UBS

UBS Investment Research

Complete Genomics Inc

Whole Human Genomes On Demand

■ Initiating coverage of GNOM with a Buy rating and $12 price target

Complete Genomics (GNOM) is a high-tech genomics contract research provider for researchers & clinicians looking to outsource whole human genome sequencing (WHGS) projects. Unlike most other next generation DNA sequencing (NGS) companies that sell instruments & consumables, GNOM has commercialized its proprietary NGS platform via a genomic services model. This focus can give the company a cost advantage in complete human genome re-sequencing work.

■ Key positives: Positioned to gain share in an emerging high growth market

We are bullish on the overall NGS market opportunity. As total sequencing costs fall, demand for WHG studies is accelerating; we see this segment of the market growing from ~$50m today to $800-$900m by 2015. With a first mover position, a validated NGS platform, and growing customer base, we believe GNOM is poised to capture share in this fast growing niche of the genetic analysis market.

■ Key risks: If you build it, will they come?

GNOM's success hinges on sample volume growth outpacing price erosion; if the market for outsourced WHGS services fails to develop, GNOM may fall short of expectations. Although GNOM's current platform is competitive, NGS technology is rapidly evolving; if GNOM does not keep pace they may not succeed. The WHGS opportunity has lured competition which could unfavorably impact pricing.

■ Valuation: $12 price target based on EV/Sales multiple and DCF analysis

GNOM shares currently trade at ~1.4x EV/2012E sales and our PT implies ~3x.

Highlights (US$k)	12/08	12/09	12/10E	12/11E	12/12E
Revenues	0	623	8,674	32,431	92,756
EBIT (UBS)	(27,857)	(34,685)	(51,222)	(51,289)	(11,383)
Net Income (UBS)	(28,394)	(37,049)	(53,289)	(52,189)	(11,833)
EPS (UBS, US$)	(369.36)	(6.59)	(2.06)	(1.99)	(0.39)
Net DPS (UBS, US$)	0.00	0.00	0.00	0.00	0.00

Profitability & Valuation	5-yr hist av.	12/09	12/10E	12/11E	12/12E
EBIT margin %	-	<-500	<-500	-158.1	-12.3
ROIC (EBIT) %	-	>500	<-500	(227.4)	(35.4)
EV/EBITDA (core) x	-	-	-4.0	-4.0	14.0
PE (UBS) x	-	-	NM	NM	NM
Net dividend yield %	-	-	0.0	0.0	0.0

Source: Company accounts, Thomson Reuters, UBS estimates. (UBS) valuations are stated before goodwill-related charges and other adjustments for abnormal and economic items at the analysts' judgement.
Valuations: based on an average share price that year, (E): based on a share price of US$6.89 on 20 Dec 2010 16:42 EST

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Global Equity Research

Americas

Biotechnology

12-month rating	Buy *Prior: Not Rated*
12m price target	US$12.00
Price	US$6.89

RIC: GNOM.O BBG: GNOM US

21 December 2010

Trading data

52-wk range	US$8.03-6.85
Market cap.	US$0.18bn
Shares o/s	25.8m (COM)
Free float	3%
Avg. daily volume ('000)	211
Avg. daily value (m)	US$1.6

Balance sheet data 12/10E

Shareholders' equity	US$0.07bn
P/BV (UBS)	2.4x
Net Cash (debt)	US$0.06bn

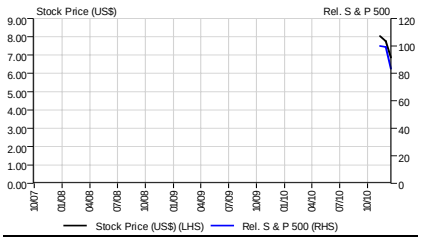
Forecast returns

Forecast price appreciation	+74.2%
Forecast dividend yield	0.0%
Forecast stock return	+74.2%
Market return assumption	5.6%
Forecast excess return	+68.6%

EPS (UBS, US$)

	12/10E			12/09
	From	To	Cons.	Actual
Q1	-	(2.20)	-	(1.68)
Q2	-	(2.29)	-	(1.68)
Q3	-	(3.71)	-	(1.68)
Q4E	-	(0.62)	-	(1.57)
12/10E	-	(2.06)	-	
12/11E	-	(1.99)	-	

Performance (US$)



Source: UBS

www.ubs.com/investmentresearch

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Investment Thesis

Whole Human Genome Sequencing on Demand

Complete Genomics (ticker GNOM) is a high-technology genomics contract research provider for researchers and clinicians looking to outsource their whole human genome (WHG) sequencing and data analysis projects. Unlike other next generation DNA sequencing (NGS) companies that sell platforms and consumables directly to customers, Complete Genomics has commercialized its proprietary NGS platform via a fee-for-service model. The company is further differentiated from its peers because it is focused solely on industrialized whole human genome re-sequencing. Because of this specialization and that fact that Complete Genomics is not beholden to other vendors, they are in a better position today to offer a lower cost per sample than most other in-house sequencing operations or service providers. In our view, Complete Genomics looks well positioned in what we believe will be a rapidly growing niche of the genetic analysis market, and thus offers investors a new way to participate in the NGS and genomics revolution.

As DNA sequencing costs have plummeted, demand for whole human genome analysis has skyrocketed. Indeed, since the first human genome was published in 2000 up until April 2010, it was estimated that ~200 whole human genomes had been sequenced. By comparison, Complete Genomics sequenced over 300 in its second quarter of commercial activity and has a growing backlog of over 800 genomes at the end of September. Moreover, third party estimates see the number of whole human genomes sequenced increasing from ~2,700 at the end of 2010 to ~30,000 by the end of 2011. We see the market for whole human genome sequencing growing from ~$50 million today to $800-900 million by 2015, and if the company executes, then we believe it can capture share.

Complete Genomics success hinges on sample volume growth outpacing anticipated price erosion. In our view, if Complete Genomics builds it, they will come, although the rate of market development is difficult to predict. In addition, while Complete Genomics' technology is competitive and has room for advancement, the rate of NGS platform development has far exceeded most expectations, and so it is difficult to predict what will evolve and if the company can keep pace. That said, should the cost of sequencing fall low enough that platforms becomes less of a differentiating factor, given the IT infrastructure and data analysis demands of WHG sequencing, we believe there will still be a market for genomics contract research, especially for clinical applications (e.g., cancer pathology). Indeed, the attractiveness of the market has lured a number of new entities to begin offering outsourced genomic services. However if these players price their services well below Complete Genomics, it could be difficult for the company to either win new business or reach profitability.

Despite these concerns, we believe that Complete Genomics current valuation of ~1.4x 2012E EV/Sales ~1.9x Price/Sales, which is at a discount to its NGS peers, represents an attractive entry point for a company at the verge of a high growth opportunity. As such, we establish a $12 price target and rate GNOM shares at Buy, but note that this is a speculative investment that may be better suited for investors with a high tolerance for risk as part of a well diversified portfolio

Key Positives

Proprietary Technology Platform with a Scale and Cost Advantage

Complete Genomics' next generation DNA sequencing (NGS) platform consists of a proprietary short-read sequencing instrument, off the shelf sequencing reagents, a high throughput process infrastructure, and custom data analysis technology. Unlike most other next NGS companies that sell instruments and consumables directly to customers, Complete Genomics has commercialized its NGS platform via a genomic services model optimized for the industrialized re-sequencing and analysis of whole human genomes. This focus, and the fact that the company is not beholden to other instrument vendors for either technology or software, today gives Complete Genomics a cost advantage relative to most other in-house sequencing operations or NGS service providers.

Complete genomics has commercialized its NGS platform via a genomic services model optimized for the industrialized re-sequencing and analysis of whole human genomes

The Technology Has Been Validated

The company's technology has been validated both internally through peer reviewed publications, and externally by paying customers. The company has had over 35 customers to date, and in its first two quarters of commercial operations sequenced over 450 genomes and generated over $5 million in revenues. Our channel checks, as well as published comments from early access customers, indicate that the Complete Genomics' sequencing data is at least on par with, if not better than, what customers can generate via their in-house operations.

Novel Asset in a High Growth Market

Complete Genomics is a first mover in what we see as an attractive high growth segment of the overall NGS market. As WHG sequencing costs have plummeted, from ~$40,000 in late 2009 to $10,000 at the end of 2010, demand for WHG sequencing has skyrocketed. Indeed, since the first human genome was published in 2000 up until April 2010, it was estimated that ~200 whole human genomes had been sequenced. By comparison, Complete Genomics sequenced over 300 in its second quarter of commercial activity. Moreover, third party estimates see the number of whole human genomes sequenced increasing from ~2,700 at the end of 2010 to ~30,000 by the end of 2011. We see the market for whole human genome sequencing growing from ~$50 million today to $800-900 million by 2015, and if the company executes as forecast, then we believe it can capture share.

We see the market for whole human genome sequencing growing from ~$50 million today to $800-900 million by 2015

That said, Complete Genomics future profitability is contingent on order volumes growing at a pace fast enough to offset anticipated price erosion. The WHG sequencing market appears to be highly elastic and, thus, as prices decline, volumes are likely to rise due to "pent-up" demand from researchers working on cancer research studies, non-cancer disease projects and population studies. Although declining DNA sequencing costs allow for larger volumes to be analyzed, many labs remain constrained by a lack of sequencing capacity given that WHG studies compete with other applications (e.g. exome, transcriptome, and projects on other species). Moreover, labs may also be limited with respect to their IT infrastructure or personnel, concerns which are alleviated by Complete Genomics's business model. As such, we believe that there is sufficient demand to support a WHG outsourcing business model.

Complete Genomics future profitability is contingent on order volumes growing at a pace fast enough to offset anticipated price erosion

Year to date, Complete Genomics has sequenced approximately 455 genomes (365 in Q3) at an average selling price (ASP) per genome of ~$12,500. As of September 30, 2010, the company had a backlog for sequencing over 800 genomes, with ~45% of orders placed in Q3. For 2011, we estimate that the company will sequence 4,800 genomes (+532% y/y) at an ASP per genome of ~$6,900 (-40% y/y), generating $32.4 million in revenues. By 2014, assuming the company executes on its business plan and remains competitive in a rapidly evolving market, we believe that as sequencing costs continue decline, Complete Genomics has the potential to sequence ~140,000 genomes (~208% 3-year CAGR) at an ASP per genome of $1,500 (-40% 3-year CAGR), generating over $200 million in revenues.

Risk Analysis

WHG Sequencing Market May Be Slow To Develop

We remain bullish on the opportunity for NGS, as our forecast for robust growth over the 2010-2015 period underscores our belief that scientists will attempt to sequence just about everything that can be sequenced. That said, despite the enthusiasm we believe the scientific and medical community has for the use of genomics and NGS, we recognize that certain factors—both technological and non-technological—could slow the growth of the overall market. These include funding constraints, "data fatigue" (i.e., the data deluge overwhelms scientists' abilities to translate genomic data into either products or clinically actionable results), bioinformatics challenges, and regulatory concerns. Given that Complete Genomics' business model hinges on volume growth, should the market not develop as quickly as forecast, then results will likely fall short of expectations.

As Competition Intensifies, Pricing Dynamics Could Become Unfavorable

The apparent attractiveness of the WHG sequencing market has lured several new players to offer outsourced genomic services and, if these entities price their services below Complete Genomics, it could be difficult for the company to win business or reach profitability. Specifically, in July 2010, Illumina announced the creation of the Illumina Genome Network, a partnership program designed to enable large scale human whole genome sequencing projects for researchers. To date, the company has not announced any major deals between research groups and a partner, but Illumina has been actively engaging potential customers and we expect to see order related news flow in the near future. Another player in the WHG sequencing outsourced market is the BGI (formerly the Beijing Genome Institute), a Chinese genomics center with an infrastructure consisting of over 150 NGS instruments from Illumina and Life Technologies. Given BGI's substantial capacity, we expect to the company to compete for outsourced WHG sequencing work, although we would expect a large share of this work focused on non-human studies. However, as noted above, we believe that the WHG market is sufficiently larger to support multiple contenders.

NGS Technology Ramp Likely To Remain Fast & Furious

Predicting what the NGS competitive landscape will look like over the next 3 to 5 years is difficult, since in almost every aspect, the ability of NGS platforms to generate greater amounts of information at a cheaper price has dramatically

exceeded expectations. Although Complete Genomics NGS technology is competitive today and there is a defined roadmap for improving the platform (i.e., lower costs, faster turnaround time, expanded applications, & higher greater accuracy), other players in the field are also working hard to either improve their current NGS systems or introduce new ones, some of which could prove to be disruptive. That said, should the cost of WHG sequencing fall low enough that platforms becomes less of a differentiating factor, given the IT infrastructure and data analysis demands that would still be required, we believe there will continue to be a need for genomics contract research where Complete Genomics can participate.

Research Funding Could Be Volatile

In the near term, we expect that Complete Genomics' revenues will be primarily derived from academic and government researchers as well as biopharmaceutical companies. As such, the company is exposed to changes in R&D funding by both government and commercial entities. In terms of government spending, several measures are being considered to control growing healthcare costs and it is difficult to predict which proposal will be adopted. The outlook for NIH (National Institutes of Health) funding is also difficult to predict, although we continue to assume a scenario where a FY11-12 budgets are frozen at current levels. Additionally, since the recession, biotechnology and pharmaceutical companies have tightly managed their R&D spending. While we expect R&D expenditures to increase over time, the period of retrenching could take longer than expected. That said, given that Complete Genomics provides a cost effective outsourcing option for researchers who might want to pursue WHG sequencing projects but whose budgets are constrained, it is possible that the company could benefit from a constrained capital spending environment.

UBS Estimates

Table 1: Current Revenues and EPS estimates for 2010-2012

	1QA	2QA	3QA	4QE	2010E	2011E	2012E
UBSe EPS	($2.20)	($2.29)	($3.71)	($0.62)	($2.06)	($1.99)	($0.39)
FCe EPS	NM	NM	NM	NM	NM	NM	NM
UBSe Revs ($M)	$0	$1	$4	$3	$9	$32	$93
FCe Revs ($M)	NM	NM	NM	NM	NM	NM	NM

Source: UBS estimates, Company reports, and First Call

Forthcoming Catalysts

- Advances in Genome Biology and Technology (AGBT), on February 2-5, 2011 in Marco Island, Florida
- Scientific publication on Complete Genomics' long-fragment read (LFR) technology, anticipated during 1H11.

