

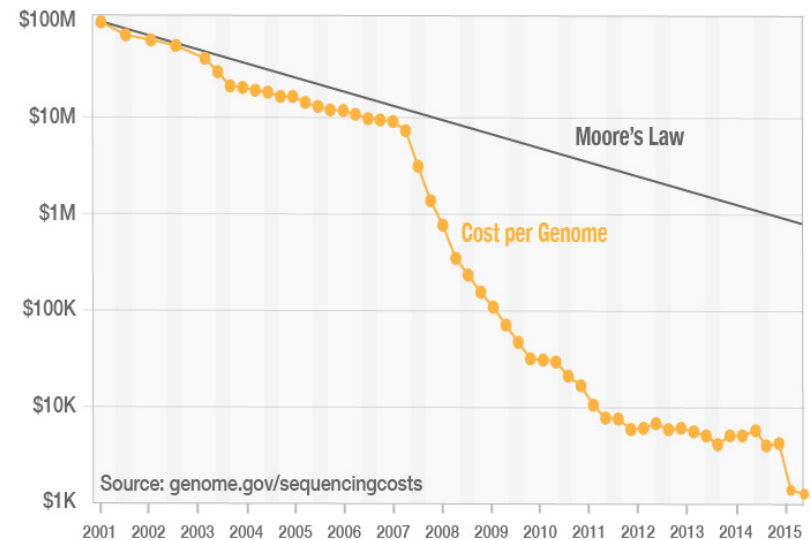
Genomics

Industry Overview and
Capital Markets Perspectives

January 2021

Overview and Key Developments

- Genomics is an industry at the intersection of biology and technology that enables understanding of genetic variations
- The key segments of the industry include
 - Instruments and consumables
 - Sequencing services
 - Bioinformatics
- [Marketsandmarkets estimates](#) the size of the next-generation sequencing (NGS) market at \$7.8 billion in 2019 growing at annual growth rate 20.9%
- Academic and research centers have been the early adopters of the sequencing technology
 - As the cost of the technology has come down, hospitals, clinics and biotechnology/pharma companies started to use genome sequencing as well
- Genome sequencing is used in the following applications
 - Diagnostics (cancer, reproductive, infectious and rare diseases)
 - Drug Discovery
 - Agriculture & Animal Research



