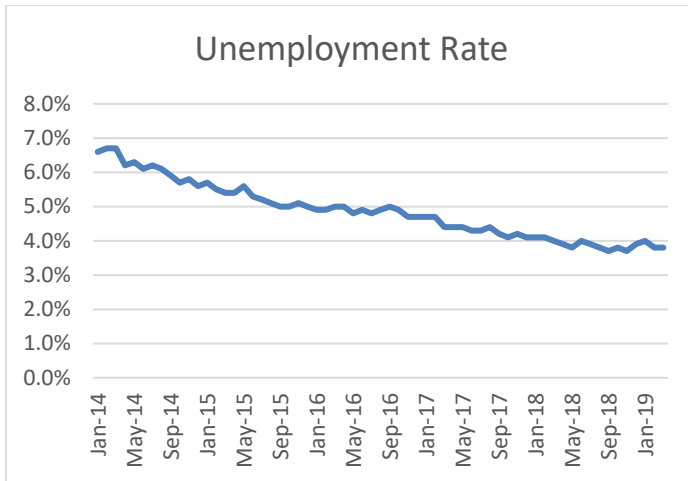
Source: Centers of Disease Control and Prevention

The population of women and men between 50 and 80 years old will be growing at a CAGR of 1.10% through 2025. Since the risk of developing cancer grows with age, we forecast the trend of new cases to increase in the future. We acknowledge cancer has different risk factors and by only taking age into account we could be missing out on other variables. However, age is quantifiable, and we consider it to be a good proxy for future trends.



Source: United States Census Bureau

Unemployment Rate



Source: U.S Bureau of Labor Statistics

The U.S unemployment rate continues to be at historical lows. The last figure reported in March 2019, came at 3.8%¹⁴, thus in line with the trend shown on the graph above. This figure has two effects on Genomic Health Inc. First, more employment means more people having access to employer-based insurance plans. When people have insurance they can choose better diagnostic and treatment methods like GHDX tests without the burden to pay large bills. As a result, the company can benefit from an increase in demand. Second, a low unemployment rate pushes wages higher as supply exceeds demand. Genomic Health Inc. is very sensitive to SG&A expenses, therefore an increase in wages can greatly hurt the company.

CATALYSTS FOR GROWTH

Expansion of portfolio to include in vitro diagnostic test solutions will allow the company to access more markets by eliminating the need of transporting tissue back to their laboratory in California. Thanks to a strategic collaboration with Biocartis, the company is developing an IVD version of the Oncotype DX breast cancer test that can be performed on Biocartis' Idylla platform. This development allows Genomic to offer tests globally through local pathology labs starting in France and Germany in 2019. Last December, the company announced an extension of this partnership to include the development of an in vitro diagnostic version of the Oncotype DX genomic prostate score. We believe the company is making the right decision as this collaboration allows Genomic's tests to have access to a bigger market.

INVESTMENT POSITIVES

- Growth stock in a growing industry. The company is expected to grow 17.20%¹⁸ in the next 5 years and the industry is expected to grow at a CAGR of 12.2% through 2024.
- Increasing demand for personalized care couple with an aging population will drive up the demand for GHDX tests.
- Great momentum for Oncotype DX invasive breast cancer test with the release of TAILORx.

INVESTMENT NEGATIVES

- The company heavily relies in one business segment to generate total revenues.
- If FDA decides to oversee LDTs the company might have to run new clinical studies thus halting operations.
- Changes in healthcare legislation that negatively affect Medicare and other third-party payors can alter established reimbursement rates.

VALUATION

In valuing GHDX we used different valuation models following the McKinsey method. The results are the following:

- DCF/EP: \$70.98
- Dividend Discount Model: \$32.97
- Relative P/E: \$81.21
- Relative P/S: \$54.42

The current price as of April 17, 2019, is \$61.39 and the consensus one-year target price is \$77.38¹⁵, which represents an upside of 15.35%. The relative P/E valuation only takes into consideration three companies: NeoGenomics Inc., Myriad Genetics and Qiagen N.V because the rest of peer companies have negative EPS estimates. We believe that both the DCF/EP model and the relative valuation capture more precisely the value of the company. We did not take into consideration the value of the dividend discount model and GHDX does not currently pay a dividend and does not foresee to pay one in the near future. According to the DCF/EP price of \$74.36, there is an upside of 10.85% while the price of relative P/E indicates an upside of 20.33%.

Revenues for invasive breast cancer test are forecasted based on positive results from TAILORx study that will increase coverage in Germany as well as favorable demographics around the world as population ages. We believe the company is poised for growth in international markets as only 11% of the available market has been penetrated.

Revenue growth	19E	20E-24E	25E-27E	28 CV
Invasive Breast Cancer Test	10%	9%	5%	3%

Revenues for prostate cancer test will grow significantly in the next few years driven by the now Medicare-reimbursed AR-V7 Nucleus test and increased penetration of U.S Genomic Prostate Score (GPS) test. Although these products face great competition from similar tests offered by other companies, we believe the GPS to be superior as it has been validated to be more versatile as it can effectively identify adverse pathology, recurrence, metastasis and related death. In addition, the AR-V7 test can recognize patients resistant to ARSI therapy thus avoiding unnecessary treatment costs and improving survival rates.

Revenue growth	19E	20E-21E	22E-24E	25E-27E	28E CV
Prostate Cancer Test	40%	30%	10%	7%	2%

EPS are below consensus on FactSet and within the range of management's guidance. The street is higher in this estimate as SG&A and tax expenses are lower.

	2019E	2020E
Management Consensus	\$1.23-\$1.38	\$1.70
Henry Fund	\$1.29	\$1.41

Selling and marketing expenses are forecasted as 39.0% of sales through 2021, 38.0% through 2024, 37.0% through 2026 and 35.0% for 2027 and 2028. General and administrative expenses are forecasted as 15.5% through 2021, 15.0% through 2024, 14% through 2027 and 14% at 2028. The idea behind those estimates is that the company can decrease their percentages of 41.8% and 16.3%

respectively in 2018 due to economies of scale. However, this will have a at slow rate as the company needs to maintain a strong sales force to increase adoption and reimbursement of tests in the U.S and international markets.

Cost of product revenues also experience economies of scales thus improving an already above average profit margin. We forecast cost of product revenues at 16% of sales through 2022, 15% through 2027 and 14% at 2028. Capital expenditures are forecasted as an average of historical expenses for the last three years (\$14,379 thousand) plus an inflation of 2%.

WACC

To calculate the weighted average cost of capital for GHDX we used the 10-year U.S Treasury Bill as a proxy for the risk-free rate, a market risk premium of 4.95% based on the Henry Fund estimate and a beta of 1.12 retrieved from Bloomberg (5Y weekly). This gives us a cost of equity of 8.14%. The cost of debt was calculated using a pre-tax cost of debt of 3.99%, an estimate from FactSet and a marginal tax rate of 10%. The marginal tax rate that FactSet uses for 2019 is around 7% which we deemed too low and decided to increase it to 10%. The company might have some tax loss carryforwards that we have not been able to quantify. The after-tax cost of debt is then 3.59%. Market value of equity is calculated by multiplying the number of outstanding shares by the share price while the market value of debt is just the PC of operating leases since the company holds no debt. This ratio of equity to debt is maintained constant throughout the forecasted period. This results in a WACC of 8.10% that is used for all years.