Valuation

For valuation, we have analyzed publicly traded early-stage CROs (contract research organizations), diagnostic laboratories, diagnostic and genetic analysis companies. Currently, GNOM shares trade at 1.4x 2012E EV/Sales (Table 2). By way of comparison, CROs trade at approximately 1.8x, laboratories trade at 1.4x, diagnostic companies trade 3.6x and genetic analysis trade at 4.6x (with Illumina at 6x). As a whole, the selected Life Sciences companies in Table 2 trade at 2.9x 2012E EV/Sales.

We arrive at our 12-month price target of $12 through a discounted cash flow analysis using the proprietary UBS VCAM model (Table 3). Given that the company has undergone commercial and proof of concept validation, we find it appropriate to use a 15% discount rate. A VCAM sensitivity analysis is shown in Chart 1. Our $12 price target implies a ~3x multiple on 2012E EV/Sales.

Table 2: Comp Sheet for the Complete Genomics

			Price	Mkt Cap	EV	Price/Sales			EV/Sales		
Company	**Ticker**	**Rating**	**12/20/2010**	**($M)**	**($M)**	**CY2010E**	**CY2011E**	**CY2012E**	**CY2010E**	**CY2011E**	**CY2012E**
Quest Diagnostics	DGX	Neutral	$54.46	$9,278	$12,076	1.3	1.2	1.2	1.6	1.6	1.6
Labcorp	LH	Neutral	$88.21	$8,971	$10,220	1.8	1.6	1.6	2.1	1.9	1.8
Bio-Reference Labs	BRLI	Buy	$21.48	$598	$622	1.1	1.0	0.8	1.2	1.0	0.9
Covance	CVD	Neutral	$51.54	$3,340	$2,951	1.7	1.6	1.5	1.5	1.4	1.4
Charles River	CRL	Neutral	$35.28	$2,036	$2,603	1.8	1.8	1.7	2.3	2.3	2.2
Life Technologies	LIFE	Buy	$55.23	$10,267	$12,002	2.9	2.7	2.5	3.3	3.2	3.0
Myriad Genetics	MYGN	Neutral	$64.57	$2,111	$1,683	7.2	5.2	4.7	5.7	4.1	3.7
Qiagen	QGEN	Neutral	$55.23	$4,517	$4,531	4.1	3.7	3.4	4.1	3.7	3.4
Illumina	ILMN	Buy	$64.57	$8,074	$7,657	9.1	7.5	6.5	8.6	7.1	6.1
Pacific Biosciences	PACB	Not rated	$15.02	$793	$684	NA	NA	5.4	NA	NA	4.6
MEAN						**3.4**	**2.9**	**2.9**	**3.4**	**2.9**	**2.9**
MEDIAN						**1.8**	**1.8**	**1.7**	**2.3**	**2.3**	**2.6**
Complete Genomics	**GNOM**	**Buy**	**$6.89**	**$178**	**$128**	**20.4**	**5.5**	**1.9**	**14.7**	**3.9**	**1.4**

Note: consensus estimates used for Not Rated companies

Source: FactSet and UBS estimates

Table 3: UBS-VCAM Inputs and Valuation for Complete Genomics [GNOM.O]

Key Inputs	Years: 1-5*	<=6*	10E	15E	25E	CAGR**
Sales Growth	218.3%	25.0%	20.0%	10.0%	5.0%	24.9%
Gross Margin	54.9%	65.0%	67.0%	68.0%	69.0%	NM
SG&A & Other as % of Sales	72.8%	50.0%	40.0%	35.0%	30.0%	11.9%
EBIT Margin	-17.9%	15.0%	27.0%	33.0%	39.0%	NM
Tax Rate	-5.2%	20.0%	35.0%	35.0%	35.0%	NM
Depr. & Non-GWA % Sales	19.9%	13.0%	12.0%	10.0%	8.0%	13.1%
Capex as % of Sales	27.0%	16.0%	12.0%	10.0%	8.0%	8.5%
Acquisitions as % of Sales	0.0%	0.0%	0.0%	0.0%	0.0%	NM

Other Inputs	Years:	<=6*	10E	15E	25E	CAGR**
EBIT / Interest Expense [x]		440.6x	440.6x	440.6x	440.6x	NM
Rent Expense as % of Sales		0.0%	0.0%	0.0%	0.0%	NM
R&D Expense as % of Sales		20.0%	15.0%	12.0%	10.0%	NM
+/- Earn. Quality Adj. as % of Sales		0.0%	0.0%	0.0%	0.0%	NM
+/- Oth. UNFCF Adj. as % of Sales		0.0%	0.0%	0.0%	0.0%	NM
Deferred Taxes as % of Taxes		0.0%	0.0%	0.0%	0.0%	NM
Days Costs in Inventory		30.0	30.0	30.0	30.0	NM
Days Sales in A/R		92.0	92.0	92.0	92.0	NM
Days Costs Payable		50.0	50.0	50.0	50.0	NM

Present Value (per share)	US$ 10.56
1-Year Target (per share)	US$ 12.15

Weighted Average Cost of Capital (WACC) = 15.03%

Cost of Debt = Risk Free (US$) + Spread = 3.54% + 1.50% = 5.04%

Estimated marginal tax rate (T) = 15.0%

Cost of Equity = Risk Free Rate + Levered Beta x ERP

Equity Risk Premium ("ERP") = Global ERP + Country premium

ERP = 4.00% - 0.50% = 3.50%

Levered Beta = Group Asset Beta x Co. Beta Mult. x [1+(1-T) x (net D/E)]

Levered Beta = 0.94 x 3.61 x [1 + (1 - 15.0%) x -4.0%] = 3.28

Cost of Equity = COE = 3.54% + (3.28 x 3.50%) = 15.03%

WACC = [E / TC x COE] + [L / TC x COL] + [D / TC x COD x (1 - T)]

WACC = [100.0% x 15.03%] + [0% x NM]

+ [0.0% x 5.04% x (1 - 15.0%)] = 15.03%

Value Creation Horizon (VCH)

Industry VCH (Life Sciences Tools & Services)	25 years
+/- Company VCH Adjustment:	0 years
= Company VCH (10-25 years):	25 years

Year	PV Factor [WACC=15.03%]	UNFCF [US$ k]	PV[UNFCF] [US$ k]	NOPAT [US$ k]
2010E	0.996	(69,994)	(69,699)	(51,222)
2011E	0.866	(58,895)	(50,986)	(51,289)
2012E	0.753	(26,983)	(20,308)	(11,383)
2013E	0.654	(12,300)	(8,048)	4,979
2014E	0.569	(6,437)	(3,662)	17,823
2015E	0.495	(31,560)	(15,608)	30,555
2016E	0.430	(2,979)	(1,281)	43,247
2017E	0.374	2,180	815	58,768
2018E	0.325	8,917	2,898	77,223
2019E	0.283	17,317	4,892	98,565
2020E	0.246	34,290	8,422	121,476
2021E	0.214	47,816	10,210	146,908
2022E	0.186	64,942	12,056	174,311
2023E	0.161	85,945	13,870	202,884
2024E	0.140	110,874	15,556	231,594
2025E	0.122	150,209	18,322	258,207
2026E	0.106	170,636	18,095	286,471
2027E	0.092	192,917	17,786	316,274
2028E	0.080	217,059	17,397	347,465
2029E	0.070	243,041	16,935	379,856
2030E	0.061	270,811	16,405	413,220
2031E	0.053	300,277	15,814	447,294
2032E	0.046	331,312	15,169	481,779
2033E	0.040	363,746	14,479	516,345
2034E	0.035	397,369	13,751	550,633
2035E	0.030	431,931	12,995	584,264

Enterprise and Equity Valuation

Item	Value [US$ k]	Notes
Sum of PV[UNFCF], yrs 1-24	63,283	[see table at left]
Mid-year adjustment	67,598	[= -69,699 x 97.0%; est. FCF ytd FY2010E]
NOPAT (year 25)	584,264	[see table at left]
NOPAT Perpetuity (year 25)	3,888,600	[= 584,264 / 15.03%]
PV[NOPAT Perpetuity (year 25)]	134,568	[= 3,888,600 x 0.035]
Value of operating assets	265,449	[= 63,283 + 67,598 + 134,568]
Value of peripheral assets	366	[estimated as of 20 Dec 2010]
Value of other assets/(liabilities)	0	[estimated as of 20 Dec 2010]
Value of non-operating assets	366	[= 366 + 0]
ADJUSTED ENTERPRISE VALUE	265,815	[= 265,449 + 366]
Short term debt (book value)	4,364	[estimated as of 20 Dec 2010]
Long term debt (book value)	0	[estimated as of 20 Dec 2010]
Perferred stock (book value)	0	[estimated as of 20 Dec 2010]
Book value of debt & debt equivs.	4,364	[= 4,364 + 0 + 0]
Mkt. value/seasonal debt adjustment	46,926	[estimated as of 20 Dec 2010]
Notional debt capitalized oper. leases	0	[no operating lease capitalization]
Value of minority interest	0	[estimated as of 20 Dec 2010]
CLAIMS ABOVE EQUITY	51,291	[= 4,364 + 46,926 + 0 + 0]
Total cash & equivalents	58,290	[estimated as of 20 Dec 2010]
Required cash & equivalents	253	[= 623 (FY2009 sales) x 3.0%, (max. 58,290)]
Surplus cash & equivalents	58,037	[= 58,290 - 253]
EQUITY VALUE	272,561	[= 265,815 - 51,291 + 58,037, (min. 0)]
Fully dil. shares outstanding [k]	25,810	[estimated as of 20 Dec 2010]
EQUITY VALUE per share [US$]	10.56	[= 272,561 / 25,810]

1-Year Price Target Calculation

Cost of equity	15.03%	[see COE calculation above]
Dividend yield	0.00%	[expected]
Implied 1-yr price target / sh. [US$]	12.15	[= 10.56 x (1 + 15.03% - 0.00%)]

Notes

All figures are in US$ k, unless noted otherwise.

* "Yrs. <=6" figure used if yr 1-5 not available, yr 1-5 shown are averages.

** CAGRs = Compound annual growth rate, 2010E to VCH (2035E)

WACC Section Abbreviations

TC = total capital, T = marginal tax rate, NM = Not Meaningful

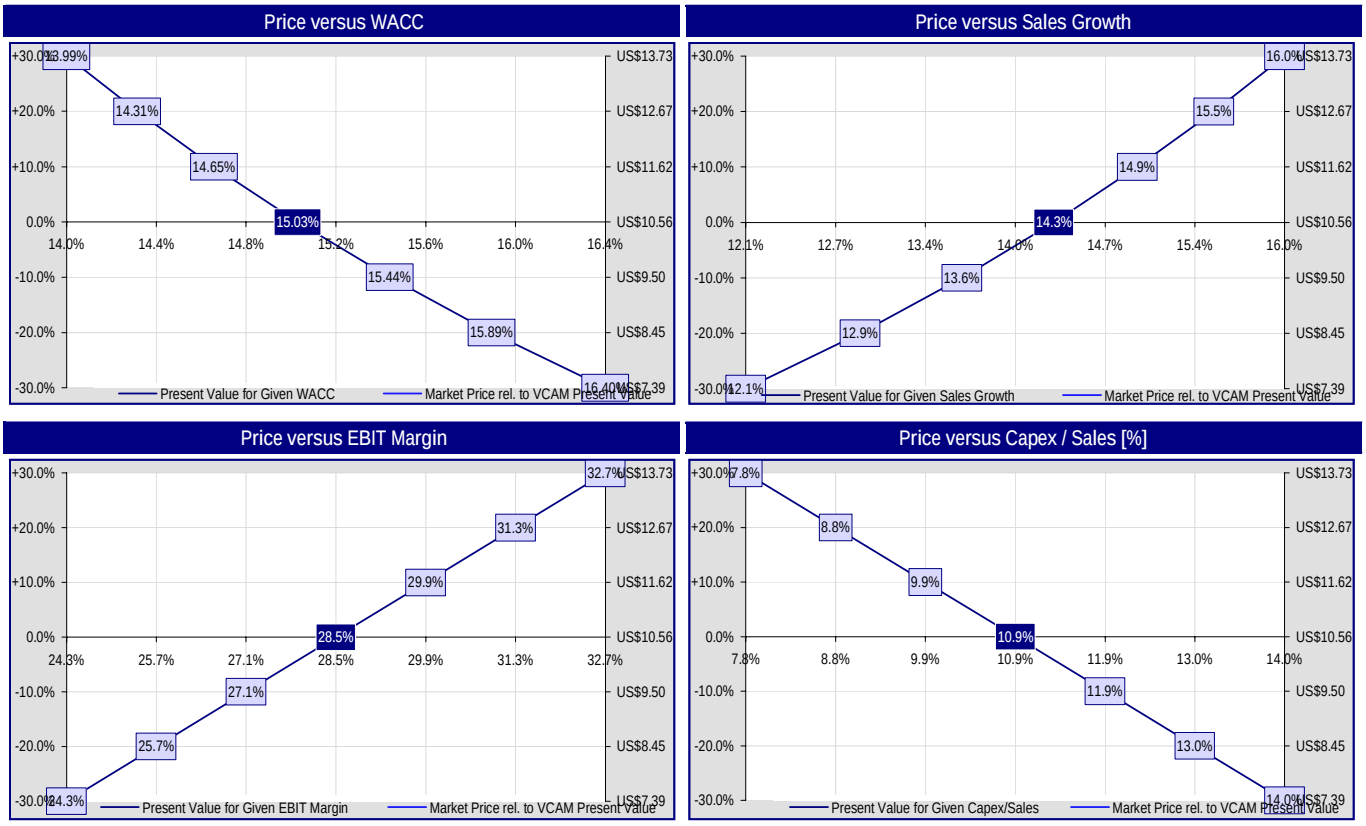
E = market equity value, COE = cost of equity

D = market value of debt, COD = cost of debt

L = capitalize value of operating leases, COL = cost of leases

Source: UBS-VCAM

Chart 1: UBS-VCAM Sensitivities for Complete Genomics [GNOM.O]



Notes: Sensitivities are derived from assuming Sales Growth, EBIT Margin, or Capex / Sales is flat annually for years 6 through the VCH (year 25).
Explicit estimates in years 1 through 5 do not vary, and always represent the assumptions on the Inputs Page.
For each chart, one parameter is varied while the others are held constant. Those held constant are set as they appear on the Inputs Page.