Industry Mapping

Instruments and Consumables

Instruments
Chips
Reagents

Pre-Sequencing

Library preparation
Reagent kits
Target enrichment

Sequencing Services

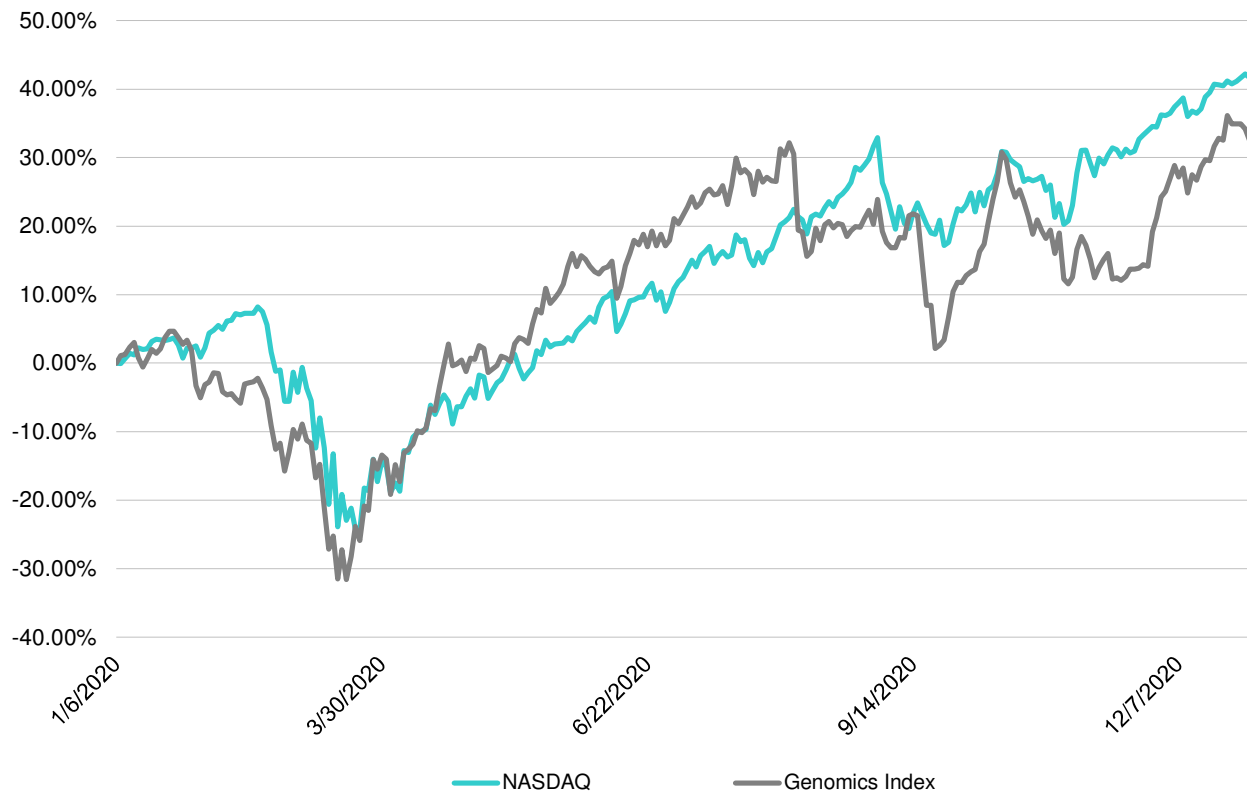
Exomes
RNA
Whole / Targeted genomes

Bioinformatics



Data Analysis Software
Data Analysis Services
Cloud Computing Solutions


Genomics Index vs. NASDAQ



Comments

- Genomics companies traded in line with NASDAQ in the last 12 months
- Genomics index includes Illumina, PacBio, BGI Genomics and 10x Genomics