KEYS TO MONITOR

- The evolution of product mix as percentage of total product revenues. If the company relies too heavily in one product segment and growth prospects do not deliver profitability can be at risk.
- Tax expenses should be followed to gauge a more accurate marginal tax rate.
- Growth and reimbursement in the U.S and international markets.
- Competition from EXAS, MYGN, NSTG and OPK as they sell pure substitute products.

- Patents expirations, new applications and their effect on revenues.

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Genomic Health*Revenue Decomposition*

In thousands

<i>Fiscal Years Ending Dec. 31</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Invasive breast cancer test	311,421	312,163	358,210	394,031	429,494	468,148	510,282	556,207	606,266	636,579	668,408	701,828	722,883
YoY % change		0.24%	14.75%	10.00%	9.00%	9.00%	9.00%	9.00%	9.00%	5.00%	5.00%	5.00%	3.00%
Prostate cancer test	10,833	18,059	27,004	37,806	49,147	63,891	70,281	77,309	85,040	90,992	97,362	104,177	106,261
YoY % change		66.70%	49.53%	40.00%	30.00%	30.00%	10.00%	10.00%	10.00%	7.00%	7.00%	7.00%	2.00%
Other	4,664	10,229	8,897	9,787	10,765	11,842	12,552	13,557	14,641	15,812	17,077	18,444	18,812
YoY % change		119.32%	-13.02%	10.00%	10.00%	10.00%	6.00%	8.00%	8.00%	8.00%	8.00%	8.00%	2.00%
Total product revenues	326,918	340,451	394,111	441,623	489,406	543,882	593,115	647,072	705,946	743,384	782,847	824,449	847,956
YoY % change	13.73%	4.14%	15.76%	12.06%	10.82%	11.13%	9.05%	9.10%	9.10%	5.30%	5.31%	5.31%	2.85%
Contract revenues	950	299	-	-	-	-	-	-	-	-	-	-	-
Total revenues	327,868	340,750	394,111	441,623	489,406	543,882	593,115	647,072	705,946	743,384	782,847	824,449	847,956
YoY % change	14.06%	3.93%	15.66%	12.06%	10.82%	11.13%	9.05%	9.10%	9.10%	5.30%	5.31%	5.31%	2.85%

GEOGRAPHY

United States	281,077	287,662	334,682
YoY % change	14%	2%	16%
Outside of the United States	46,791	53,088	59,429
YoY % change	13%	13%	12%
Total revenues	327,868	340,750	394,111

Medicare	70200	75200	93800
% of total	21%	22%	24%

Genomic Health
Income Statement

In thousands

<i>Fiscal Years Ending Dec. 31</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Revenues:													
Product revenues	326,918	340,451	394,111	\$ 441,623	\$ 489,406	\$ 543,882	\$ 593,115	\$ 647,072	\$ 705,946	\$ 743,384	\$ 782,847	\$ 824,449	\$ 847,956
Contract revenues	950	299	-										
Total revenues	\$ 327,868	\$ 340,750	\$ 394,111	\$ 441,623	\$ 489,406	\$ 543,882	\$ 593,115	\$ 647,072	\$ 705,946	\$ 743,384	\$ 782,847	\$ 824,449	\$ 847,956
Operating expenses:													
Cost of product revenues	57,263	54,718	64,326	70,660	78,305	87,021	94,898	97,061	105,892	111,508	117,427	123,667	118,714
Research and development	61,723	62,811	64,200	71,940	79,723	88,597	96,617	105,407	114,997	121,096	127,524	134,301	138,131
Selling and marketing	151,042	157,001	164,779	172,233	190,869	212,114	225,384	245,887	268,260	275,052	289,653	288,557	296,785
General and administrative	64,372	60,970	64,210	68,452	75,858	84,302	88,967	97,061	105,892	104,074	109,599	115,423	110,234
Depreciation and amortization	8,900	11,700	12,700	9,929	11,047	11,956	12,710	13,351	13,907	14,401	14,851	15,270	15,666
Total operating expenses	343,300	347,200	370,215	393,213	435,802	483,990	518,577	558,767	608,948	626,130	659,055	677,218	679,530
Income(loss) from operations	(15,432)	(6,450)	23,896	48,410	53,605	59,892	74,538	88,305	96,999	117,253	123,792	147,230	168,427
Interest income	418	934	2,385	3,958	4,060	4,166	4,274	4,386	4,500	4,617	4,737	4,860	4,986
Gain on sale of equity securities	3,208	2,807	-	-	-	-	-	-	-	-	-	-	-
Unrealized gain on equity securities	-	-	875	-	-	-	-	-	-	-	-	-	-
Other income (expense), net	(732)	356	(232)	-	-	-	-	-	-	-	-	-	-
Income (loss) before income taxes	(12,538)	(2,353)	26,924	52,368	57,665	64,058	78,812	92,691	101,498	121,870	128,529	152,090	173,413
Income tax expense	1,381	1,504	1,247	5,237	5,767	6,406	7,881	9,269	10,150	12,187	12,853	15,209	17,341
Net income (loss)	\$ (13,919)	\$ (3,857)	\$ 25,677	47,131	51,899	57,652	70,931	83,422	91,348	109,683	115,676	136,881	156,071
Basic net income (loss) per share	\$ (0.42)	\$ (0.11)	\$ 0.72	\$ 1.30	\$ 1.41	\$ 1.55	\$ 1.88	\$ 2.19	\$ 2.36	\$ 2.83	\$ 2.98	\$ 3.53	\$ 4.02
Weighted average shares outstanding-b:	33,264	34,495	35,727	36,216	36,706	37,195	37,684	38,174	38,663	38,810	38,810	38,810	38,810