Source: UBS-VCAM

Ownership

Table 4: Top 10 Holders of GNOM shares as of 12/20/10

Rank	Shareholder	Position
1	Orbimed Advisors	4,156,270
2	Essex Woodlands Health Ventures	4,156,269
3	Prospect Venture Partners	2,449,353
4	Enterprise Partners	2,284,463
5	OVP Venture Partners	2,173,344
6	Highland Capital Management	2,119,171
7	Locked Shares	1,536,859
8	Drmanac, Radje	441,999
9	Reid, Clifford	319,200
10	Curson, John	116,999
Insider/Stake Ownership (%)		3.6%

Source: Bloomberg

Management

Clifford Reid, PhD—President and CEO

Dr. Clifford A. Reid is Complete Genomics' co-founder and Chairman and has served as President, Chief Executive Officer and member of the board of directors since July 2005. Prior to these positions at Complete Genomics, from March 2003 to September 2005, Dr. Reid was Vice President of Collaborative Solutions at Open Text Corporation, a software company. In 1995, Dr. Reid co-founded Eloquent Inc., a digital video communications company, and served as its CEO until 1999 and as its Chairman until 2003, when the company was acquired by Open Text. In 1988, Dr. Reid cofounded Verity, Inc, an enterprise text search engine company, and served as its VP of Engineering from 1988 to 1992 and as its Executive VP from 1992 to 1993. Dr. Reid received a BS in Physics from the Massachusetts Institute of Technology, an MBA from Harvard University and a Ph.D. in Management Science and Engineering from Stanford.

Ajay Bansal---CFO

Ajay Bansal has served as Complete Genomics' Chief Financial Officer since May 2010. From June 2009 to January 2010, Mr. Bansal served as CFO and Executive Vice President of Business Development at Lexicon Pharmaceuticals, Inc, a biopharmaceutical company. Prior to Complete Genomics, from December 2007 to October 2008, Mr. Bansal served as CFO and Executive VP of Finance of Tercica, Inc, a biopharmaceutical company acquired by the Ipsen Group in October 2008. Mr. Bansal also served as CFO and Senior VP of Finance of Tercica from March 2006 until December 2007. From February 2003 to January 2006, Mr. Bansal served as VP of Finance and Administration and CFO of Nektar Therapeutics, a biopharmaceutical company. From July 2002 to February 2003, Mr. Bansal served as Director of Operations Analysis at Capital One Financial, a bank holding company. From August 1998 to June 2002, Mr. Bansal was at Mehta Partners LLC, a financial advisory firm, where he was named partner in January 2000. Prior to joining Mehta Partners, Mr. Bansal served for over 10 years in management roles at Novartis, a pharmaceuticals company, and in consulting at Arthur D. Little, Inc., McKinsey & Company, Inc. and ZS Associates. Mr. Bansal received a BS in Mechanical Engineering from the Indian Institute of Technology (Delhi) and an MS in Operations Management and an MBA. from Northwestern University.

Radoje Drmanac, PhD---Chief Scientific Advisor

Dr. Radoje Drmanac is co-founder of Complete Genomics and has served as the company's Chief Scientific Officer since July 2005. In 2001, Dr. Drmanac co-founded Callida Genomics, Inc, a DNA sequencing company, and served as Callida's Chief Scientific Officer from 2001 to 2004 and as President since 2004. In 1994, Dr. Drmanac co-founded Hyseq, Inc. a DNA array technology company that became Hyseq Pharmaceuticals, Inc. and later merged with Variagenics, Inc. to become Nuvelo, Inc., and served as its Senior Vice President of Research from 1994 to 1998 and as its Chief Scientific Officer from 1998 to 2001. Previously, Dr. Drmanac served as a group leader at Argonne National Laboratory. Dr. Drmanac received a BS, MS and PhD in Molecular Biology from the University of Belgrade.

Bruce Martin---Senior VP of Product Development

Bruce Martin has served as Complete Genomics' Senior Vice President of Product Development since March 2010. Previously, Mr. Marti served as the company's VP of Product Development from May 2007 to March 2010. From 2005 to May 2007, Mr. Martin served as VP of Product Strategy at PSS Systems, Inc, an internet software company. From 2002 to 2003, Mr. Martin served as Chief Technical Officer of Openwave Systems Inc, a software company. Mr. Martin received a BS in Computer Science and Electrical Engineering from the University of California, Davis.

Mark Sutherland---Senior VP of Business Development

Mark J. Sutherland has served as Complete Genomics' Senior Vice President of Business Development since March 2010. Prior to that, from October 2008 to November 2009, Mr. Sutherland served as Senior VP of Business Development at GenVault Corporation, a DNA storage company. From November 2005 to September 2007, Mr. Sutherland served as Chief Business Officer for Flashpoint Technology, Inc, a digital content management company. Since August 1988, Mr. Sutherland served for 17 years in various roles at Molecular Dynamics, a manufacturer of molecular biology and genetic engineering equipment, and its successor companies, Amersham Biosciences and GE Healthcare. Mr. Sutherland served as VP of Genomics at Amersham from 1998 to 2001 and as VP, Strategic Alliances, at Amersham and for the Discovery Systems business of GE Healthcare from 2001 to 2005. Mr. Sutherland received a BS in Chemistry with Honors from Stanford University.

Environmental, Social, & Governance Issues

We believe each of the life sciences tools and diagnostics companies make concerted efforts to minimize the environmental impact of their operations. We believe that Complete Genomics makes a reasonable disclosure regarding corporate governance guidelines, committee charters, a code of ethics, and the company's bylaws. Management remains committed to maintaining the integrity of the company's internal controls over financial reporting and all other aspects of disclosure controls under the Sarbanes-Oxley Act, 2002.

Complete Genomics' services are intended to facilitate large-scale human genome studies for a wide variety of scientific applications. In the past, genetic testing has raised ethical, legal and social issues regarding privacy and the appropriate uses of the resulting information. In most cases, the company does not know the identity of the individuals whose DNA is sequenced, the reason why their DNA is being sequenced or intended use. We expect the company to adapt and comply with any future changes to regulation of genetic testing.

Complete Genomics also works with materials, including chemicals, biological agents and compounds and DNA samples that could be hazardous to human health and safety or the environment. The company's operations also produce hazardous and biological waste products. Complete Genomics has been compliant with federal, state and local laws and regulations that govern the use, generation, manufacture, storage, handling and disposal of these materials and wastes. We expect the company to remain compliant with present and future regulatory changes.

Company Description

Complete Genomics is a next generation genetic analysis company offering whole human genome DNA re-sequencing and data analysis services.

Established in 2006 and headquartered in Mountain View, CA, Complete Genomics Inc. (Ticker: GNOM), is a next generation genetic analysis company offering whole human genome (WHG) DNA re-sequencing and data analysis services. Unlike other next generation DNA sequencing (NGS) companies that sell instrument platforms and consumables directly to customers, Complete Genomics has commercialized its novel NGS instrument platform via an end-to-end genomic services model. As such, the company is essentially a high-technology genomics contract research provider for researchers looking to outsource their whole human genome re-sequencing work. The company is further differentiated from its peers because it is focused solely on the industrialized deep re-sequencing and analysis of whole human genomes.

Complete Genomics' Analysis Platform, consisting of a proprietary NGS instrument, sophisticated bioinformatics and data management software, currently provides customers, including academic, government and biopharmaceutical researchers, with high-quality "research ready" whole human genomic data at an economical price point in 90-120 days, thus limiting or eliminating the need for in-house sequencing instruments, supporting IT infrastructure and specialized personnel. Indeed, because Complete Genomics is not beholden to other equipment or reagent vendors, the company theoretically has a cost advantage and can offer a significantly lower fully loaded cost per sample than most other in-house sequencing operations or NGS service providers.

From inception until mid-2009, Complete Genomics initially focused on developing and validating its proprietary sequencing technology. In late 2009, the company recognized its first revenues from early access customers and commenced full commercial operations in mid-2010. To date Complete Genomics has had over 35 customers, and the company, along with their collaborators, have published a number of peer reviewed publications in high profile scientific journals validating both the technology and the quality of the data, which is reported to be at a level of 99.999% accuracy. As of September 30, 2010, the company had a backlog of orders for sequencing over 800 genomes.

Technology Overview

Complete Genomics offers customers research-ready WHG data without the requirement of investing in instruments, associated IT infrastructure, and labour

Complete Genomics has developed and commercialized an end-to-end outsourced service model for large-scale human DNA sequencing and analysis through its proprietary human genome sequencing platform, consisting of a novel sequencing technology, off the shelf sequencing reagents, high throughput process infrastructure and data analysis technology, which we review below. Broadly speaking, Complete Genomics' platform relies on combining several established molecular biology techniques along with some novel steps to sequence large quantities of DNA fragments that are approximately 70 nucleotide bases long. Moreover, the company's platform for the most part uses readily-available, inexpensive reagents at low volumes, which today allows Complete Genomics to sequence an entire human genome today for an "all in" price of around $10,000. Within the next 3 years the total sequencing cost is

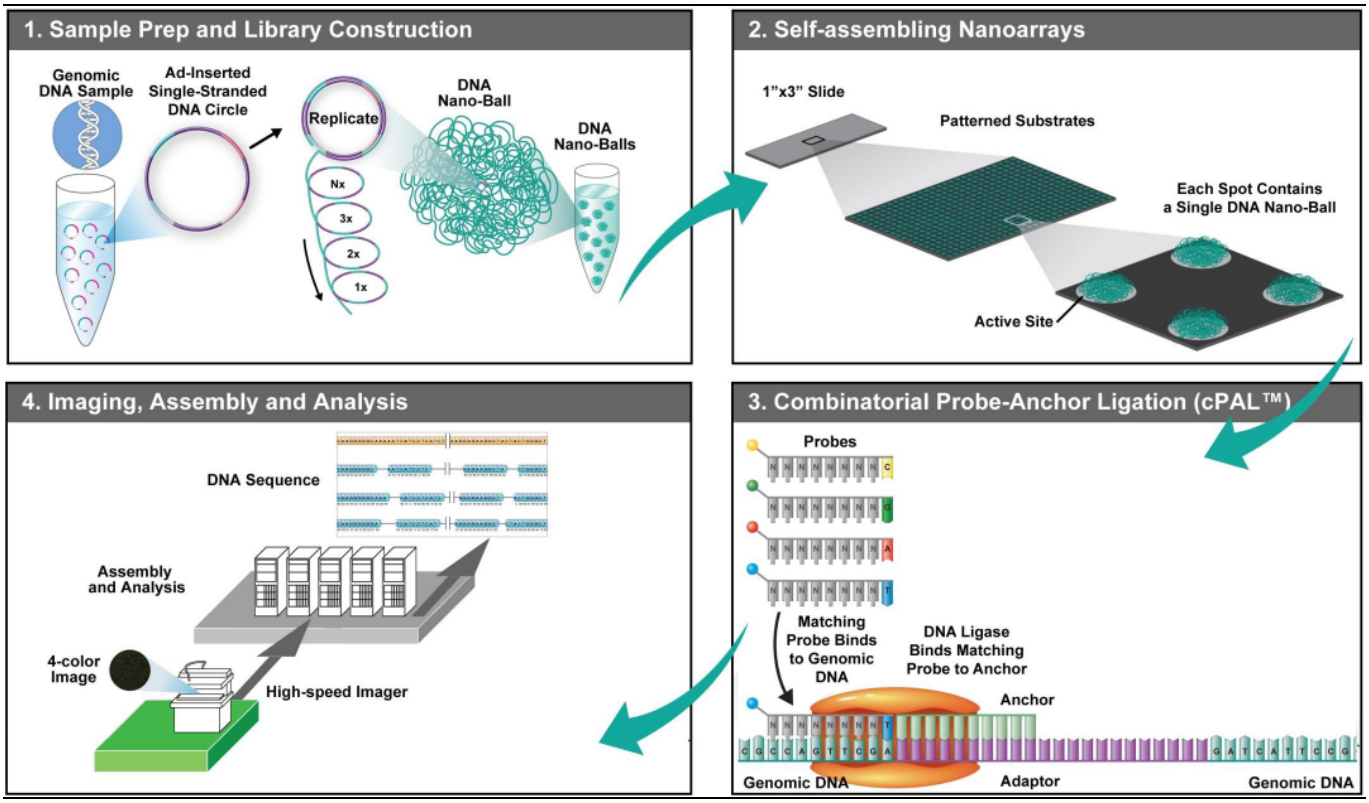
expected to fall to under $2,000 per whole human genome and drive accelerating demand. In turn, Complete Genomics offers its customers research-ready human genomic data at an economical price and compelling data turn-around time without the requirement of investing in instruments, associated IT infrastructure, and labour.

Complete Genomics' Sequencing Platform

Similar to other "short read" next generation DNA sequencing platforms, Complete Genomics' basic workflow involves genomic library construction, followed by a DNA fragment amplification step, and finally a modified sequencing by ligation (SBL) protocol, which employs a novel high density DNA nanoball (DNB) array format and the use of combinatorial probe-anchor ligation (cPAL) reads (Chart 2). In addition, unlike its NGS peers, both Complete Genomics' technology platform and workflow have been optimized for sequencing entire human genomes.

Complete Genomics' basic workflow involves genomic library construction, followed by a DNA fragment amplification step, and a modified SBL protocol

Chart 2: Overview of Complete Genomics Sequencing Technology



Source: Complete Genomics

After Complete Genomics obtains a human genome sample from a customer, a paired-end genomic fragment library, consisting of short stretches of target human genomic DNA linked together with known synthetic DNA adaptor sequences, is constructed. Specifically, isolated genomic DNA is fragmented using ultrasound into smaller pieces that are roughly 500 bases in size (note that a human genome is approximately 3 billion bases) and then ligated (i.e., attached) onto an adaptor DNA sequence fragment. This construct is then amplified through PCR and finally "circularized" by joining the ends of the PCR products. However, given that Complete Genomics' sequencer can only read DNA a short distance from adaptor sites, the company inserts additional

adaptors within the unknown genomic DNA at regular intervals, typically 4 adaptors per DNA fragment (using various DNA restriction enzymes to open the circle), that when combined support ~70-base reads (35 bases per paired-end). Note that read length may be increased by inserting additional adaptors. Ultimately, these adaptors serve as starting sequencing points for reading up to 10 bases from each adaptor-genomic DNA junction.