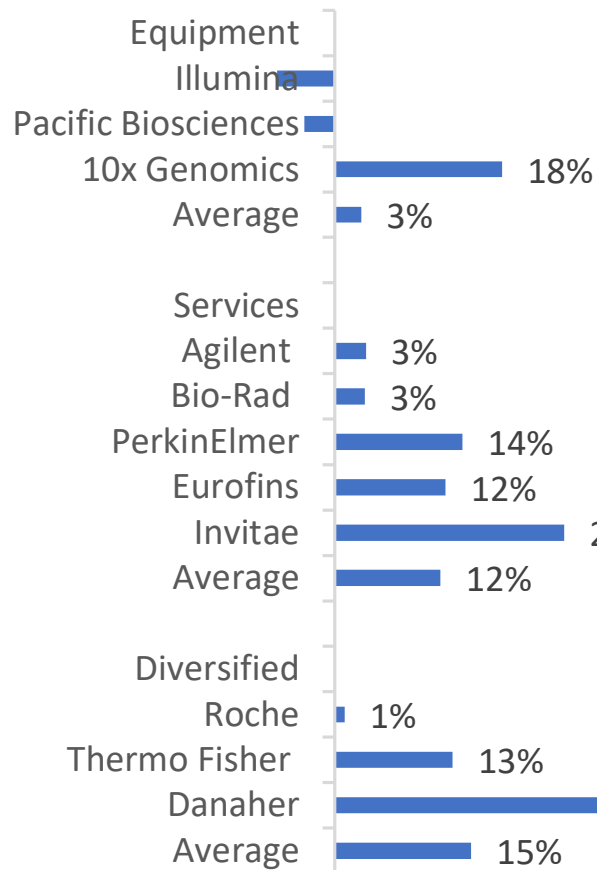
Trading Multiples

Company Name	Market Capitalization	Net Debt	Enterprise Value	EV / Revenue	EV / EBITDA	P/E	Comment
Equipment							 Instrument and consumable manufacturers trade at the highest multiples driven by product innovation
Illumina	54,020	(1,419)	52,601	14.2x	46.1x	64.5x	
Pacific Biosciences	4,833	(166)	4,667	40.7x	NM	NM	
10x Genomics	15,237	(707)	14,530	32.3x	NM	NM	
Average	24,697	(764)	23,933	29.0x	46.1x	64.5x	
Services							Diversified life sciences companies trade at healthy multiples representing a variety of businesses in their portfolio
Agilent	36,359	1,096	37,455	6.5x	24.7x	32.2x	
Bio-Rad	17,345	(509)	16,836	6.7x	32.0x	51.8x	
PerkinElmer	16,068	1,770	17,839	4.2x	12.6x	15.8x	
Eurofins	16,907	3,171	20,137	3.0x	12.9x	26.1x	
Invitae	7,388	(29)	7,359	16.1x	NM	NM	
Average	18,813	1,100	19,925	7.3x	20.6x	31.5x	
Diversified							
Roche	300,117	11,423	315,296	4.4x	10.7x	15.1x	
Thermo Fisher	184,605	13,567	198,172	5.9x	18.0x	21.7x	
Danaher	157,803	17,073	178,156	7.2x	24.1x	31.7x	
Average	214,175	14,021	230,541	5.8x	17.6x	22.8x	

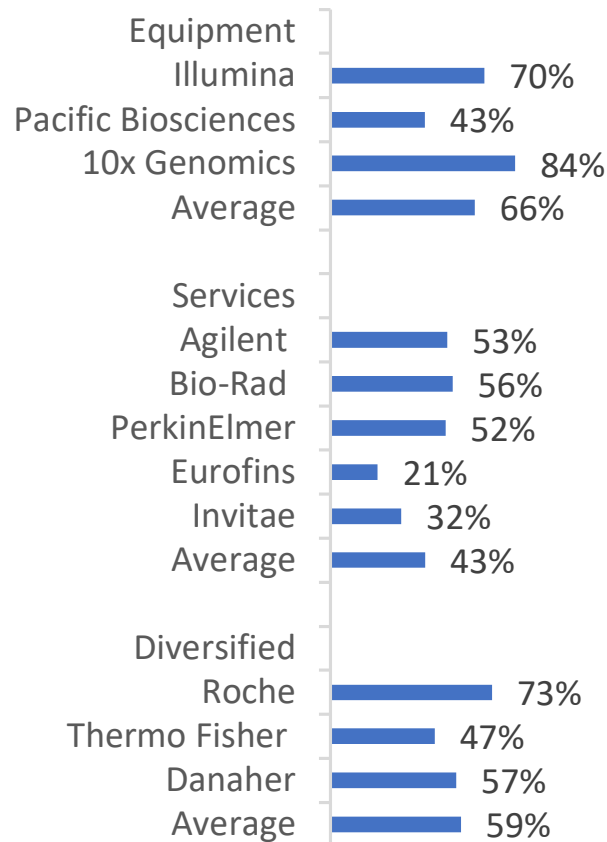
Note: Multiples are based on the next 12 month estimates