Genomic Health
Balance Sheet

In thousands

<i>Fiscal Years Ending Dec. 31</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
ASSETS													
Current assets:													
Cash and cash equivalents	\$ 40,404	\$ 45,518	\$ 61,645	\$ 109,513	\$ 166,919	\$ 230,495	\$ 306,627	\$ 396,425	\$ 494,198	\$ 598,838	\$ 706,951	\$ 834,103	\$ 981,622
Short-term marketable securities	56,585	84,057	148,149	152,001	155,953	160,008	164,168	168,436	172,816	177,309	181,919	186,649	191,502
Accounts receivable	35,179	31,161	51,531	48,505	53,753	59,736	65,143	71,069	77,536	81,648	85,982	90,551	93,133
Prepaid expenses and other current assets	13,796	13,524	13,511	16,334	18,101	20,116	21,937	23,932	26,110	27,494	28,954	30,493	31,362
Total current assets	145,964	174,260	274,836	326,352	394,726	470,354	557,875	659,863	770,659	885,288	1,003,806	1,141,796	1,297,619
Property and equipment, net	45,688	46,440	39,532	43,983	47,603	50,607	53,156	55,370	57,339	59,132	60,797	62,375	63,894
Property and equipment, gross	102,404	112,114	111,996	126,375	141,042	156,003	171,262	186,827	202,703	218,896	235,413	252,261	269,446
Accumulated depreciation and amortization	56,716	65,674	72,464	82,393	93,439	105,395	118,106	131,456	145,363	159,765	174,616	189,886	205,552
Long-term marketable securities	-	-	4,066	4,172	4,280	4,391	4,506	4,623	4,743	4,866	4,993	5,123	5,256
Other assets	9,462	10,917	15,938	16,352	16,778	17,214	17,661	18,121	18,592	19,075	19,571	20,080	20,602
Total assets	\$ 201,114	\$ 231,617	\$ 334,372	\$ 390,858	\$ 463,386	\$ 542,567	\$ 633,198	\$ 737,977	\$ 851,333	\$ 968,361	\$ 1,089,167	\$ 1,229,374	\$ 1,387,371
LIABILITIES AND STOCKHOLDERS' EQUITY													
Current liabilities:													
Accounts payable	2,864	156	8,849	6,887	7,632	8,481	9,249	10,091	11,009	11,592	12,208	12,857	13,223
benefits	27,900	24,953	34,457	30,400	33,689	37,439	39,704	43,316	47,257	47,885	50,428	51,025	51,409
Accrued expenses	10,179	14,084	15,870	16,582	18,377	20,422	22,271	24,297	26,507	27,913	29,395	30,957	31,840
Accrued license fees	-	-	-	-	-	-	-	-	-	-	-	-	-
Deferred revenue	-	-	-	-	-	-	-	-	-	-	-	-	-
Other current liabilities	232	323	600	468	518	576	628	685	748	787	829	873	898
Total current liabilities	41,175	39,516	59,776	54,337	60,216	66,918	71,852	78,389	85,521	88,179	92,860	95,712	97,370
Other liabilities	3,834	3,810	4,436	5,024	5,568	6,188	6,748	7,362	8,031	8,457	8,906	9,380	9,647
Total liabilities	45,009	43,326	64,212	59,361	65,784	73,106	78,600	85,751	93,553	96,636	101,766	105,091	107,017
Stockholders' equity:													
Common stock	427,105	464,640	506,682	520,888	535,095	549,301	563,507	577,713	591,920	596,181	596,181	596,181	596,181
Accumulated other comprehensive loss	1,198	(294)	(87)	(87)	(87)	(87)	(87)	(87)	(87)	(87)	(87)	(87)	(87)
Accumulated deficit	(242,088)	(245,945)	(206,325)	(159,194)	(107,295)	(49,643)	21,288	104,710	196,058	305,741	421,417	558,298	714,369
Treasury stock	(30,110)	(30,110)	(30,110)	(30,110)	(30,110)	(30,110)	(30,110)	(30,110)	(30,110)	(30,110)	(30,110)	(30,110)	(30,110)
Total stockholders' equity	156,105	188,291	270,160	331,497	397,602	469,461	554,598	652,226	757,781	871,725	987,401	1,124,282	1,280,354
Total liabilities and stockholders' equity	\$ 201,114	\$ 231,617	\$ 334,372	\$ 390,858	\$ 463,386	\$ 542,567	\$ 633,198	\$ 737,977	\$ 851,333	\$ 968,361	\$ 1,089,167	\$ 1,229,374	\$ 1,387,371

Genomic Health
Cash Flow Statement

In thousands

<i>Fiscal Years Ending Dec. 31</i>	2012	2013	2014	2015	2016	2017	2018
Operating activities							
Net income (loss)	8,249	(12,757)	(24,592)	(33,308)	(13,919)	(3,857)	25,677
Adjustments to reconcile net income:							
Depreciation and amortizations	5,471	6,324	6,870	7,069	8,933	11,759	12,669
Employee stock-based compensation	15,104	17,457	16,538	16,005	18,303	20,256	21,090
Write-off of previously capitalized software costs	-	663	-	635	2,600	76	2,347
Impairment of long-lived assets	-	-	375	123	56	22	2,358
Loss (gain) on disposal of property and equipment	(86)	-	(51)	(80)	33	35	27
Outside director restricted stock awarded in lieu of fees	172	230	230	200	200	200	200
Gain (loss) on sale of equity securities	-	-	-	-	(3,208)	(2,807)	-
Discount on convertible promissory note	-	-	-	-	-	671	-
Discount on equity investment	-	-	-	-	-	322	-
investments	-	-	-	-	-	(7)	(875)
Write-off of convertible promissory note	-	-	-	-	-	-	1,329
Deferred tax benefit from unrealized gain on available-f	-	-	-	(1,548)	-	820	-
Share of loss of equity method investee	98	-	-	-	-	-	-
Impairment of investments	-	643	-	-	-	-	-
Changes in assets and liabilities:							
Accounts receivable	(1,176)	(7,193)	(5,470)	(2,248)	1,985	4,018	(6,247)
Prepaid expenses & other assets	(1,599)	(1,448)	741	(1,292)	(4,550)	55	(2,464)
Accounts payable	(2,144)	1,238	985	949	(4,579)	(2,308)	8,374
Accrued compensation & employee benefits	1,636	1,566	3,824	4,531	5,661	(2,947)	9,504
Accrued expenses & other liabilities	1,923	1,617	3,088	(2,963)	2,372	4,164	2,573
Deferred revenues	(1,686)	212	(251)	96	(431)	121	-
Net cash flows from operating activities	25,962	8,552	2,287	(11,831)	13,456	30,593	76,562
Investing activities							
Purchases of property & equipment	(9,850)	(10,992)	(10,455)	(23,483)	(19,786)	(13,276)	(10,076)
Proceeds from sale of property & equipment	-	-	122	70	8	10	55
Purchases of marketable securities	(103,570)	(107,183)	(96,800)	(76,743)	(69,722)	(109,249)	(172,563)
Maturities of marketable securities	90,160	116,169	94,910	106,439	66,757	71,802	103,979
Proceeds from sales of marketable securities	-	-	-	-	9,717	10,155	-
Other investments	(4,963)	(5,000)	(2,000)	-	(6,100)	(2,000)	(2,500)
Net cash flows from investing activities	(28,223)	(7,006)	(14,223)	6,283	(19,126)	(42,558)	(81,105)
Financing activities							
Proceeds from issuance of common stock under stock p	17,492	13,743	12,030	12,197	17,010	21,776	26,250
Withholding taxes related to restricted stock units net s	-	-	(3,647)	(3,842)	(3,469)	(4,697)	(5,498)
Repurchase of common stock	(30,095)	(15)	-	-	-	-	-
Net cash flows from financing activities	(12,603)	13,728	8,383	8,355	13,541	17,079	20,752
Net increase in cash, cash equivalents & restricted cash	(14,864)	15,274	(3,553)	2,807	7,871	5,114	16,209
Cash, cash equivalents & restricted cash at the beginning of	32,869	18,005	33,279	29,726	32,533	40,404	45,708
Cash, cash equivalents & restricted cash at the end of peri	18,005	33,279	29,726	32,533	40,404	45,518	61,917