Before sequencing may commence, it is necessary to amplify or create multiple copies of the multi-adaptor library construct in order to achieve an optimal signal-to-noise ratio (fewer construct copies means less signal and the potential for errors in reading the unknown DNA). Unlike other DNA amplification techniques typically used in NGS protocols that involve performing clonal DNA amplification in emulsions (454/Roch & Life Technologies) or on solid surfaces (Illumina), Complete Genomics' conducts DNA amplification in solution and in a single reaction chamber, thus conserving reagent use and increasing sample density. Traditional amplification approaches are also not implemented since the multi-adaptor library construct is circular versus linear, which calls for the use of a "special" DNA polymerase capable of replicating or making several copies of the circular DNA linked together as a single molecule of connected nucleotides in a process termed "rolling circle replication." This technique gives rise to amplified DNA clusters referred to as DNA nanoballs (DNBs) that can be read with standard fluorescent chemistry and imagers assembled from commercial components. On average, the DNBs are roughly 200-300 nanometers in diameter and contain hundreds of copies (200+) of the 70 base nucleotide sequences.

The resulting DNBs are packed onto 1" x 3" silicon flow cell chips engraved with grid patterns of "small spots" using standard photolithography processes that are designed to capture and hold one DNB per spot. The small spots are roughly 300 nanometers in diameter, with 700 nanometers space between each spot, resulting in ~2.8 billion total spots per silicon chip. Each DNB array (silicon chip filled with DNBs) contains up to 180 billion bases of genomic DNA ready for sequencing and imaging. An advantage of this high-density DNB array is that there are more DNA copies per sq. nanometer versus traditional DNA arrays, thus reducing the quantity of sequencing reagents needed and improving the imaging field. Going forward, the company may reduce the grid size to 250 nanometers (from 700 nanometers), thereby decreasing the diameter of the sticky spots and DNA nanoballs. A benefit of this modification is an increase of the array DNA density by a factor of 8, which translates to a decrease in reagent costs by the same magnitude.

In order to read the sequence of nucleotides in each DNB, Complete Genomics developed a proprietary ligation-based DNA sequencing method termed cPAL (combinatorial Probe-Anchor Ligation). This approach is similar to "sequencing by ligation" (used by Life Technologie's SOLiD platform) in that it uses the enzyme T4 DNA ligase to differentiate between the various nucleotides (A,C,T,G) and attach distinct fluorescent tags (different color per base), which are eventually imaged using a specialized camera. Also, the use of DNA ligase results in high-accuracy since each nucleotide is read multiple times, yielding an error rate of roughly 1 in 100,000 (or 99.999% accuracy). As previously discussed, the company's cPAL technology can read up to 10 adjacent bases in a

DNA fragment from each end of an adaptor, for a total of 70 bases from each fragment. Because of the short-read lengths, to ensure that a genome has been adequately covered, Complete Genomics sequences each sample 40 times (e.g., 40 fold coverage). Note that the DNA sequencing field considers a genome "fully" sequenced when at least 90% of the bases have been accounted for, as the many repetitive sequences scattered throughout the genome make it difficult to achieve 100%. As discussed later, the use of longer read lengths is one way to increase genomic coverage.

To deal with this deluge of resulting data, Complete Genomics has developed proprietary sequence assembly software to reconstruct over 90% of a whole human genome from the ~2 billion 70-base reads generated from the company's DNB/cPAL technology. After the genomic data is assembled, Complete Genomics uses its analysis software to identify key differences or variants in each genome, including single nucleotide polymorphisms (SNPs) and small insertions/deletions. Most recently, the company enhanced its data analysis software to include copy number variation (CNV) results and structural variation (SV) results as part of its genome analysis report. The company also offers open source analytical tools, which allow customers to perform their own data analysis. In the near future, the company is working on enhancing its analytical tools to include oncology analysis (comparison of cancer genome vs. normal), family analysis (comparison of parental genome vs. child) and large-scale analysis (comparison of hundreds of genomes sequenced in a large-scale study). The completed genomic data is delivered to customers through a cloud-based data system operated by Amazon Web Services (AWS).

Platform Validation

Proof-of-concept was demonstrated via a *Science* January 2010 publication

Complete Genomics demonstrated proof-of-concept for its technology platform via a *Science* January 2010 publication, in which the company sequenced 3 human genomes for an average total reagent cost of approximately $4,400 (although a cost of $1,800 was reported for one run) The research team also generated 45-87 fold coverage per genome on average and identified 3.2 to 4.5 million sequence variants per genome. Additionally, validation of one genome data set demonstrated high-quality reads given a sequencing accuracy of roughly 1 false variant per 100 kilobases.

Complete Genomics has a base of over 35 customers

As summarized in Table 5, the company has a base of over 35 customers, consisting of academic researchers (48% of orders and pipeline), government labs (30%), biopharmaceutical clients (12%), and not-for-profit labs (10%). Year-to-date, Complete Genomics has sequenced over 450 complete human genomes, with more than 300 during 3Q10.

Table 5: Selected Complete Genomics' Customers (as of 3Q10)

Academic Medical Center Univ of Amsterdam	Flanders Institute for Biotechnology	Ontario Institute for Cancer Research
Brigham & Women's Hospital	Genentech, Inc.	Pfizer Inc.
Broad Institute of MIT and Harvard	HudsonAlpha Institute for Biotechnology	SAIC-Frederick, Inc., National Cancer Institute
Children's Hospital of Philadelphia	Institute of Cancer Research United Kingdom	University of North Carolina
Eli Lilly and Company	Institute of Molecular Medicine at the University of Texas Health Science Center at Houston	University of Texas Southwestern Medical Center
Erasmus Medical Centre in Rotterdam, the Netherlands	Institute for Systems Biology	

Source: Company reports

Here we summarize several projects that are either completed or in process at Complete Genomics:

- **Pediatric Cancer Study with the National Cancer Institute (NCI):** This project was awarded by SAIC-Frederick Inc (the prime contractor for the NCI's R&D facility in Frederick, Maryland) and involves sequencing 100 whole human genomes (50 normal/50 tumor) over a 6-month period to potentially identify genetic patterns that give rise to cancerous tumors. Results from this study may ultimately lead to the development of diagnostic tests and medical treatments for pediatric cancers. Of note, this project is part of NCI's Therapeutically Applicable Research to Generate Effective Treatments (TARGET), which aims to use genomic technologies to discover therapeutic targets in pediatric cancers (acute lymphoblastic leukemia, acute myeloid leukemia, neuroblastoma, osteosarcoma and Wilms tumor) in order to generate more effective treatments. As such, Complete Genomics' contract with SAIC-Frederick has an option for the contractor to award an additional sequencing order of 1,128 whole human genomes (564 normal/ 564 cancer) over an additional 18-month period (~63 genomes per month).

- **Miller Syndrome Study with the Institute for Systems Biology (ISB):** This project with the ISB involved sequencing and analyzing the whole genome sequences of a family of 4, consisting of 2 healthy parents and their 2 children suffering from two recessive genetic disorders, Miller syndrome and primary ciliary dyskinesia). Results of the study allowed researchers to identify the causative gene for Miller Syndrome and confirm the genetic makeup of primary ciliary dyskinesia. Findings were also published in *Science* in March 2010 and led to a follow-on project award with the ISB to sequence 122 whole human genomes.

- **Non-Small Cell Lung (NSCL) Cancer Study with Genentech/Roche:** This project with Genentech/Roche involved conducting comparative whole human genome sequencing analysis on a primary NSCL tumor (60x coverage) and adjacent normal tissue (46x coverage) from the lung of a single long-term smoker. Given that this was the first whole human genome sequence of a primary NSCL tumor and matched normal tissue, the data led to the identification of several novel mutations and confirmation of previously known mutations (KRAS and G12C). Additionally, Genentech

was able to measure the rate of smoking-induced mutations (1 mutation per 3 cigarettes). Findings from this study were published in *Nature* in May 2010.

- **Hypercholesterolemia study with University of Texas Southwestern Medical Center (UTSW):** This project with UTSW consisted of conducting a whole human genome sequence of an 11 month old with xanthomas (cholesterol-rich deposits) and high blood cholesterol levels (1023 mg/dl). The infant's parents had normal cholesterol and no known family history of hypercholesterolemia, suggesting an autosomal recessive disorder or a *de novo* mutation. Findings from the study revealed that the infant had a mutation in the *ABCG5* gene, which led to the definite diagnosis of sitosterolemia (a rare, autosomal recessive disease), even though the subject had atypical symptoms (i.e. normal plasma sitosterol to cholesterol ratio).

NGS Platform Comparison

Complete Genomics believes that it has a technological advantage over its peers and that the company will continue to maintain this edge going forward. Indeed, the initial specs of the Complete Genomics instrument system look impressive relative to its NGS peers, as it is claimed that the system will do upwards of 180 gigabases (Gbs) per day based on the processing of eighteen 120Gb genomes per 12-day run. A comparison of the Complete Genomics system versus other NGS platforms is shown in Table 6.

Table 6: Performance Metrics for Currently Available NGS Sequencing Platforms

Company	Platform	Biochemisty	Molecule?	Throughput	Length	Accuracy	Cost	Cost / Genome
Illumina	Genome Analyzer II_x	Sequencing by synthesis	No	6-7 Gb/day	2x100 bps	99.9%	$300k	$30,000-40,000
	HiSeq 1000	Sequencing by synthesis	No	12-15 Gb/day	2x100 bps	99.9%	$550k	$10,000-15,000
	HiSeq 2000	Sequencing by synthesis	No	25-30 Gb/day	2 x 100 bps	99.9%	$690k	<$10,000
Life Technologies	SOLiD 5500xl	Sequencing by ligation	No	20-30 Gb/day	75 x 35 bps	99.99%	$595k	<$10,000
	SOLiD 5500	Sequencing by ligation	No	10-15 Gb/day	75 x 35 bps	99.99%	$349k	$10,000-20,000
	PGM (Ion Torrent)	Ion signal Detection	No	100Mb/day	100 bps	99.9%	$49k	?
Roche	GS FLX	Pyrosequencing	No	1 Gb/ day	400 bps	99.5%	$500k	?
	GS Junior	Pyrosequencing	No	70Mb/day	400 bps	99%	$100k	?
Helicos	Heliscope	Sequencing by synthesis	Yes	2-4 Gb/day	35bps	97-99%	$800k	?
Pacific Biosciences	PacBio RS	Sequencing by synthesis	Yes	1-2Gb/day	500 bps	80-85%	$700k	?
Complete Genomics	NA	Sequencing by ligation	No	180 Gb/day	35 x 2 bps	99.999%	N/A	$4,000-10,000

Source: Company websites, UBS estimates

In order to sequence 1 genome at 40x coverage using Complete Genomics' system, ~120Gb of sequence data are required. Thus, based on the platform's current output, the company expects to sequence 1 genome per day per instrument, assuming ~67% system utilization (2/3 of 180GBs is 120GBs). With 18 systems online, Complete Genomics currently has the capacity to sequence over 400 genomes per month. Management expects to further expand its sequencing capacity during 2011 in order to generate between 800-1,200 genomes per month. In the future, in order to meet the anticipated demand the

company plans to build a number of satellite sequencing centers around the world.

Business Strategy

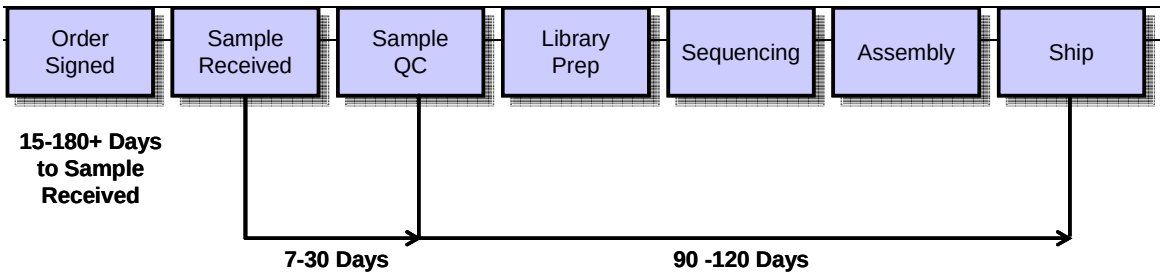
Complete Genomics offers customers an outsourced end-to-end WHG sequencing solution via its state of the art genome center in Mountain View, CA

Complete Genomics' offers customers an outsourced end-to-end whole human genome sequencing solution through its state of the art genome center situated in Mountain View, California. This 67,000 square feet facility began commercial operation in May 2010 and features a high-throughput sample preparation facility, high-throughput sequencing systems and a large-scale data center. The company also leases about 2,200 square feet of data center space in Santa Clara, California. Going forward, the company intends to open additional satellite genome centers domestically and abroad to accommodate future demand.

The overall project turnaround time currently is ~90-120 days, but the company is working to reduce time to results to ~30-60 days

After a project award is signed by a customer, they send their genomic DNA samples to Complete Genomics via common carriers (FedEx or UPS) typically within 15-180 days. Once a genomic sample is received by Complete Genomics, it is evaluated for several pre-defined quality acceptance criteria upon receipt, which usually takes 7-30 days. Samples which meet the acceptance criteria are then prepared for sequencing, loaded on to flow slides and read on the company's sequencing instruments. After the sequencing process is completed, the generated data is analyzed at the company's computing center. Once the genomic data is finalized, it is uploaded to Amazon Web Services (AWS) and made available to customers. The overall project turnaround time currently for Complete Genomics is roughly 90-120 days, but the company is working on increasing its capacity and implementing new capabilities to reduce time to results to approximately 30-60 days.

Chart 3: Complete Genomics' End-to-End WHG Sequencing Solution



Source: Company reports

Technology Roadmap & Product Pipeline

In addition to improving the turnaround time, the company currently has a number of programs in place aimed at enhancing its platform and product offerings. With regards, to platform improvement, Complete Genomics believes that it can realize significant hardware and software performance improvements by 2013 to further reduce sequencing costs. Specifically, the company assumes over 20x improvement in consumables cost (chiefly through changes in DNB array density and cycle time), ~10x improvement in instrument cost, ~5x improvement in computing cost, ~10x improvement in labor costs, and 10x

improvement in overhead costs. After putting all these factors together, management believes that it lead to an overall 10x reduction in overall genome sequencing pricing while maintaining 65-70% gross margins.