Company Benchmarking

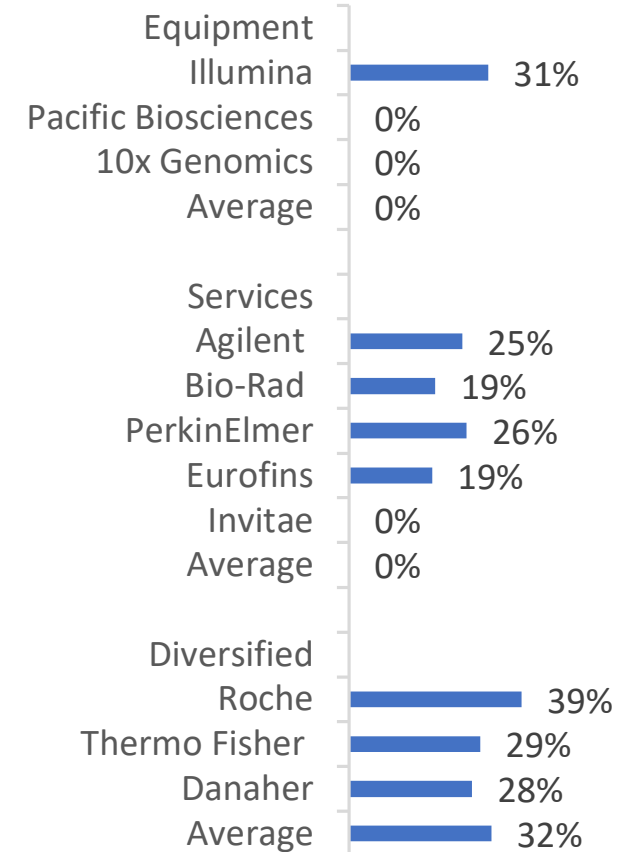
Revenue Growth



Gross Margin



EBITDA Margin



Comment



Growth in 2020 has been impacted by the pandemics

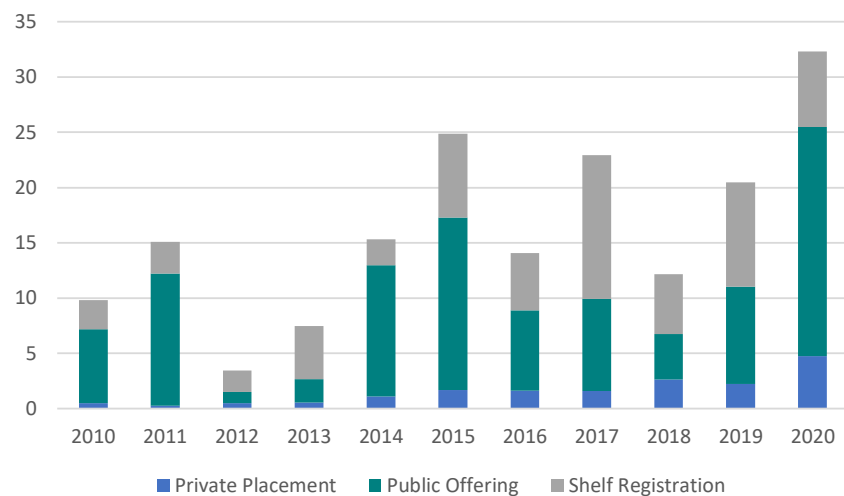
Equipment manufacturers tend to have high gross margins

Diversified companies have the highest EBITDA margins because of their scale

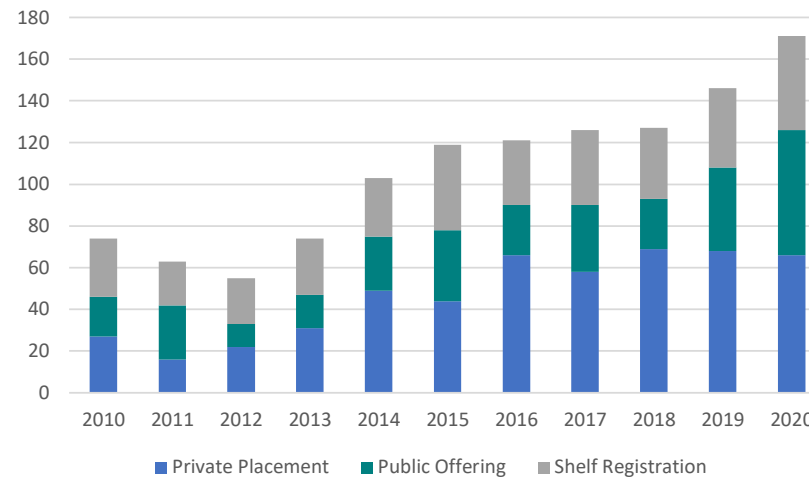
Note: based on Last Twelve Months (LTM) results

Fund Raising in Genomics Space

Deal Value, \$bn



Number of Deals



2020 has been a strong year for raising capital in public markets led by the following companies: Gilead Sciences, 10x Genomics, Agilent, Danaher, Denali Therapeutics and Pacific Biosciences

Most Active Private Equity and Venture Funds



Corporate

GV / Alphabet
Roche Venture Fund
Illumina Ventures
Gilead Sciences
Eli Lilly

Generalist

T. Rowe Price
Fidelity
Kleiner Perkins
TPG
Andreessen Horowitz

Industry Focused

Arch Venture
Casdin Capital
OrbiMed Advisors
Third Rock Ventures
Foresite Capital
Polaris Partners
Deerfield Management
Khosla Ventures