Genomic Health*Cash Flow Statement*

In thousands

<i>Fiscal Years Ending Dec. 31</i>	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Operating activities										
Net income (loss)	47,131	51,899	57,652	70,931	83,422	91,348	109,683	115,676	136,881	156,071
Adjustments to reconcile net income:										
Depreciation and amortizations	9,929	11,047	11,956	12,710	13,351	13,907	14,401	14,851	15,270	15,666
Changes in assets and liabilities:										
Accounts receivable	3,026	(5,248)	(5,983)	(5,407)	(5,926)	(6,466)	(4,112)	(4,334)	(4,569)	(2,582)
Prepaid expenses & other assets	(2,823)	(1,767)	(2,015)	(1,821)	(1,996)	(2,177)	(1,385)	(1,460)	(1,539)	(869)
Accounts payable	(1,962)	745	849	768	841	918	584	615	649	367
Accrued compensation & employee benefits	(4,057)	3,289	3,750	2,265	3,612	3,941	628	2,542	597	384
Accrued expenses	712	1,794	2,045	1,849	2,026	2,211	1,406	1,482	1,562	883
Other current liabilities	(132)	51	58	52	57	62	40	42	44	25
Other liabilities	588	544	620	560	614	670	426	449	473	267
Net cash flows from operating activities	52,413	62,353	68,932	81,907	96,001	104,413	121,671	129,863	149,368	170,212
Investing activities										
Purchases of property & equipment	(14,379)	(14,667)	(14,960)	(15,259)	(15,565)	(15,876)	(16,193)	(16,517)	(16,848)	(17,185)
Change in other assets	(414)	(425)	(436)	(448)	(459)	(471)	(483)	(496)	(509)	(522)
(Increase) decrease in marketable short-term securities	(3,852)	(3,952)	(4,055)	(4,160)	(4,268)	(4,379)	(4,493)	(4,610)	(4,730)	(4,853)
(Increase) decrease in marketable long-term securities	(106)	(108)	(111)	(114)	(117)	(120)	(123)	(127)	(130)	(133)
Net cash flows from investing activities	(18,751)	(19,153)	(19,563)	(19,981)	(20,409)	(20,847)	(21,293)	(21,750)	(22,216)	(22,693)
Financing activities										
Proceeds from issuance of common stock (ESOP)	14,206	14,206	14,206	14,206	14,206	14,206	4,262	-	-	-
Net cash flows from financing activities	14,206	14,206	14,206	14,206	14,206	14,206	4,262	-	-	-
Net increase in cash, cash equivalents & restricted cash	47,868	57,406	63,576	76,132	89,798	97,773	104,639	108,113	127,152	147,519
Cash, cash equivalents & restricted cash at the beginning of period	61,645	109,513	166,919	230,495	306,627	396,425	494,198	598,838	706,951	834,103
Cash, cash equivalents & restricted cash at the end of period	109,513	166,919	230,495	306,627	396,425	494,198	598,838	706,951	834,103	981,622

Genomic Health

Common Size Income Statement

<i>Fiscal Years Ending Dec. 31</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Revenues:													
Product revenues	99.71%	99.91%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Contract revenues	0.29%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total revenues	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Operating expenses:													
Cost of product revenues	17.47%	16.06%	16.32%	16.00%	16.00%	16.00%	16.00%	15.00%	15.00%	15.00%	15.00%	15.00%	14.00%
Research and development	18.83%	18.43%	16.29%	16.29%	16.29%	16.29%	16.29%	16.29%	16.29%	16.29%	16.29%	16.29%	16.29%
Selling and marketing	46.07%	46.08%	41.81%	39.00%	39.00%	39.00%	38.00%	38.00%	38.00%	37.00%	37.00%	35.00%	35.00%
General and administrative	19.63%	17.89%	16.29%	15.50%	15.50%	15.50%	15.00%	15.00%	15.00%	14.00%	14.00%	14.00%	13.00%
Depreciation and amortization	3.78%	4.98%	5.40%	4.22%	4.70%	5.08%	5.40%	5.68%	5.91%	6.12%	6.32%	6.49%	6.66%
Total operating expenses	104.71%	101.89%	93.94%	89.04%	89.05%	88.99%	87.43%	86.35%	86.26%	84.23%	84.19%	82.14%	80.14%
Income(loss) from operations	-4.71%	-1.89%	6.06%	10.96%	10.95%	11.01%	12.57%	13.65%	13.74%	15.77%	15.81%	17.86%	19.86%
Interest income	0.13%	0.27%	0.61%	0.90%	0.83%	0.77%	0.72%	0.68%	0.64%	0.62%	0.61%	0.59%	0.59%
Gain on sale of equity securities	0.98%	0.82%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Unrealized gain on equity securities	0.00%	0.00%	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Other income (expense), net	-0.22%	0.10%	-0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Income (loss) before income taxes	-3.82%	-0.69%	6.83%	11.86%	11.78%	11.78%	13.29%	14.32%	14.38%	16.39%	16.42%	18.45%	20.45%
Income tax expense	0.42%	0.44%	0.32%	1.19%	1.18%	1.18%	1.33%	1.43%	1.44%	1.64%	1.64%	1.84%	2.05%
Net income (loss)	-4.25%	-1.13%	6.52%	10.67%	10.60%	10.60%	11.96%	12.89%	12.94%	14.75%	14.78%	16.60%	18.41%
Basic net income (loss) per share	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Weighted average shares outstanding-basic	10.15%	10.12%	9.07%	8.20%	7.50%	6.84%	6.35%	5.90%	5.48%	5.22%	4.96%	4.71%	4.58%

Genomic Health

Common Size Balance Sheet

<i>Fiscal Years Ending Dec. 31</i>	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
ASSETS													
Current assets:													
Cash and cash equivalents	12.32%	13.36%	15.64%	24.80%	34.11%	42.38%	51.70%	61.26%	70.01%	80.56%	90.31%	101.17%	115.76%
Short-term marketable securities	17.26%	24.67%	37.59%	34.42%	31.87%	29.42%	27.68%	26.03%	24.48%	23.85%	23.24%	22.64%	22.58%
Accounts receivable	10.73%	9.14%	13.08%	10.98%	10.98%	10.98%	10.98%	10.98%	10.98%	10.98%	10.98%	10.98%	10.98%
Prepaid expenses and other current assets	4.21%	3.97%	3.43%	3.70%	3.70%	3.70%	3.70%	3.70%	3.70%	3.70%	3.70%	3.70%	3.70%
Total current assets	44.52%	51.14%	69.74%	73.90%	80.65%	86.48%	94.06%	101.98%	109.17%	119.09%	128.23%	138.49%	153.03%
Property and equipment, net	13.93%	13.63%	10.03%	9.96%	9.73%	9.30%	8.96%	8.56%	8.12%	7.95%	7.77%	7.57%	7.54%
Property and equipment, gross	31.23%	32.90%	28.42%	28.62%	28.82%	28.68%	28.88%	28.87%	28.71%	29.45%	30.07%	30.60%	31.78%
Accumulated depreciation and amortization	17.30%	19.27%	18.39%	18.66%	19.09%	19.38%	19.91%	20.32%	20.59%	21.49%	22.31%	23.03%	24.24%
Long-term marketable securities	0.00%	0.00%	1.03%	0.94%	0.87%	0.81%	0.76%	0.71%	0.67%	0.65%	0.64%	0.62%	0.62%
Other assets	2.89%	3.20%	4.04%	3.70%	3.43%	3.16%	2.98%	2.80%	2.63%	2.57%	2.50%	2.44%	2.43%
Total assets	61.34%	67.97%	84.84%	88.50%	94.68%	99.76%	106.76%	114.05%	120.59%	130.26%	139.13%	149.11%	163.61%
LIABILITIES AND STOCKHOLDERS' EQUITY													
Current liabilities:													
Accounts payable	0.87%	0.05%	2.25%	1.56%	1.56%	1.56%	1.56%	1.56%	1.56%	1.56%	1.56%	1.56%	1.56%
Accrued compensation and employee benefits	8.51%	7.32%	8.74%	6.88%	6.88%	6.88%	6.69%	6.69%	6.69%	6.44%	6.44%	6.19%	6.06%
Accrued expenses	3.10%	4.13%	4.03%	3.75%	3.75%	3.75%	3.75%	3.75%	3.75%	3.75%	3.75%	3.75%	3.75%
Accrued license fees	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Deferred revenue	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Other current liabilities	0.07%	0.09%	0.15%	0.11%	0.11%	0.11%	0.11%	0.11%	0.11%	0.11%	0.11%	0.11%	0.11%
Total current liabilities	12.56%	11.60%	15.17%	12.30%	12.30%	12.30%	12.11%	12.11%	12.11%	11.86%	11.86%	11.61%	11.48%
Other liabilities	1.17%	1.12%	1.13%	1.14%	1.14%	1.14%	1.14%	1.14%	1.14%	1.14%	1.14%	1.14%	1.14%
Total liabilities	13.73%	12.71%	16.29%	13.44%	13.44%	13.44%	13.25%	13.25%	13.25%	13.00%	13.00%	12.75%	12.62%
Stockholders' equity:													
Common stock	130.27%	136.36%	128.56%	117.95%	109.34%	101.00%	95.01%	89.28%	83.85%	80.20%	76.16%	72.31%	70.31%
Accumulated other comprehensive loss	0.37%	-0.09%	-0.02%	-0.02%	-0.02%	-0.02%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%
Accumulated deficit	-73.84%	-72.18%	-52.35%	-36.05%	-21.92%	-9.13%	3.59%	16.18%	27.77%	41.13%	53.83%	67.72%	84.25%
Treasury stock	-9.18%	-8.84%	-7.64%	-6.82%	-6.15%	-5.54%	-5.08%	-4.65%	-4.27%	-4.05%	-3.85%	-3.65%	-3.55%
Total stockholders' equity	47.61%	55.26%	68.55%	75.06%	81.24%	86.32%	93.51%	100.80%	107.34%	117.26%	126.13%	136.37%	150.99%
Total liabilities and stockholders' equity	61.34%	67.97%	84.84%	88.50%	94.68%	99.76%	106.76%	114.05%	120.59%	130.26%	139.13%	149.11%	163.61%