Today Complete Genomics' deliverables include 40x average coverage of mapped reads per sample, sequence variant detection on both alleles on at least 90% of the nucleotides in the genome, functional annotation of the genome, and data summary reports along with a full set of supporting data for these results. Going forward, a key part of Complete Genomics' product pipeline is the development of a long fragment read (LFR) technology. LFR technology will not only help to resolve portions of the genome that are difficult to interrogate (due to the presence of either lengthy repeated or duplicated DNA sequences), but it will also help the company to further improve both the accuracy (by 1 to two orders of magnitude) and "completeness" of its deliverable data sets (to ~95%) while still maintaining a low cost. LFR technology will also be important in the analysis of cancer genomes, which are littered with structural variants that are typically less well characterized by short read NGS technologies. Additionally, the LFR approach can also help researchers distinguish between maternal and paternal contributions to the genome (i.e., chromosome haplotyping). While the LFR technology is still being optimized for commercial deployment, the company currently expects a paper on the method to be published during the first half of 2011.

Other planned technology enhancements include complete transcriptome (i.e., RNA) and methlyome sequencing (using bisulfite conversion), which the company plans to have add as options at a future date. Should these programs be successful, we believe that Complete Genomics will be able to command a higher price for its services.

Market Forecast

Sizing the Current & Future NGS Market

We estimate the NGS market in 2010 to be ~$850M

We estimate the next-generation DNA sequencing (NGS) market in 2010 to be approximately $850 million, which represents ~20% year-over-year growth from 2009 market estimate. We believe the large majority of the current market is comprised of revenues from the sale of instruments and consumables for **Targeted Human** re-sequencing and **Non-Human** sequencing experiments, which we estimate generated ~$400-450 million and ~$350-400 million in revenues, respectively, in 2010. Under the umbrella of "Targeted Human", we all include all human, non-whole genome sequencing projects that are focused on a discrete set of genes; that is, they are a part of analysis designed to interrogate specific regions of the genome. The Non-Human market is (as the name would suggest) comprised of projects involving the sequencing of samples from species other than *Homo sapiens*, primarily by academic and applied market customers. Key areas within this segment include microbial & invertebrate genome sequencing, as well as bio-agricultural sequencing (crop & livestock), and energy & biofuels projects. Looking forward, we project the Targeted Human segment of the market to reach ~$575 million (+30%) in 2011 and $1.1 billion (5-yr CAGR of ~20%) by 2015. We see the Non-Human segment growing to ~$420 million (+20%) in 2011 and ~$700 million by 2015 (5 yr CAGR of ~15%)

According to a report in *Nature* coinciding with the 10the Anniversary of the sequencing of the first whole human genome, from 2000 up until April 2010, only about 200 whole human genomes had been sequenced. As DNA sequencing costs have plummeted, it is now estimated (via a survey done by *Nature* in the same feature) that some 2,700 whole human genomes are likely to be sequenced by year end, with another 30,000 on tap for 2011. As such, we estimate the nascent **Whole Human Genome (WHG)** sequencing market to be ~$50 million in size in 2010, resulting primarily from large projects taken on at genome centers, and with a small contribution from commercial genome sequencing service providers. We project the Whole Human Genome Market to grow to ~$110 million (+125%) in 2011 and to ~$900 million (5-yr CAGR of 80%) in 2015.

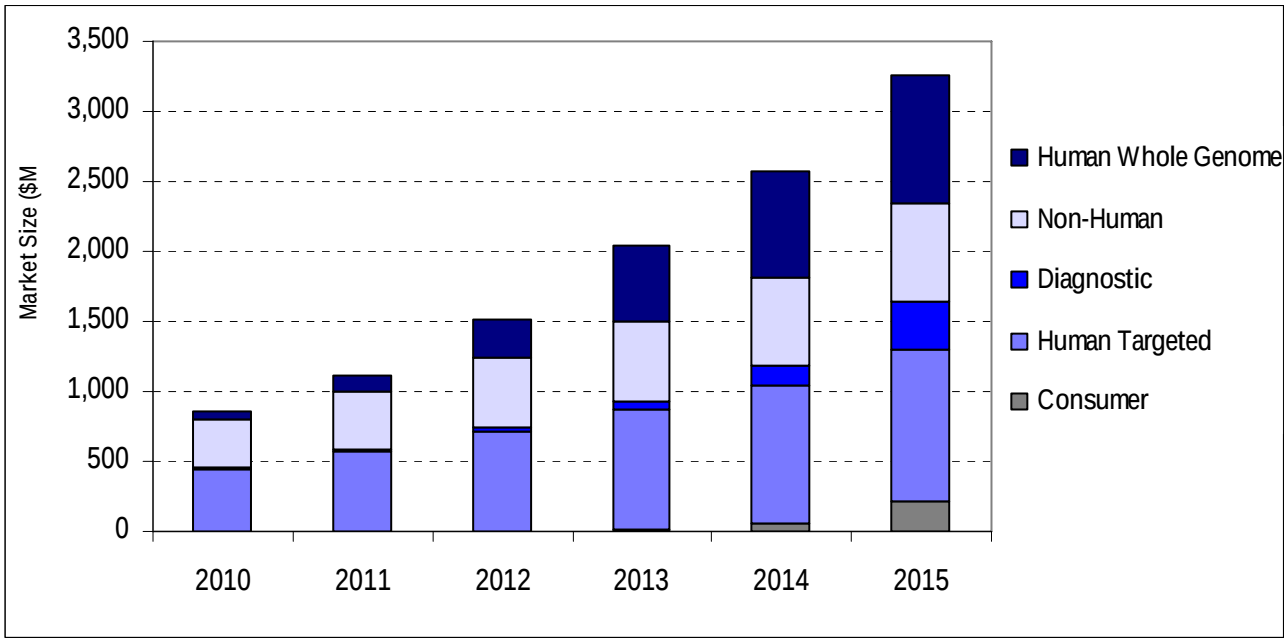
We project the WGH Market to grow to ~$110M (+125%) in 2011 and to ~$900M (5-yr CAGR of 80%) in 2015

Finally, we estimate minor contributions of $10 million and $2 million, respectively, from the **Diagnostics** and **Consumer** segments, as these are emerging applications within the NGS landscape. That said, as sequencing prices fall and more clinically actionable data is mined from the genome, we expect these markets to grow within 3 or 4 years and by 2015 project a ~$350 million opportunity with Diagnostics (5 yr- CAGR of ~100%) and ~$210 million opportunity within Consumer (5 yr- CAGR of ~150%).

All told, we project the total market for NGS to grow to $1.1 billion next year, representing 30% growth. By 2015, we project the total NGS market to be ~$3.3 billion, which represents a 30% CAGR for the 2010-2015 period (Chart 4). For an in dept discussion of the NGS market, see our companion report entitled "Next Generation Sequencing Update: Still Fast & Furious".

For 2011, we project the total NGS market to amount to $1.1B (+30%)

Chart 4: Forecasts for the Segments of the Next Generation DNA Sequencing Market Through 2015



Source: UBS estimates

Whole Human Genome Sequencing Market Analysis

We estimate that the WHG sequencing market was approximately $50M in 2010

We estimate that the Whole Human Genome (WHG) sequencing market was approximately $50 million in 2010. While this is amount is a relatively small portion (~6%) of our projected total of the 2010 Next-Generation Sequencing market, it nonetheless represents the result of what is estimated to be the sequencing of over 3,000 full genomes during the year - up from a low three-digit total in 2009. Demand for WHG sequencing is chiefly being fuelled by rapid decrease in costs, which have fallen from ~$40,000 in late 2009 to $10,000 at the end of 2010. Going forward, as costs continue to fall, we expect the number of genomes sequenced each year to grow considerably, driven in the near-term by a focus on cataloguing the diversity of the human genome in greater detail and cancer genomics. Ultimately, we believe the HWG market can yield a revenue opportunity that is ~$900 million within 5 years.

Today, the key customers for WHG sequencing are academic and government researchers, but we expect to see more interest from biopharma customers as prices fall

The key customers for WHG sequencing today are academic and government researchers, although we expect to see more interest from biopharmaceutical customers as prices fall. Amongst academic & government researchers, WHG sequencing is being performed primarily as a part of projects designed to scan for novel variants within the human genome that are correlated with disease. Here, the bulk of work focuses on explaining disease risk resulting from low-frequency alterations in DNA that were missed by microarray-based genome wide association studies (GWAS) done over the last several years, as the ability to catalog all changes that occur within a human genome and then compare them to a reference genome represents a deeper and far more unbiased analysis than does a microarray-based approach.

On the commercial side, from what little data is available, it appears as if drug developers are currently using WHG sequencing data primarily for cancer research, although we would assume some work moves into biomarker discovery, drug target evaluation programs, and patient stratification. It will likely take some time for WHG sequencing work to move meaningfully into the clinical trial arena, as cost will be prohibitive for some time. However, as the price of a genome approaches ~$1,000 (at which point this cost would be ~5% of the average cost per patient in Phase I trials, according to industry sources), this data could broad incorporation into patient screening efforts during clinical developments. As an example of the opportunity that we believe exists in the drug development, we note that by sequencing the genomes of just 20% of the patients who took place in government or industry funded clinical trials for $1,000 a sample would yield an annual opportunity of over $300 million.

Comments form researchers suggest that some have opted to outsource whole genome projects to commercial service providers, as they have yet to either build out the sequencing capacity and IT infrastructure necessary for WHG projects or they do not wish to tie up their internal NGS capacity. Going forward, while it is likely that drug companies will acquire greater high throughput NGS capabilities in order to better support in-house projects, we believe that these customers will opt for an outsource model for WHG sequencing.

Pricing as the Linchpin for Growth

We believe the rapidly decreasing price per genome to be the primary factor influencing the expansion of the WHG market

Much like the sequencing market as a whole, in addition to improvements in throughput and accuracy, we believe the rapidly decreasing price per genome to be the primary factor influencing the expansion of the WHG market. For users performing whole genome sequencing in their own labs, the cost of reagents used for the sequencing of a full human genome currently stands at approximately $4,000-15,000- with the lower end of the range reached during optimized, production-scale runs on the highest capacity Illumina and Life Technologies platforms. We believe the cost of reagents per genome will continue to fall precipitously, and have little trouble envisioning this price point being below $2,500 by the end of 2012, and below $1,000 by 2014-15.

When considering the average price per genome, we note that cost is influenced by the level of coverage (number of "passes" across the DNA) generated during each run, as lesser coverage (fewer passes) is naturally cheaper due to the need for lower reagent volumes. As such, whole-genome sequencing coverage varies depending on application, as certain projects require lower coverage. For example, sequencing experiments looking to detect low-frequency mutations that are related to rare diseases require precise base-calling that is achieving by undergoing 30-40x coverage of the genome, whereas analyses that seek to understand common genetic differences between populations can be successfully achieved through 5-15x coverage on next-generation platforms. Consequently, the price paid per runs also varies, as the cost associated is naturally lower for fewer passes.

We estimate that pricing for WHG sequencing will decline from ~$11,000 in 2010 to ~$7,000 in 2011 and will approach $1,250 by 2015

For commercial WHG services, our pricing estimates stem primarily from our projections for average ASPs on the offering of Complete Genomics— the most established (and transparent) whole genome service provider in the market. We estimate that pricing for WHG sequencing will decline from approximately $11,000 in 2010 to ~$7,000 in 2011 and will approach $1,250 by 2015.

We see the WHG segment of the market growing to ~$110 million in 2011, ~$270 million in 2012, ~$540 million in 2013, ~$750 million in 2014, and ~$900 million in 2015. While these totals imply robust growth through the duration of the foreseeable forecast period, we do point out that we expect some slowdown in demand as researchers pause to analyze and publish on the huge amounts of information generated from the large experiments.

Outsourced Human Whole Genome Sequencing

While the decline in DNA sequencing costs allows for increasingly larger sample populations to be analyzed, many labs remain constrained by a lack of sequencing capacity, as WHG studies compete with exome, transcriptome, and projects on other species for instrument time. In addition, labs may also be limited with respect to their IT infrastructure, or lack the expertise necessary to undertake large scale WHG sequencing projects. As such, a market for outsourced whole genome sequencing services has begun to evolve. In addition, to increasing outsourcing by academic and government researchers, we also believe that pharmaceutical and biotechnology companies will likely favor an outsourcing model should they wish to pursue WHG sequencing projects. Furthermore, as previously noted, we also see the market for clinical cancer genome sequencing developing along the lines of an outsourced CLIA lab

model. As such, we believe that there is sufficient demand to support a WHG outsourcing business model, although it is difficult to estimate how rapidly this market will develop.

Competitive Landscape

Illumina Genome Network. In July 2010, Illumina announced the creation of the Illumina Genome Network, a partnership program designed to enable large scale (i.e., 50 or more samples) human whole genome sequencing projects for researchers. The program works by pairing customers that have large projects but inadequate sequencing capacity with institutions willing to perform the outsourced work. Illumina then acts as the facilitator and supplier of reagents for these experiments.

All customers that use the service can expect to have their samples processed at an average coverage of 30x, with greater than 3 million SNPs detected and genotype concordance of 99% for non-cancer samples. Data is delivered in a format that can be visualized using either Illumina's own Genome studio package or third-party open-source software tools. Additionally, premium data analysis packages are available depending on the service provider used.

The Network will include leading global academic and commercial institutions that have been certified by the company, and will focus only on whole HWG sequencing services. Currently, the Network consist of two organizations-GMI/Macrogen, a commercial provider of genomics services with facilities in the U.S. and Korea, and the National Center for Genome Resources (NCGR)-have signed on as partners, while discussions with institutions such as the Broad Institute, BGI, University of Washington, and deCODE Genetics are ongoing.

To date, the company has not announced any major deals between research groups and a partner. That said, Illumina has been actively engaging potential customers, and we expect the company will confirm orders sooner rather than later, as the ability to directly compare datasets and workflows between outsourced and in-house projects run on Illumina instruments is likely to be a strategic marketing point. We note that while management appears intent on aggressively targeting all portions of the NGS market, it has noted that the service-oriented portion of their business will remain much smaller than their equipment and consumables business. Nevertheless, we expect the company to garner share and expand the outsourced WHG market.