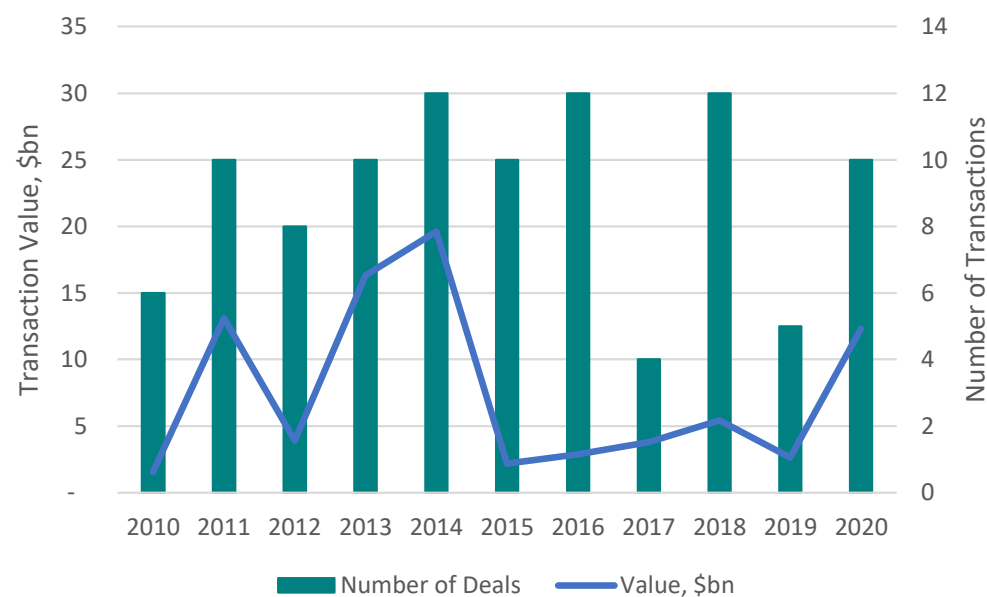
Notable Transactions

- Acquisition of GRAIL by Illumina for \$8.0bn in 2020
- Acquisition of Genomic Health for \$2.5bn by Exact Sciences in 2019
- Acquisition of Foundation Medicine for \$2.4bn by Roche in 2018
- Acquisition of Integrated DNA Technologies for \$2.0bn by Danaher in 2018

Takeaways

- M&A was the second-largest source of financing behind public capital markets but ahead of private placements
- The number of U.S. deals where transaction value has been disclosed has been 4-12 per year
- The total M&A value has been \$2-4bn per year

Genomics M&A Activity



Includes target companies in North America for which the deal size was disclosed

Precedent Transaction Multiples



- Most of the multiples of Transaction Value / EBITDA have been in 12x - 18x range
 - Reflects double-digit expected growth for the industry
- Typical revenue multiples have been 2.0x - 5.0x

Date	Target	Acquiror	Value		
			\$m m	EBITDA x	Revenue x
07/29/2019	Genomic Health	Exact Sciences Corporation	2,534	29.9x	5.1x
07/19/2017	GE Healthcare Dharmacon	Horizon Discovery	87	16.8x	2.4x
01/08/2016	Affymetrix	Thermo Fisher Scientific	1,467	29.9x	3.7x
10/21/2015	Clariant	NeoGenomics Laboratories	301	n/a	2.4x
07/01/2014	Trans Ova Genetics	Precigen	110	13.7x	1.6x
04/15/2013	Life Technologies	Thermo Fisher Scientific	16,019	13.1x	4.1x
10/03/2011	Pharmaceutical Product Development	The Carlyle Group	3,875	10.4x	2.1x
07/25/2011	NEXUS Biosystems	Brooks Automation	92	16.3x	2.6x
02/07/2011	Beckman Coulter	Danaher	7,393	8.6x	1.9x
01/24/2011	Genoptix	Novartis	450	6.6x	1.6x
10/22/2010	Clariant	GE Healthcare	598	n/a	5.3x
Average			2,993	16.1x	3.0x

Includes transactions in which transaction value and financials are publicly available

About the Author



Art Baker is currently an advisor to Chief Financial Officer at Pacific Biosciences. He has previously held strategy and corporate development roles in Fortune 500 and private equity owned companies. He worked as an investment banker at RBC Capital Markets from 2006 to 2013.

Art is passionate about the life sciences industry and would like to continue his career at one of the established or emerging companies. His areas of expertise include strategy, M&A, operational finance, budgeting, forecasting, capital markets, negotiations and new business development.

Art possesses a Bachelor of Science in Business from Oklahoma City University, an Ph.D. Degree in Finance from Moscow State University, Russia, and an MBA from the University of Toronto, Canada. He passed all three levels of the CFA Program.



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