Genomic Health
Value Driver Estimation

Fiscal Years Ending Dec. 31	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
NOPLAT													
EBITA Calculation													
Operating Revenue	327,868	340,750	394,111	441,623	489,406	543,882	593,115	647,072	705,946	743,384	782,847	824,449	847,956
- Cost of revenues	57,263	54,718	64,326	70,660	78,305	87,021	94,898	97,061	105,892	111,508	117,427	123,667	118,714
- Selling and marketing	151,042	157,001	164,779	172,233	190,869	212,114	225,384	245,887	268,260	275,052	289,653	288,557	296,785
- General and administrative	64,372	60,970	64,210	68,452	75,858	84,302	88,967	97,061	105,892	104,074	109,599	115,423	110,234
- Research and development	61,723	62,811	64,200	71,940	79,723	88,597	96,617	105,407	114,997	121,096	127,524	134,301	138,131
+ Implied Interest on Operating Leases	1,303	1,218	1,060	878	748	832	900	957	1,005	1,047	1,085	1,118	1,150
EBITA	(5,229)	6,468	37,656	59,218	65,399	72,680	88,149	102,613	111,911	132,702	139,728	163,619	185,243
Adjusted Taxes													
Income tax expense	1,381	1,504	1,247	5,237	5,767	6,406	7,881	9,269	10,150	12,187	12,853	15,209	17,341
- Tax shield on interest income	(42)	(93)	(239)	(396)	(406)	(417)	(427)	(439)	(450)	(462)	(474)	(486)	(499)
- Tax on gain on sale of equity securities	(321)	(281)	-	-	-	-	-	-	-	-	-	-	-
- Tax on unrealized gain on equity securities	-	-	(88)	-	-	-	-	-	-	-	-	-	-
- Tax on other income	-	(36)	-	-	-	-	-	-	-	-	-	-	-
+ Tax on other expense	73	-	23	-	-	-	-	-	-	-	-	-	-
+ Tax on operating lease interest	130	122	106	88	75	83	90	96	101	105	108	112	115
Total Adjusted Taxes	1,222	1,216	1,050	4,929	5,435	6,072	7,544	8,926	9,800	11,830	12,488	14,835	16,958
NOPLAT Calculation													
EBITA	(5,229)	6,468	37,656	59,218	65,399	72,680	88,149	102,613	111,911	132,702	139,728	163,619	185,243
- Adjusted Taxes	1,222	1,216	1,050	4,929	5,435	6,072	7,544	8,926	9,800	11,830	12,488	14,835	16,958
+ Change in Deferred Taxes	-	-	-	-	-	-	-	-	-	-	-	-	-
NOPLAT	(6,451)	5,252	36,605	54,289	59,964	66,607	80,605	93,687	102,110	120,872	127,240	148,784	168,285
Operating Current Assets:													
Normal Cash (lesser of actual or %)	26,229	27,260	31,529	35,330	39,153	43,511	47,449	51,766	56,476	59,471	62,628	65,956	67,836
Accounts receivable	35,179	31,161	51,531	48,505	53,753	59,736	65,143	71,069	77,536	81,648	85,982	90,551	93,133
Prepaid expenses & other current assets	13,796	13,524	13,511	16,334	18,101	20,116	21,937	23,932	26,110	27,494	28,954	30,493	31,362
Total Operating CA	75,204	71,945	96,571	100,168	111,006	123,362	134,529	146,768	160,121	168,613	177,564	187,000	192,332
Operating Current Liabilities:													
Accounts payable	2,864	156	8,849	6,887	7,632	8,481	9,249	10,091	11,009	11,592	12,208	12,857	13,223
Accrued compensation and employee benefits	27,900	24,953	34,457	30,400	33,689	37,439	39,704	43,316	47,257	47,885	50,428	51,025	51,409
Accrued expenses	10,179	14,084	15,870	16,582	18,377	20,422	22,271	24,297	26,507	27,913	29,395	30,957	31,840
Accrued license fees	-	-	-	-	-	-	-	-	-	-	-	-	-
Deferred revenue	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Operating CL	40,943	39,193	59,176	53,869	59,697	66,342	71,224	77,703	84,773	87,391	92,030	94,838	96,471
Net Operating Working Capital	34,261	32,752	37,395	46,299	51,309	57,020	63,305	69,064	75,348	81,222	85,533	92,161	95,860
Plus: Net PPE	45,688	46,440	39,532	43,983	47,603	50,607	53,156	55,370	57,339	59,132	60,797	62,375	63,894
Plus: PV of Operating Leases	30,535	26,558	22,015	18,741	20,850	22,567	23,991	25,199	26,249	27,182	28,032	28,822	29,570
Invested Capital	110,485	105,750	98,942	109,022	119,762	130,194	140,452	149,634	158,936	167,536	174,363	183,358	189,324
NOPLAT	(6,451)	5,252	36,605	54,289	59,964	66,607	80,605	93,687	102,110	120,872	127,240	148,784	168,285
Less: change in IC	9,305	(4,735)	(6,807)	10,080	10,740	10,432	10,258	9,181	9,303	8,599	6,827	8,996	5,965
FCF	(15,756)	9,987	43,413	44,209	49,224	56,176	70,346	84,506	92,808	112,272	120,413	139,788	162,320
NOPLAT	(6,451)	5,252	36,605	54,289	59,964	66,607	80,605	93,687	102,110	120,872	127,240	148,784	168,285
Beginning IC	101,180	110,485	105,750	98,942	109,022	119,762	130,194	140,452	149,634	158,936	167,536	174,363	183,358
ROIC	-6.4%	4.8%	34.6%	54.9%	55.0%	55.6%	61.9%	66.7%	68.2%	76.1%	75.9%	85.3%	91.8%
Beginning IC	101,180	110,485	105,750	98,942	109,022	119,762	130,194	140,452	149,634	158,936	167,536	174,363	183,358
Multiplied by: (ROIC-WACC)	-14.5%	-3.3%	26.5%	46.8%	46.9%	47.5%	53.8%	58.6%	60.1%	68.0%	67.9%	77.2%	83.7%
EP	(14,642)	(3,692)	28,045	46,279	51,138	56,912	70,065	82,317	89,997	108,006	113,678	134,669	153,442