BGI. The BGI (formerly the Beijing Genome Institute) is a Chinese genomics center that employs over 3,000 workers and is building an infrastructure that is comprised of over 150 next-generation DNA sequencing instruments from Illumina and Life Technologies, including HiSeq units installed following a 128-system order in January (recall that the BGI order is a 3 year rollout). As such, BGI has become the world's largest DNA sequencing facility; indeed, based on an assumption (gleaned from 3rd party sources) of BGI's current installed base of 100 HiSeqs, 25 Genome Analyzers, and 25 SOLiDs, this would result in the ability to generate 90,000 Gb of sequencing data per month, or 1,000 full human genomes at 30x coverage. However, unlike Complete Genomics and the Illumina Genome Network, the BGI undertakes sequencing projects involving all species, rather than focusing solely on whole human genomes. Operationally, the center deploys its considerable capacity for both

research projects funded partially or entirely by the institution, as well as fee-for-service projects commissioned by customers seeking outsourced biological and IT expertise. All profits made by the BGI, however, are reinvested internally in support of their research agenda.

Key to BGI's ability to win business is its expansion beyond the Shenzhen facility which serves as its sole sequencing. A new facility in Hong Kong was expected to reach full operational status by year-end (2010), and executives are currently setting up "BGI Americas" and "BGI Europe" satellite facilities that will serve as feeder sites for the Chinese locations performing the lab work.

Given the substantial capacity maintained by the BGI, we do expect the center to see a significant share of outsourced human genome work. In fact, those at the institute itself have estimated that the BGI will have sequenced between 10,000 and 20,000 human genomes (although it is unclear at what level of coverage) by the end of 2011. While it is unclear what percentage of this will be from paying customers rather than collaborative research projects, it is nevertheless well above the total we project for Complete Genomics by the end of next year. That said, we also see two issues that represent competitive disadvantages for BGI: the hesitation on the part of researchers to send their work to China, and the reluctance of researchers to cede partial authorship to the BGI on publications, although this later point is apparently under review. Based on our channel checks, we believe some researchers may want to maintain a greater level of control over their samples and data than shipment to China would allow, in terms of both sample handling and intellectual property. The extent to which these concerns will prevent BGI from winning business is difficult to estimate. In our view, however, they do represent issues that could likely play a role in the way in which the outsourced whole genome market evolves should BGI decide that it is in its interest to become a loss leader.

Intellectual Property & Legal

Complete Genomics' core genome sequencing technology originated at Callida Genomics, Inc ('Callida') in Dr. Radoje (Rade) Drmanac's laboratory, who is currently Chief Scientific Officer and one of the co-founders of Complete Genomics. In March 2006, the company exclusively licensed relevant patents related to random array technology as well as probe anchor ligation, which are in effect until patent expiry. As of July 2010, Complete Genomics has licensed 12 issued patents (6 US/ 6 international) from Callida that are set to expire between 2014 and 2027. As show in Table 8, the company also owns or licenses 93 pending patent applications (50 US/ 30 international/ 13 applications filed under the Patent Cooperation Treaty).

Table 7: Complete Genomics Patent Portfolio Overview

	Biochemistry	Software	Hardware
Patent Families	18	8	7
U.S. Patents, Applications	35	8	7
PCT/Foreign Patents, Applications	32	5	6
Total Applications	**67**	**13**	**13**

Source: Company reports

In August 2010, Illumina filed a patent infringement lawsuit against Complete Genomics in the US District Court in Delaware. The lawsuit alleges that Complete Genomics' Analysis Platform and its combinatorial probe anchor ligation (cPAL) technology, infringes on three patents held by Illumina, particularly US patents 6,306,597 ("DNA sequencing by parallel oligonucleotide extensions"; expires in 2015) ; 7,232,656 ("Arrayed biomolecules and their use in sequencing"; expires in 2019); and 7,598,035 ("Method and compositions for ordering restriction fragments"; expires in 2018). As part of the lawsuit, Illumina seeks unspecified monetary damages and injunctive relief.

The three aforementioned patents have been the subject of legal proceedings in the past. US patent '597 was recently part of lawsuit between Illumina and Life Technologies ("Life"), in which a jury found that the Life's SOLiD technology did not infringe this patent. In 2008, Applied Biosystems (now part of Life Technologies), asked the USPTO to re-examine claim 1 of the '597 patent and in May 2009, the patent office rejected the claim in a non-final action. In September 2009, the USPTO (United States Patent and Trademark Office) said that claim 1 was patentable in a final action. In March 2010, the patent office issued an ex parte reexamination certificate for the '597 patent, thus confirming the patentability of claim 1. However, shortly after the ex parte decision, the Federal Circuit affirmed a District Court Order (entered pursuant to Solexa`s own stipulation) that claim 1 in the '597 patent is invalid under the District Court`s claim construction.

US patents '656 and '035 are the subject of an ongoing lawsuit between Illumina and Life. In October 2009, as part of a countersuit, Illumina claimed that Life's SOLiD system infringes these two patents (as well as two others). Subsequently, Life requested a re-examination of these patents. In May 2010, the USPTO initially rejected all their claims as unpatentable in a non-final office action, but await further review.

Financial Projections

While Complete Genomics has not issued formal guidance, management expects to reach $100 million in revenues by 2012 and has provided the long-term targets summarized in Table 8. Key to reaching these targets will be the ability to deliver operational leverage via accelerating volume growth in the face of falling prices and continuing invest in the company's technology platform and IT infrastructure.

Table 8: Long-Term Targets for Complete Genomics

	Target
Revenues	$100+M by 2012
Gross Margins	65-70%
R&D as % of Revenue	20-25%
SG&A as % of Revenue	20-25%
Operating Margins	20-25%

Source: Company reports

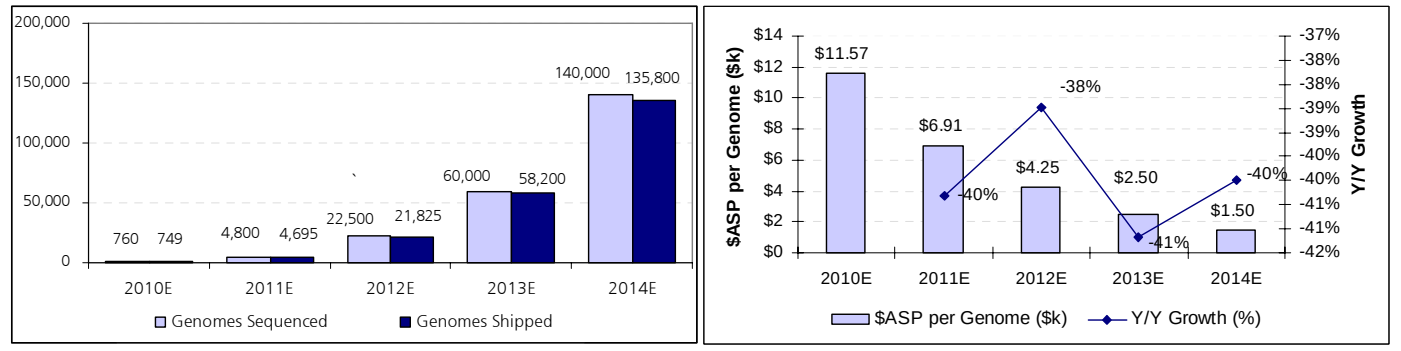
Revenues

Complete Genomics' revenues are primarily derived from its human genome sequencing service, which is offered through a direct field sales and support organization. For the majority of contracts, revenues are generally recognized by the company once genomic data is shipped to a customer. Additionally, the selling price per genome for the company's sequencing service is chiefly based on the number of genomes per customer orders. Below we review our assumptions for genomes sequenced, genomes shipped and average selling price per genome sequenced to derive our revenue estimates.

Year to date, we estimate that Complete Genomics has sequenced roughly 455 genomes and shipped 448 genomes at an average selling price (ASP) of ~$12,500 per genome. During 3Q10, we estimate that the company sequenced 365 genomes and shipped 354 genomes at an ASP of ~$11,750 per genome. For Q4, Complete Genomics projects that it will sequence over 300 genomes. As such, we forecast that the company will sequence 305 genomes and ship 301 genomes at an ASP of $10,250 per genome.

For 2010, all total we estimate that Complete Genomics will sequence 760 genomes and ship 749 genomes at an ASP of ~$11,570 per genome (Chart 5). For 2011, we estimate that the company will sequence 4,800 genomes and ship 4,695 genomes at an ASP of ~$6,900 (-40% y/y) per genome. For 2012, we estimate that Complete Genomics will sequence 22,500 genomes and ship 21,825 genomes at an ASP of ~$4,250 (-38% y/y) per genome.

Chart 5: Genomes Sequenced, Genomes Shipped and $ASP per Genome for Complete Genomics (2010E-2014E)

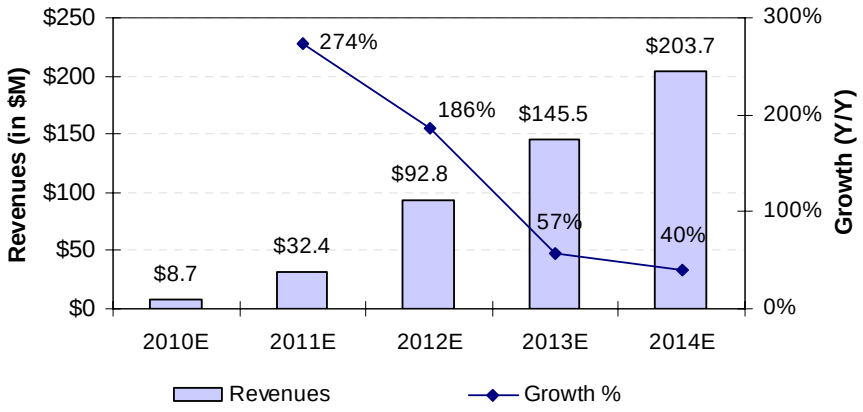


Source: UBS estimates

Year to date, Complete Genomics has recognized $5.6 million in revenues. During 3Q10, the company recorded $4.2 million in revenues and for Q4 we project $3.1 million in total revenues.

Based on the assumptions presented above, for 2010, we estimate that the company will record $8.7 million in revenues. For 2011-2012, we project total revenues of $32.4 million (+274% y/y) and $92.8 million (+186% y/y), respectively (Chart 6).

Chart 6:Project Revenue Estimates for Complete Genomics (2010E-2014E)



Source: UBS estimates

Backlog

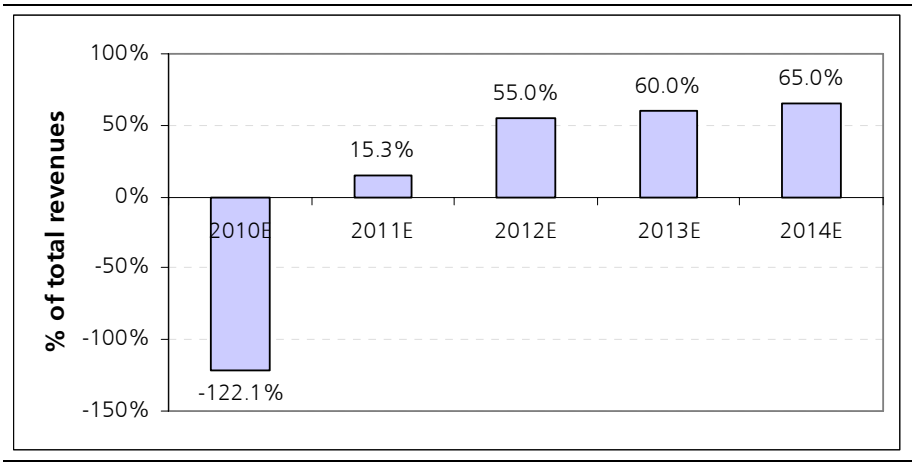
Complete Genomics's backlog consists of the number of genomes for which customers have submitted firm sequencing orders, but have not been recognized as revenue by the company, and are expected to ship within 12 months. As of September 30, 2010, the company noted that it had a backlog for sequencing over 800 genomes, of which ~10% were placed in Q1, ~45% in Q2 and the remaining ~45% in Q3. Management estimates that the current backlog will translate to ~$9 million in revenue over the next 12 months. However, it is worth noting that backlog conversion into revenues is contingent on several variables including, Complete Genomics' system throughput, the number of sequencing lines at a given time, the length of time after a customer submits an order and provides the company with qualified samples, and the rate at which customers accept completed genomic data (mainly for contracts in which an acceptance period has been established).

Margins and Expenses

Given that Complete Genomics commercially launched its genomic sequencing services at the beginning of 2010, several start-up costs are still being incurred, particularly those related to sample acceptance testing, sample preparation, sample sequencing, data analysis and continued validation of the company's technology. These costs chiefly include personnel related expenses, chemical reagents, engineering materials and supplies, consultant fees, and facility expenses.

For 2010, we project gross margins of -122.1% as the company continues to incur start-up costs (Chart 7). For 2011-12, we project gross margins of 15.3% and 55% (+3,970 bps) as sequencing volumes begin to ramp for the company.

Chart 7: Projected Gross Margins for Complete Genomics (2010E-2014E)

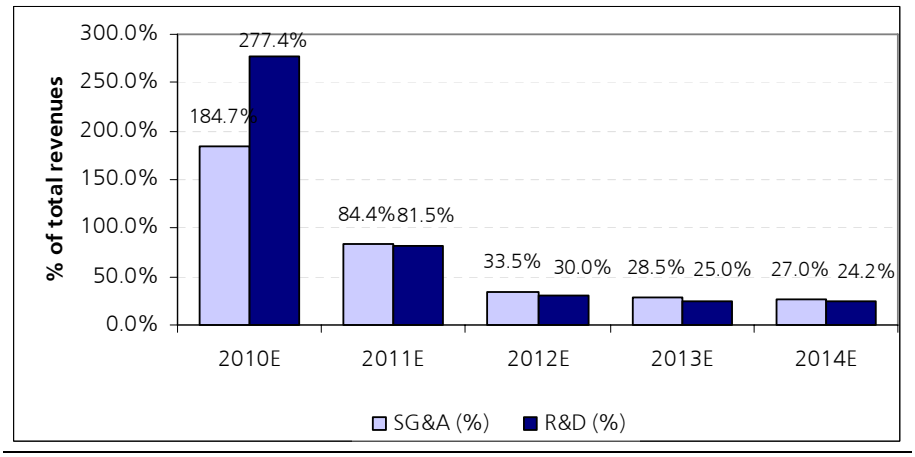


Source: UBS estimates

For Complete Genomics, research and development (R&D) expenses consist chiefly of scientific research activities as well as software, hardware and process automation development and engineering. Over the next few years, we anticipate that R&D costs will remain steady (in terms of dollar figures) as the company continues to optimize and develop its technology. As shown in Chart 8, for 2010, we estimate R&D expenses of $24.1 million (277.4% of net revenues). For 2011-12, we estimate R&D expense of $26.4 million (81.5%) and $27.8 million (30%).