Genomic Health

Weighted Average Cost of Capital (WACC) Estimation

Cost of Equity	
Risk Free Rate	2.60%
Market Risk Premium	4.95%
Beta	1.12
Cost of Equity (Re) =	8.14%

Cost of Debt	
Pre-tax Cost of Debt	3.99%
Marginal Tax Rate	10.00%
After Tax Cost of Debt (Rd) =	3.59%

Market Value of Equity	
Shares Outstanding	35,727
Share Price	\$61.39
Market Value of Equity (E) =	\$ 2,193,281

Market Value of Debt	
PV of Operating Leases	22,015
Total Value of Debt (D) =	\$ 22,015

Total Value of the Firm (D + E = V)	\$ 2,215,296
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WACC	8.10%
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Genomic Health

Dividend Discount Model (DDM) or Fundamental P/E Valuation Model

Fiscal Years Ending Dec. 31	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
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EPS	\$ 1.30	\$ 1.41	\$ 1.55	\$ 1.88	\$ 2.19	\$ 2.36	\$ 2.83	\$ 2.98	\$ 3.53	\$ 4.02
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Key Assumptions

CV growth	4.00%
CV ROE	12.19%
Cost of Equity	8.14%

Future Cash Flows

Period	1	2	3	4	5	6	7	8	9	10
P/E Multiple (CV Year)										16
EPS (CV Year)										4.0
Future Stock Price										65
Dividends Per Share	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Future Cash Flows										65
Discounted Cash Flows										32

Intrinsic Value	\$ 32.23
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Partial Year Adjusted Value	\$ 32.97
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Genomic Health*Relative Valuation Models*

Ticker	Company	Price	EPS		P/E 19	P/E 20	Est. 5yr EPS gr.	PEG 19	PEG 20
			2019E	2020E					
NEO	NeoGenomics Inc.	\$21.36	\$0.24	\$0.34	89.0	62.8	49.5	1.80	1.27
HOLX	Hologic Inc	\$47.00	\$1.43	\$1.63	32.9	28.8	8.0	4.09	3.59
MYGN	Myriad Genetics	\$32.70	\$0.37	\$1.53	88.4	21.4	9.4	9.40	2.27
QGEN	Qiagen NV	\$40.09	\$1.02	\$1.27	39.4	31.6	10.6	3.70	2.97
Average					62.4	36.1		4.7	2.5

GHDX	Genomic Health	\$61.39	\$1.30	\$1.41	47.2	43.4	24.86	1.9	1.7
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Implied Value:

Relative P/E (EPS19)	\$ 81.21
Relative P/E (EPS20)	\$ 51.11
PEG Ratio (EPS19)	\$ 153.64
PEG Ratio (EPS20)	\$ 88.76

Genomic Health*Relative Valuation Models*

Ticker	Company	Price	Sales		Sales Price/Sales Price/Sales	
			2019E	2020E	19	20
NEO	Neogenomics Inc	\$21.36	\$385	\$427	0.1	0.1
EXAS	Exact Sciences Corporation	\$90.10	\$729	\$1,057	0.1	0.1
OPK	OPKO Health	\$2.56	\$972	\$1,047	0.0	0.0
GH	Guardant Health Inc	\$70.01	\$134	\$200	0.5	0.4
HOLX	Hologic Inc	\$47.00	\$3,325	\$3,447	0.0	0.0
NSTG	NanoString Technologies Inc	\$24.76	\$121	\$132	0.2	0.2
MYGN	Myriad Genetics	\$32.70	\$862	\$928	0.0	0.0
QGEN	Qiagen NV	\$41.04	\$1,602	\$1,735	0.0	0.0
Average					0.1	0.1

GHDX	Genomic Health	\$61.39	\$ 442	\$ 489	0.1	0.1
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Implied Value:

Relative P/S 19	\$ 54.42
Relative P/S 20	\$ 45.84

Genomic Health*Key Management Ratios*

<i>Fiscal Years Ending Dec. 31</i>	2012	2013	2014	2015	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Liquidity Ratios																	
Current Ratio = CA/CL	5.14	4.86	3.87	3.35	3.54	4.41	4.60	6.01	6.56	7.03	7.76	8.42	9.01	10.04	10.81	11.93	13.33
Quick Ratio = (Cash+AR)/CL	1.59	2.10	1.69	1.63	1.84	1.94	1.89	2.91	3.66	4.34	5.17	5.96	6.69	7.72	8.54	9.66	11.04
Net Current Assets % TA	84.70%	81.90%	79.88%	77.43%	72.58%	75.24%	82.19%	83.50%	85.18%	86.69%	88.10%	89.42%	90.52%	91.42%	92.16%	92.88%	93.53%
Activity or Asset-Management Ratios																	
Total Asset Turnover		1.58	1.52	1.55	1.70	1.57	1.39	1.22	1.15	1.08	1.01	0.94	0.89	0.82	0.76	0.71	0.65
Accrued Expenses Turnover		38.76	32.21	30.71	30.48	27.03	22.75	24.29	25.27	25.23	25.48	25.47	25.47	25.94	25.94	25.94	26.26
PPE Turnover		14.52	13.03	8.95	6.73	7.12	7.93	9.44	9.64	9.97	10.48	10.93	11.48	12.12	12.40	12.71	13.06
Profitability Ratios																	
Return on Assets = NI/Total Assets	5.37%	-7.21%	-13.23%	-18.04%	-6.92%	-1.67%	7.68%	12.06%	11.20%	10.63%	11.20%	11.30%	10.73%	11.33%	10.62%	11.13%	11.25%
Return on Equity = NI/Total Equity	6.53%	-8.80%	-16.90%	-23.87%	-8.92%	-2.05%	9.50%	14.22%	13.05%	12.28%	12.79%	12.79%	12.05%	12.58%	11.72%	12.17%	12.19%
Gross Margin = (Sales-COGS)/Sales	84.14%	83.76%	82.32%	81.29%	82.48%	83.93%	83.68%	84.00%	84.00%	84.00%	84.00%	85.00%	85.00%	85.00%	85.00%	85.00%	86.00%
Operating Margin = (Operating Income/TR)	3.59%	-4.52%	-8.57%	-11.84%	-4.71%	-1.89%	6.06%	10.96%	10.95%	11.01%	12.57%	13.65%	13.74%	15.77%	15.81%	17.86%	19.86%
Net Income Margin = (NI/Revenue)	3.51%	-4.88%	-8.92%	-11.59%	-4.25%	-1.13%	6.52%	10.67%	10.60%	10.60%	11.96%	12.89%	12.94%	14.75%	14.78%	16.60%	18.41%

Effects of ESOP Exercise and Share Repurchases on Common Stock Balance Sheet Account and Number of Shares Outstanding

Number of Options Outstanding (shares): 3,083
 Average Time to Maturity (years): 6.30
 Expected Annual Number of Options Exercised: 489