Selling, general and administrative (SG&A) expenses for Complete Genomics consist predominantly of sales and marketing, finance, human resources and executive personnel as well general corporate costs and facilities related expenses. We expect the company to continue to invest in new genome centers (domestically and internationally) as well as headcount expansion. As shown in Chart 8, for 2010, we estimate SG&A expenses of $16 million (184.7% of net revenues). For 2011-12, we estimate SG&A expense of $27.4 million (84.4%) and $31.1 million (33.5%).

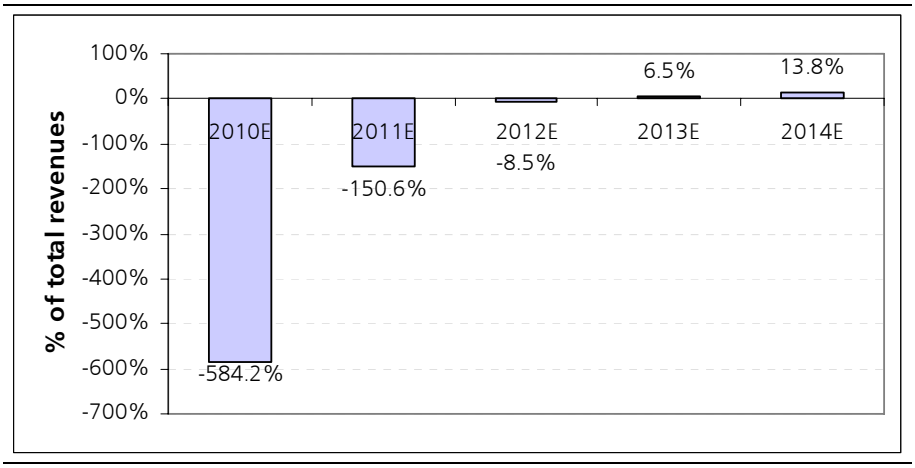
Chart 8: SG&A and R&D as a percent of revenues (2010E-2014E)



Source: UBS estimates

For 2010, we anticipate operating margins to be -584.2% as Complete Genomics continues to incur start costs (Chart 9). However, over the next few years we expect operating margins as volumes increase and operational leverage is realized. For 2011-12, we project operating margin to be -150.6% and -8.5%, respectively.

Chart 9: Projected Operating Margins for Complete Genomics (2010E-2014E)

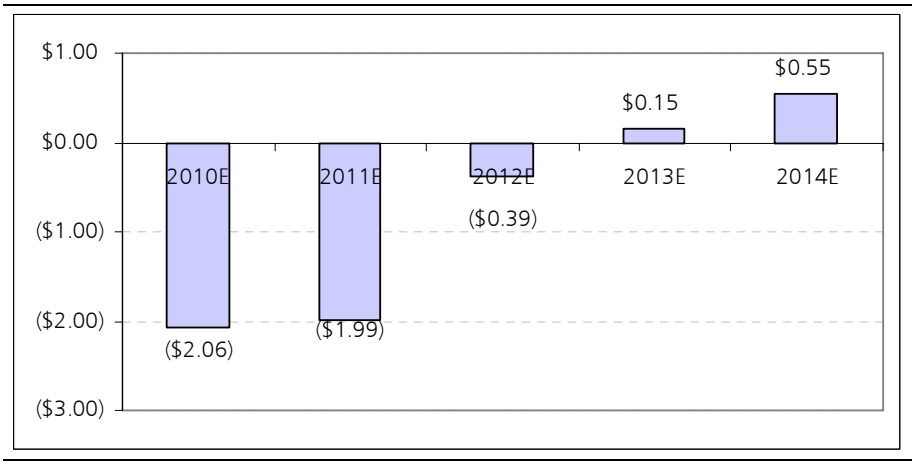


Source: UBS estimates

Net Loss & Earnings Forecast

Given that Complete Genomics is experiencing significant start-up costs, we anticipate the company to post a net loss over the next 3 years. However, we expect that company to achieve breakeven by the end of 2012/early 2013 and record its first year of profitability in 2013. For 2010, we project Complete Genomics to record a net loss of $2.06 (Chart 10). For 2011-12, we forecast a net loss of $1.99 and $0.39, respectively. A full P&L statement is shown in Chart 11.

Chart 10:Projected EPS for Complete Genomics (2010E-2014E)



Source: UBS estimates

Balance Sheet and Cash Flow

Cash and Cash Equivalents: After completing its initial public offering (IPO) and Series E financing, Complete Genomics balance sheet had with ~$75 million in cash and cash equivalents, including approximately $47 million in net proceeds from the recent IPO.

Cash Burn: For 2010, we expect Complete Genomics' cash burn to be roughly $60 million and $50-57 million for 2011 as the company continues to invest in its sequencing platform, expand its Mountain View facility and grow its headcount. By our model, the company will need to raise additional capital through a share offering in 2012.

Debt: As of September 30, 2010, Complete Genomics had approximately an aggregate of $5 million in short term debt related to drawing funds from its credit facility. Interest accrues at an annual rate between 10.50% and 11.04%, as determined at the time of the transaction. A summary Balance Sheet and Cash Flow analysis is shown in Chart 12.

Chart 11: Income Statement for Complete Genomics

Dollars in thousands except per share data, # of genomes Fiscal year ended December 31	2008A	2009A	2010E	2011E	2012E	2013E	2014E
	FY	FY	FY	FY	FY	FY	FY
Genomes Sequenced			760	4,800	22,500	60,000	140,000
Genomes Shipped			749	4,695	21,825	58,200	135,800
Genome ASP ($k)			11.574	6.908	4.250	2.500	1.500
Total Revenues	-	623	8,674	32,431	92,756	145,500	203,700
COGS		5,033	19,268	27,460	41,740	58,200	71,295
R&D expense	23,633	22,424	24,059	26,440	27,827	36,375	49,295
Sales and Marketing	1,045	1,798	7,388	15,009	17,624	24,735	33,611
General and Administrative	3,179	4,953	8,630	12,360	13,450	16,733	21,470
Operating expenses	27,857	34,208	59,346	81,270	100,641	136,043	175,671
Operating income	(27,857)	(33,585)	(50,672)	(48,839)	(7,884)	9,458	28,029
Interest income			250	100	50		
Interest expense	974	3,465	2,317	1,000	500	150	50
Other Income, Net	437	1,101					
Income before taxes	(28,394)	(35,949)	(52,739)	(49,739)	(8,334)	9,308	27,979
Income taxes						465	4,197
Net income	(28,394)	(35,949)	(52,739)	(49,739)	(8,334)	8,842	23,782
Stock option expenses		1,100	550	2,400	3,500	4,000	6,000
Net income (including option expenses)	(28,394)	(37,049)	(53,289)	(52,139)	(11,834)	4,842	17,782
EPS Diluted, before FAS123	(369.36)	(6.40)	(2.04)	(1.90)	(0.28)	0.28	0.74
Option Expense per share	0.00	0.20	0.02	0.09	0.12	0.13	0.19
Adjusted EPS (Excludes FAS123)	($369.36)	($6.59)	($2.06)	($1.99)	($0.39)	$0.15	$0.55
Diluted shares outstanding	77	5,620	25,840	26,278	30,278	31,278	32,278
YEAR-OVER-YEAR GROWTH							
Genome Shipments				526.5%	364.8%	166.7%	133.3%
ASP				-40.3%	-38.5%	-41.2%	-40.0%
Revenues			1292.2%	273.9%	186.0%	56.9%	40.0%
COGS	NA	NA	282.8%	42.5%	52.0%	39.4%	22.5%
R&D	129.3%	-5.1%	7.3%	9.9%	5.2%	30.7%	35.5%
SG&A	222.8%	159.8%	237.3%	170.9%	113.5%	133.5%	132.8%
Operating Expenses	128.3%	22.8%	73.5%	36.9%	23.8%	35.2%	29.1%
Net income			50.9%	-3.6%	-83.9%	-220.0%	196.4%
AS A PERCENT OF TOTAL REVENUES							
Gross Profit		-707.9%	-122.1%	15.3%	55.0%	60.0%	65.0%
Research & Development		3599.4%	277.4%	81.5%	30.0%	25.0%	24.2%
SG&A		1083.6%	184.7%	84.4%	33.5%	28.5%	27.0%
Operating Expenses		5490.9%	684.2%	250.6%	108.5%	93.5%	86.2%
Operating Income		-5390.9%	-584.2%	-150.6%	-8.5%	6.5%	13.8%
Tax Rate						5.0%	15.0%
Net Income		-5770.3%	-608.0%	-153.4%	-9.0%	6.1%	11.7%

Source: Company reports and UBS estimates

Chart 12: Summary of Selected Balance Sheet and Cash Flow Statement Items for Complete Genomics

	2008A	2009A	2010E	2011E	2012E	2013E	2014E
Select Balance Sheet Items							
Cash and Equivalents	6,186	7,765	59,860	2,746	7,087	8,179	9,962
Total Current Assets	7,220	15,019	66,498	13,476	34,987	49,919	67,998
PP&E, Net	8,023	14,864	30,000	40,000	42,000	50,000	65,000
Total Assets	15,754	30,278	96,863	53,841	77,352	100,284	133,363
Total Current Liabilities	6,479	12,055	16,374	16,390	26,872	39,677	48,338
Long Term Debt	-	-	-	-	-	-	-
Total Liabilities	15,286	22,135	23,874	23,390	33,872	46,677	55,338
Shareholders' Equity	468	8,143	72,989	30,451	43,480	53,607	78,025
Select Cash Flow Items							
Depreciation and Amortization	2,795	5,240	8,200	15,000	22,000	23,000	28,000
Net Change in Working Capital	293	1,322	2,000	(7,000)	(4,500)	(6,500)	(19,000)
Net Cash from Operations	(24,303)	(26,662)	(40,972)	(41,339)	9,616	25,342	32,782
Capex	(7,419)	(9,654)	(23,000)	(17,500)	(25,000)	(29,000)	(36,000)
Free Cash Flow	(31,722)	(36,316)	(63,972)	(58,839)	(15,384)	(3,658)	(3,218)
Net Increase(Decrease) in Cash	1,926	1,579	52,095	(57,114)	4,341	1,092	1,782

Source: Company reports and UBS estimates

Complete Genomics Inc

Income statement (US$k)	-	-	12/07	12/08	12/09	12/10E	% ch	12/11E	% ch	12/12E	% ch
Revenues	-	-	-	0	623	8,674	1292.2	32,431	273.9	92,756	186.0
Operating expenses (ex depn)	-	-	-	(25,062)	(30,068)	(51,696)	71.9	(68,720)	32.9	(82,140)	19.5
EBITDA (UBS)	-	-	-	(25,062)	(29,445)	(43,022)	46.1	(36,289)	-15.7	10,617	-
Depreciation	-	-	-	(2,795)	(5,240)	(8,200)	56.5	(15,000)	82.9	(22,000)	46.7
Operating income (EBIT, UBS)	-	-	-	(27,857)	(34,685)	(51,222)	47.7	(51,289)	0.1	(11,383)	-77.8
Other income & associates	-	-	-	437	1,101	0	-	0	-	0	-
Net interest	-	-	-	(974)	(3,465)	(2,067)	-40.3	(900)	-56.5	(450)	-50.0
Abnormal items (pre-tax)	-	-	-	0	0	0	-	0	-	0	-
Profit before tax	-	-	-	(28,394)	(37,049)	(53,289)	43.8	(52,189)	-2.1	(11,833)	-77.3
Tax	-	-	-	0	0	0	-	0	-	0	-
Profit after tax	-	-	-	(28,394)	(37,049)	(53,289)	43.8	(52,189)	-2.1	(11,833)	-77.3
Abnormal items (post-tax)	-	-	-	0	0	0	-	0	-	0	-
Minorities / pref dividends	-	-	-	0	0	0	-	0	-	0	-
Net income (local GAAP)	-	-	-	(28,394)	(37,049)	(53,289)	43.8	(52,189)	-2.1	(11,833)	-77.3
Net Income (UBS)	-	-	-	(28,394)	(37,049)	(53,289)	43.8	(52,189)	-2.1	(11,833)	-77.3
Tax rate (%)	-	-	-	0	0	0	-	0	-	0	-
Pre-abnormal tax rate (%)	-	-	-	0	0	0	-	0	-	0	-

Per share (US$)	-	-	12/07	12/08	12/09	12/10E	% ch	12/11E	% ch	12/12E	% ch
EPS (local GAAP)	-	-	-	(369.36)	(6.59)	(2.06)	-68.7	(1.99)	-3.7	(0.39)	-80.3
EPS (UBS)	-	-	-	(369.36)	(6.59)	(2.06)	-68.7	(1.99)	-3.7	(0.39)	-80.3
Net DPS	-	-	-	0.00	0.00	0.00	-	0.00	-	0.00	-
Cash EPS	-	-	-	(333.01)	(5.66)	(1.74)	-69.2	(1.42)	-18.9	0.34	-
BVPS	-	-	-	0.02	0.32	2.83	796.3	1.18	-58.3	1.68	42.8

Balance sheet (US$k)	-	-	12/07	12/08	12/09	12/10E	% ch	12/11E	% ch	12/12E	% ch
Cash and equivalents	-	-	-	6,186	7,765	59,860	670.9	2,746	-95.4	7,087	158.0
Other current assets	-	-	-	1,034	7,254	6,638	-8.5	10,729	61.6	27,899	160.0
Total current assets	-	-	-	7,220	15,019	66,498	342.8	13,476	-79.7	34,987	159.6
Net tangible fixed assets	-	-	-	8,023	14,864	30,000	101.8	40,000	33.3	42,000	5.0
Net intangible fixed assets	-	-	-	0	0	0	-	0	-	0	-
Investments / other assets	-	-	0	511	395	365	-7.6	365	0.0	365	0.0
Total assets	-	-	-	15,754	30,278	96,863	219.9	53,841	-44.4	77,351	43.7
Trade payables & other ST liabilities	-	-	-	6,479	12,055	11,874	-1.5	15,890	33.8	26,372	66.0
Short term debt	-	-	-	0	0	4,500	-	500	-88.9	500	0.0
Total current liabilities	-	-	-	6,479	12,055	16,374	35.8	16,390	0.1	26,872	64.0
Long term debt	-	-	-	0	0	0	-	0	-	0	-
Other long term liabilities	-	-	-	8,807	10,080	7,500	-25.6	7,000	-6.7	7,000	0.0
Total liabilities	-	-	-	15,286	22,135	23,874	7.9	23,390	-2.0	33,872	44.8
Equity & minority interests	-	-	-	468	8,143	72,989	796.4	30,451	-58.3	43,480	42.8
Total liabilities & equity	-	-	-	15,754	30,278	96,863	219.9	53,841	-44.4	77,351	43.7