Current Average Strike Price: \$ 29.03
 Cost of Equity: 8.14%
 Current Stock Price: \$61.39

	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Increase in Shares Outstanding:	489	489	489	489	489	489	147	0	0	0
Average Strike Price:	\$ 29.03	\$ 29.03	\$ 29.03	\$ 29.03	\$ 29.03	\$ 29.03	\$ 29.03	\$ 29.03	\$ 29.03	\$ 29.03
Increase in Common Stock Account:	14,206	14,206	14,206	14,206	14,206	14,206	4,262	-	-	-
Change in Treasury Stock	0	0	0	0	0	0	0	0	0	0
Expected Price of Repurchased Shares:	\$ 61.39	\$ 66.39	\$ 71.80	\$ 77.64	\$ 83.97	\$ 90.81	\$ 98.20	\$ 106.20	\$ 114.85	\$ 124.20
Number of Shares Repurchased:	-	-	-	-	-	-	-	-	-	-
Shares Outstanding (beginning of the year)	35,727	36,216	36,706	37,195	37,684	38,174	38,663	38,810	38,810	38,810
Plus: Shares Issued Through ESOP	489	489	489	489	489	489	147	0	0	0
Less: Shares Repurchased in Treasury	-	-	-	-	-	-	-	-	-	-
Shares Outstanding (end of the year)	36,216	36,706	37,195	37,684	38,174	38,663	38,810	38,810	38,810	38,810

VALUATION OF OPTIONS GRANTED IN ESOP

In thousands

Ticker Symbol	GHDX
Current Stock Price	\$61.39
Risk Free Rate	2.60%
Current Dividend Yield	0.00%
Annualized St. Dev. of Stock Returns	54.75%

Range of Outstanding Options	Number of Shares	Average Exercise Price	Average Remaining Life (yrs)	B-S Option Price	Value of Options Granted
Range 1	3,083	29.03	6.30	\$ 43.87	\$ 135,255
Total	3,083	\$ 29.03	6.30	\$ 43.87	\$ 135,255

Present Value of Operating Lease Obligations (2018)

Fiscal Years Ending Dec. 31	Operating Leases
2019	6831
2020	7161
2021	4911
2022	4173
2023	1081
Thereafter	0
Total Minimum Payments	24157
Less: Interest	2142
PV of Minimum Payments	22015

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	1.0

Year	Lease Commitment	PV Lease Payment
1	6831	6568.9
2	7161	6622.0
3	4911	4367.1
4	4173	3568.5
5	1081	888.9
6 & beyond	0	0.0
PV of Minimum Payments		22015.4

Present Value of Operating Lease Obligations (2017)

Fiscal Years Ending Dec. 31	Operating Leases
2018	5958
2019	6746
2020	7075
2021	4822
2022	4082
Thereafter	1035
Total Minimum Payments	29718
Less: Interest	3160
PV of Minimum Payments	26558

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	1.0

Year	Lease Commitment	PV Lease Payment
1	5958	5729.4
2	6746	6238.3
3	7075	6291.5
4	4822	4123.5
5	4082	3356.7
6 & beyond	1035	818.4
PV of Minimum Payments		26557.7

Present Value of Operating Lease Obligations (2016)

Fiscal Years Ending Dec. 31	Operating Leases
2017	5206
2018	5946
2019	6734
2020	7063
2021	4817
Thereafter	5117
Total Minimum Payments	34883
Less: Interest	4348
PV of Minimum Payments	30535

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	1.1

Year	Lease Commitment	PV Lease Payment
1	5206	5006.3
2	5946	5498.5
3	6734	5988.2
4	7063	6039.8
5	4817	3961.1
6 & beyond	4817	4041.5
PV of Minimum Payments		30535.4

Present Value of Operating Lease Obligations (2015)

Fiscal Years Ending Dec. 31	Operating Leases
2016	4391
2017	4938
2018	5677
2019	6465
2020	6794
Thereafter	9822
Total Minimum Payments	38087
Less: Interest	5434
PV of Minimum Payments	32653

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	1.4

Year	Lease Commitment	PV Lease Payment
1	4391	4222.5
2	4938	4566.3
3	5677	5048.3
4	6465	5528.4
5	6794	5586.9
6 & beyond	6794	7700.1
PV of Minimum Payments		32652.5

Present Value of Operating Lease Obligations (2014)

Fiscal Years Ending Dec. 31	Operating Leases
2015	3928
2016	3872
2017	3867
2018	2476
2019 and thereafter	504
Total Minimum Payments	14647
Less: Interest	1335
PV of Minimum Payments	13312

Capitalization of Operating Leases

Pre-Tax Cost of Debt	3.99%
Number Years Implied by Year 6 Payment	1.0

Year	Lease Commitment	PV Lease Payment
1	3928	3777.3
2	3872	3580.6
3	3867	3438.7
4	2476	2117.3
5 & beyond	504.00	398.5
PV of Minimum Payments		13312.5

		Beta											
		0.89	0.96	1.03	1.1	1.17	1.24	1.31	1.38	1.45	1.52		
Marginal tax rate	19.50%	90.59	80.59	72.47	65.77	60.14	55.35	51.22	47.63	44.48	41.70		
	20.00%	90.08	80.13	72.06	65.40	59.80	55.03	50.93	47.36	44.23	41.46		
	20.50%	89.56	79.67	71.65	65.02	59.46	54.72	50.64	47.09	43.98	41.22		
	21.00%	89.05	79.21	71.24	64.65	59.11	54.40	50.35	46.82	43.72	40.99		
	21.50%	88.53	78.75	70.82	64.27	58.77	54.09	50.06	46.55	43.47	40.75		
	22.00%	88.02	78.29	70.41	63.90	58.43	53.77	49.76	46.28	43.22	40.51		
	22.50%	87.50	77.83	70.00	63.52	58.09	53.46	49.47	46.01	42.96	40.27		
	23.00%	86.98	77.37	69.58	63.15	57.74	53.14	49.18	45.73	42.71	40.04		
	23.50%	86.47	76.91	69.17	62.77	57.40	52.83	48.89	45.46	42.46	39.80		
	24.00%	85.95	76.45	68.76	62.40	57.06	52.51	48.60	45.19	42.20	39.56		
	24.50%	85.43	75.99	68.34	62.02	56.71	52.19	48.30	44.92	41.95	39.33		
	25.00%	84.92	75.53	67.93	61.65	56.37	51.88	48.01	44.65	41.70	39.09		
	25.50%	84.40	75.07	67.51	61.27	56.03	51.56	47.72	44.38	41.44	38.85		
26.00%	83.88	74.61	67.10	60.89	55.68	51.25	47.43	44.11	41.19	38.61			

Selling and marketing as % sales 2019

		Invasive breast cancer revenue growth 2019														
		70.98	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%	11.00%	12.00%	13.00%	14.00%	15.00%	16.00%		
	33.00%	68.84	69.39	69.94	70.50	71.05	71.60	72.16	72.71	73.27	73.82	74.37	74.93			
	34.00%	68.74	69.29	69.84	70.39	70.95	71.50	72.05	72.61	73.16	73.71	74.27	74.82			
	35.00%	68.64	69.19	69.74	70.29	70.84	71.40	71.95	72.50	73.05	73.61	74.16	74.71			
	36.00%	68.54	69.09	69.64	70.19	70.74	71.29	71.84	72.40	72.95	73.50	74.05	74.60			
	37.00%	68.44	68.99	69.54	70.09	70.64	71.19	71.74	72.29	72.84	73.39	73.94	74.49			
	38.00%	68.34	68.89	69.43	69.98	70.53	71.08	71.63	72.18	72.73	73.28	73.83	74.38			
	39.00%	68.24	68.78	69.33	69.88	70.43	70.98	71.53	72.08	72.63	73.18	73.72	74.27			
	40.00%	68.14	68.68	69.23	69.78	70.33	70.88	71.42	71.97	72.52	73.07	73.62	74.16			
	41.00%	68.04	68.58	69.13	69.68	70.22	70.77	71.32	71.87	72.41	72.96	73.51	74.05			
	42.00%	67.94	68.48	69.03	69.57	70.12	70.67	71.21	71.76	72.31	72.85	73.40	73.95			
	43.00%	67.84	68.38	68.93	69.47	70.02	70.56	71.11	71.65	72.20	72.74	73.29	73.84			
	44.00%	67.74	68.28	68.82	69.37	69.91	70.46	71.00	71.55	72.09	72.64	73.18	73.73			
	45.00%	67.64	68.18	68.72	69.27	69.81	70.35	70.90	71.44	71.99	72.53	73.07	73.62			
46.00%	67.54	68.08	68.62	69.16	69.71	70.25	70.79	71.34	71.88	72.42	72.97	73.51				

		Equity risk premium										
		70.98	4.75%	4.80%	4.85%	4.90%	4.95%	5.05%	5.10%	5.15%	5.20%	5.25%
CV Growth of NOPLAT	3.65%	70.63	69.63	68.66	67.71	66.79	65.01	64.15	63.31	62.50	61.70	
	3.70%	71.26	70.24	69.25	68.29	67.34	65.53	64.66	63.81	62.98	62.17	
	3.75%	71.91	70.87	69.86	68.87	67.92	66.07	65.18	64.32	63.47	62.64	
	3.80%	72.57	71.51	70.48	69.48	68.50	66.62	65.72	64.83	63.97	63.13	
	3.85%	73.25	72.17	71.12	70.09	69.10	67.18	66.26	65.36	64.49	63.63	
	3.90%	73.95	72.84	71.77	70.73	69.71	67.76	66.82	65.90	65.01	64.14	
	3.95%	74.66	73.53	72.44	71.37	70.34	68.35	67.39	66.46	65.55	64.66	
	4.00%	75.39	74.24	73.12	72.04	70.98	68.95	67.97	67.02	66.10	65.20	
	4.05%	76.15	74.97	73.83	72.72	71.64	69.57	68.57	67.60	66.66	65.74	
	4.10%	76.92	75.72	74.55	73.41	72.31	70.20	69.19	68.20	67.24	66.30	
	4.15%	77.71	76.48	75.29	74.13	73.00	70.85	69.81	68.81	67.83	66.87	
	4.20%	78.52	77.27	76.05	74.86	73.71	71.51	70.46	69.43	68.43	67.46	
	4.25%	79.36	78.07	76.83	75.62	74.44	72.19	71.12	70.07	69.05	68.06	
4.30%	80.22	78.90	77.63	76.39	75.19	72.89	71.79	70.72	69.68	68.67		
4.35%	81.10	79.76	78.45	77.18	75.96	73.61	72.48	71.39	70.33	69.30		
4.40%	82.01	80.63	79.30	78.00	76.74	74.34	73.19	72.08	71.00	69.94		

General and administrative as % sales 2019

		Average Capex														
		70.98	(13,879)	(13,979)	(14,079)	(14,179)	(14,279)	(14,379)	(14,479)	(14,579)	(14,679)	(14,779)	(14,879)	(14,979)		
	9.00%	71.73	71.71	71.70	71.68	71.67	71.66	71.64	71.63	71.62	71.60	71.59	71.57			
	10.00%	71.62	71.61	71.59	71.58	71.57	71.55	71.54	71.53	71.51	71.50	71.48	71.47			
	11.00%	71.52	71.50	71.49	71.48	71.46	71.45	71.43	71.42	71.41	71.39	71.38	71.37			
	12.00%	71.41	71.40	71.39	71.37	71.36	71.34	71.33	71.32	71.30	71.29	71.28	71.26			
	13.00%	71.31	71.30	71.28	71.27	71.25	71.24	71.23	71.21	71.20	71.18	71.17	71.16			
	14.00%	71.21	71.19	71.18	71.16	71.15	71.14	71.12	71.11	71.09	71.08	71.07	71.05			
	15.00%	71.10	71.09	71.07	71.06	71.05	71.03	71.02	71.00	70.99	70.98	70.96	70.95			
	16.00%	71.00	70.98	70.97	70.96	70.94	70.93	70.91	70.90	70.89	70.87	70.86	70.84			
	17.00%	70.89	70.88	70.86	70.85	70.84	70.82	70.81	70.80	70.78	70.77	70.75	70.74			
	18.00%	70.79	70.77	70.76	70.75	70.73	70.72	70.71	70.69	70.68	70.66	70.65	70.64			
	19.00%	70.68	70.67	70.66	70.64	70.63	70.62	70.60	70.59	70.57	70.56	70.55	70.53			
	20.00%	70.58	70.57	70.55	70.54	70.52	70.51	70.50	70.48	70.47	70.46	70.44	70.43			
	21.00%	70.48	70.46	70.45	70.43	70.42	70.41	70.39	70.38	70.37	70.35	70.34	70.32			
22.00%	70.37	70.36	70.34	70.33	70.32	70.30	70.29	70.27	70.26	70.25	70.23	70.22				
23.00%	70.27	70.25	70.24	70.23	70.21	70.20	70.18	70.17	70.16	70.14	70.13	70.12				
24.00%	70.16	70.15	70.14	70.12	70.11	70.09	70.08	70.07	70.05	70.04	70.02	70.01				

		Research and development										
		70.98	12.00%	13.00%	14.00%	15.00%	16.00%	17.00%	18.00%	19.00%	20.00%	21.00%
CV Growth of EPS	0.00%	34.02	33.44	32.88	32.33	31.80	31.28	30.78	30.29	29.81	29.35	
	0.50%	34.35	33.76	33.19	32.63	32.09	31.56	31.05	30.55	30.07	29.59	
	1.00%	34.69	34.09	33.50	32.94	32.39	31.85	31.33	30.82	30.33	29.84	
	1.50%	35.03	34.42	33.83	33.25	32.69	32.14	31.61	31.09	30.59	30.10	
	2.00%	35.39	34.77	34.16	33.57	33.00	32.44	31.90	31.38	30.86	30.36	
	2.50%	35.75	35.12	34.50	33.90	33.32	32.75	32.20	31.66	31.14	30.63	
	3.00%	36.13	35.48	34.85	34.24	33.64	33.06	32.50	31.96	31.43	30.91	
	3.50%	36.51	35.85	35.21	34.58	33.98	33.39	32.81	32.26	31.72	31.19	
	4.00%	36.91	36.23	35.57	34.94	34.32	33.72	33.13	32.57	32.01	31.48	
	4.50%	37.31	36.62	35.95	35.30	34.67	34.05	33.46	32.88	32.32	31.77	
	5.00%	37.73	37.02	36.34	35.67	35.03	34.40	33.79	33.20	32.63	32.07	
	5.50%	38.16	37.43	36.73	36.05	35.40	34.76	34.14	33.54	32.95	32.38	
	6.00%	38.60	37.86	37.14	36.45	35.77	35.12	34.49	33.88	33.28	32.70	