Cash flow (US$k)	-	-	12/07	12/08	12/09	12/10E	% ch	12/11E	% ch	12/12E	% ch
Net income	-	-	-	(28,394)	(37,049)	(53,289)	43.8	(52,189)	-2.1	(11,833)	-77.3
Depreciation	-	-	-	2,795	5,240	8,200	56.5	15,000	82.9	22,000	46.7
Net change in working capital	-	-	-	293	1,322	2,000	51.3	(7,000)	-	(4,500)	-35.7
Other (operating)	-	-	-	0	0	0	-	0	-	0	-
Net cash from operations	-	-	-	(25,306)	(30,487)	(43,089)	41.3	(44,189)	2.6	5,667	-
Capital expenditure	-	-	-	(7,419)	(9,654)	(23,000)	138.2	(17,500)	-23.9	(25,000)	42.9
Net (acquisitions) / disposals	-	-	-	0	0	0	-	0	-	0	-
Other changes in investments	-	-	-	0	0	0	-	0	-	0	-
Cash from investing activities	-	-	-	(7,419)	(9,654)	(23,000)	138.2	(17,500)	-23.9	(25,000)	42.9
Increase/(decrease) in debt	-	-	-	0	0	4,500	-	500	-	500	-
Share issues / (repurchases)	-	-	-	25	4	118,000	-	5,000	-	20,000	-
Dividends paid	-	-	-	0	0	0	-	0	-	0	-
Other cash from financing	-	-	-	33,623	37,891	0	-	0	-	0	-
Cash from financing activities	-	-	-	33,648	37,895	122,500	223.3	5,500	-95.5	20,500	272.7
Cash flow chge in cash & equivalents	-	-	-	923	(2,246)	56,411	-	(56,189)	-	1,167	-
FX / non cash items	-	-	-	-	3,825	(4,316)	-	(925)	-	3,174	2.8
Bal sheet chge in cash & equivalents	-	-	-	-	1,579	52,095	-	(57,114)	-	4,341	-
Core EBITDA	-	-	-	(25,062)	(29,445)	(43,022)	46.1	(36,289)	-15.7	10,617	-
Maintenance capital expenditure	-	-	-	(7,419)	(9,654)	(23,000)	138.2	(17,500)	-23.9	(25,000)	42.9
Maintenance net working capital	-	-	-	293	1,322	2,000	51.3	(7,000)	-	(4,500)	-35.7
Operating free cash flow, pre-tax	-	-	-	(32,188)	(37,777)	(64,022)	69.5	(60,789)	-5.1	(18,883)	-68.9

Source: Company accounts, UBS estimates. (UBS) valuations are stated before goodwill-related charges and other adjustments for abnormal and economic items at the analysts' judgement. Note: For some companies, the data represents an extract of the full company accounts.

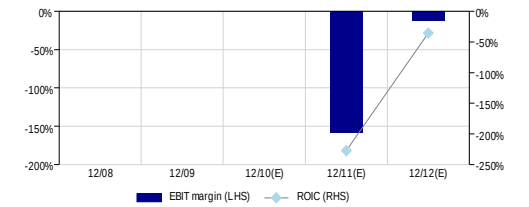
Complete Genomics Inc

12-month rating	Buy
12m price target	US$12.00

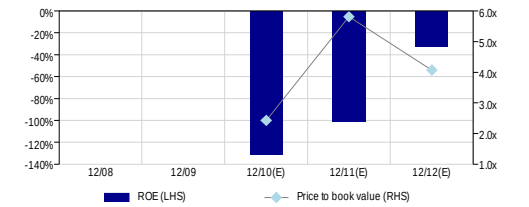
Company profile

Established in 2006 and headquartered in Mountain View, CA, Complete Genomics is a next generation genetic analysis company that offers whole human genome DNA re-sequencing and data analysis services. Unlike other next generation DNA sequencing companies that sell instruments and consumables directly to customers, Complete Genomics has commercialized its proprietary DNA sequencing platform via an end-to-end genomic services model.

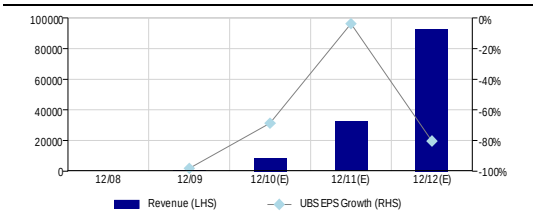
Profitability



ROE v Price to book value



Growth (UBS EPS)



Valuation (x)	5Yr Avg	12/08	12/09	12/10E	12/11E	12/12E
P/E (local GAAP)	-	-	-	NM	NM	NM
P/E (UBS)	-	-	-	NM	NM	NM
P/CEPS	-	-	-	NM	NM	20.5
Net dividend yield (%)	-	-	-	0.0	0.0	0.0
P/BV	-	-	-	2.4	5.8	4.1
EV/revenue (core)	-	-	-	NM	4.5	1.6
EV/EBITDA (core)	-	-	-	-4.0	-4.0	14.0
EV/EBIT (core)	-	-	-	NM	NM	NM
EV/OpFCF (core)	-	-	-	NM	NM	NM
EV/op. invested capital	-	-	-	NM	6.5	4.6

Enterprise value (US$k)		12/08	12/09	12/10E	12/11E	12/12E
Average market cap		-	-	177,831	177,831	177,831
+ minority interests		0	0	0	0	0
+ average net debt (cash)		(6,976)	(6,976)	(6,976)	(31,563)	(28,803)
+ pension obligations and other		0	0	0	0	0
- non-core asset value		(511)	(395)	(365)	(365)	(365)
Core enterprise value		-	-	170,490	145,903	148,663

Growth (%)	5Yr Avg	12/08	12/09	12/10E	12/11E	12/12E
Revenue	-	-	-	NM	NM	186.0
EBITDA (UBS)	-	-	17.5	46.1	-15.7	-
EBIT (UBS)	-	-	24.5	47.7	0.1	-77.8
EPS (UBS)	-	-	-98.2	-68.7	-3.7	-80.3
Cash EPS	-	-	-98.3	-69.2	-18.9	-
Net DPS	-	-	-	-	-	-
BVPS	-	-	NM	NM	-58.3	42.8

Margins (%)	5Yr Avg	12/08	12/09	12/10E	12/11E	12/12E
EBITDA / revenue	-	-	NM	NM	NM	11.4
EBIT / revenue	-	-	<-500	<-500	-158.1	-12.3
Net profit (UBS) / revenue	-	-	NM	NM	NM	NM

Return on capital (%)	5Yr Avg	12/08	12/09	12/10E	12/11E	12/12E
EBIT ROIC (UBS)	-	-	NM	NM	NM	NM
ROIC post tax	-	-	NM	NM	NM	NM
Net ROE	-	<-500	<-500	(131.4)	(100.9)	(32.0)

Coverage ratios (x)	5Yr Avg	12/08	12/09	12/10E	12/11E	12/12E
EBIT / net interest	-	-	-	-	-	-
Dividend cover (UBS EPS)	-	-	-	-	-	-
Div. payout ratio (%, UBS EPS)	-	-	-	-	-	-
Net debt / EBITDA	-	0.2	0.3	1.3	0.1	NM

Efficiency ratios (x)	5Yr Avg	12/08	12/09	12/10E	12/11E	12/12E
Revenue / op. invested capital	-	-	NM	1.0	1.4	2.9
Revenue / fixed assets	-	-	0.1	0.4	0.9	2.3
Revenue / net working capital	-	-	NM	NM	NM	NM

Investment ratios (x)	5Yr Avg	12/08	12/09	12/10E	12/11E	12/12E
OpFCF / EBIT	-	1.2	1.1	1.2	1.2	1.7
Capex / revenue (%)	-	-	NM	NM	NM	27.0
Capex / depreciation	-	2.7	1.8	2.8	1.2	1.1

Capital structure (%)	5Yr Avg	12/08	12/09	12/10E	12/11E	12/12E
Net debt / total equity	-	NM	(95.4)	(75.8)	(7.4)	(15.1)
Net debt / (net debt + equity)	-	NM	NM	NM	(8.0)	(17.9)
Net debt (core) / EV	-	-	-	(4.1)	(21.6)	(19.4)

Source: Company accounts, UBS estimates. (UBS) valuations are stated before goodwill-related charges and other adjustments for abnormal and economic items at the analysts' judgement.
Valuations: based on an average share price that year, (E): based on a share price of US$6.89 on 20 Dec 2010 16:42 EST Market cap(E) may include forecast share issues/buybacks.

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■ Complete Genomics Inc

Established in 2006 and headquartered in Mountain View, CA, Complete Genomics is a next generation genetic analysis company that offers whole human genome DNA re-sequencing and data analysis services. Unlike other next generation DNA sequencing companies that sell instruments and consumables directly to customers, Complete Genomics has commercialized its proprietary DNA sequencing platform via an end-to-end genomic services model.

■ Statement of Risk

As a service business, Complete Genomics success hinges on sample volume growth accelerating at a pace fast enough to offset anticipated price erosion. As such, if the market for whole human genome sequencing does not develop as anticipated, then it could be difficult for Complete Genomics to grow its business. While Complete Genomics' technology is competitive today and has room for advancement, the pace of technology development in next generation DNA sequencing has so far exceeded most expectations, and so it is difficult to assess if the company's platform can remain competitive going forward. Moreover, in order to advance its platform the company needs to invest in R&D, which in turn could hamper profitability. As an early stage company, there are numerous execution risks. For example, if the company cannot expand capacity fast enough to meet anticipated demand, then the business could suffer. The attractiveness of the genomics outsourcing market has lured a number of new entities to begin offering similar services, and if one or more of these players price their offerings below Complete Genomics, it could be difficult for the company to either compete or reach profitability. Declines or delays in government funding to academic laboratories, as well as slowdowns in R&D spending by pharmaceutical and biotechnology companies, could negatively impact Complete Genomics' business. As an unprofitable genomics company, Complete Genomics' share price is likely to experience significant volatility, especially if, in the future, the company needs to raise additional capital. As such, we view GNOM shares as better suited for more sophisticated investors with a high tolerance for risk as part of a broadly diversified investment portfolio.

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UBS Investment Research: Global Equity Rating Allocations

UBS 12-Month Rating	Rating Category	Coverage[1]	IB Services[2]
Buy	**Buy**	51%	37%
Neutral	**Hold/Neutral**	40%	33%
Sell	**Sell**	9%	22%
UBS Short-Term Rating	**Rating Category**	**Coverage[3]**	**IB Services[4]**
Buy	**Buy**	less than 1%	20%
Sell	**Sell**	less than 1%	0%

1:Percentage of companies under coverage globally within the 12-month rating category.
2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.
3:Percentage of companies under coverage globally within the Short-Term rating category.
4:Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

Source: UBS. Rating allocations are as of 30 September 2010.

UBS Investment Research: Global Equity Rating Definitions

UBS 12-Month Rating	Definition
Buy	FSR is > 6% above the MRA.
Neutral	FSR is between -6% and 6% of the MRA.
Sell	FSR is > 6% below the MRA.
UBS Short-Term Rating	**Definition**
Buy	Buy: Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.
Sell	Sell: Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.

KEY DEFINITIONS

Forecast Stock Return (FSR) is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months.

Market Return Assumption (MRA) is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium).

Under Review (UR) Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation.

Short-Term Ratings reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case.

Equity Price Targets have an investment horizon of 12 months.

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UBS Securities LLC: Derik de Bruin, Ph.D.; Daniel Arias; Rafael Tejada.

Company Disclosures

Company Name	Reuters	12-mo rating	Short-term rating	Price	Price date
Complete Genomics Inc[2, 4, 5, 6, 13, 16]	GNOM.O	Not Rated	N/A	US$6.89	20 Dec 2010

Source: UBS. All prices as of local market close.
Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date

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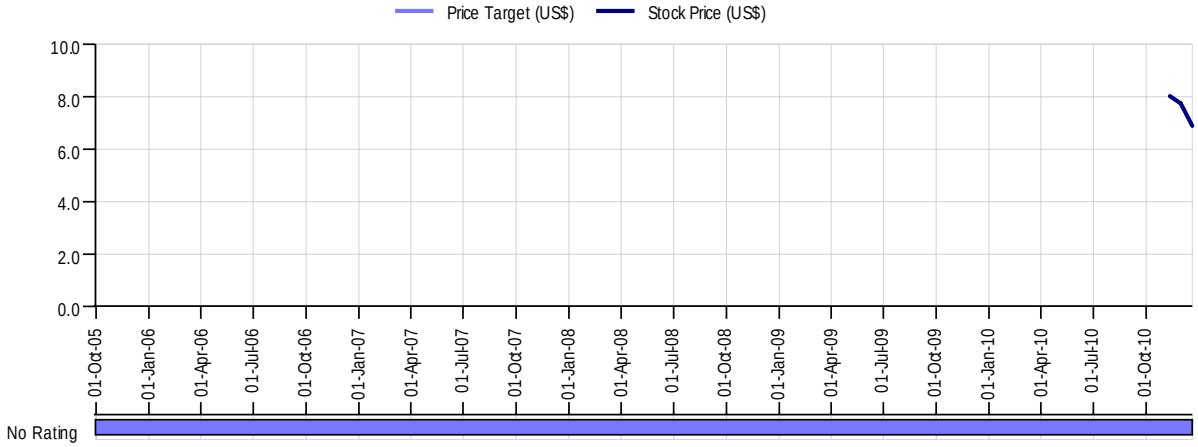
Complete Genomics Inc (US$)



Source: UBS; as of 20 Dec 2010

Additional Prices: Illumina Inc., US$64.57 (20 Dec 2010); Life Technologies Corp., US$55.23 (20 Dec 2010); Source: UBS. All prices as of local market close.

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