



GRANDATION CAPITAL

RESEARCH DEPARTMENT

Lisa Liu +1 626 345 5648
lisaliu@grandationcapital.com

Jimmy Tse +1 626 639 3024
jimmytse@grandationcapital.com

Companies mentioned in this report
(price as 1/16/19 market close)

Ticker	Price 1/16/19	MTD Δ
MRNA.O	16.26	6.5%
DNLI.O	21.17	2.5%
BIIB.O	332.03	10.3%
CELG.O	87.3	36.2%
MGNX.O	12.83	1.0%
IMGN.O	4.99	4.0%
LOXO.O	233.26	66.5%
NVCR.O	45.26	35.2%
ALXN.O	111.7	14.7%
REGN.O	404.54	8.3%
STIM.O	14.96	-22.7%
BSX	36.62	3.6%
DHR	104.49	1.3%
ISRG.O	515.93	7.7%
IDXX.O	197.24	6.0%
HZNP.O	21.92	12.2%
SGEN.O	71.67	26.5%

What's happening?

- **FDA will develop new guideline for gene and cell therapies.** On 1.16.19, FDA issued an outline for cell and gene therapy IND procedures, including documents associated with the treatment and proposals to request expedited process. Based on the current assessment, FDA expects to approve 10-20 cell and gene therapy products each year. We will keep monitor the developments on this new procedure (**upside ▲ for Cell and Gene Concept**).
- **Bristol-Myers Squibb's acquired Celgene for \$74bn.** On 1.3.19, BMY announced to acquire CELG in a cash and stock deal valued at \$74bn. Upon agreement, CELG shareholders will receive one BMY share plus \$50 in cash for each CELG share, implied 53.7% premium based on CELG's stock price of \$64.21 on 1/2/19 closing (**upside ▲ for BMY and CELG**).

BIOTECH INDUSTRY REPORT

1/16/2019

VOLUME 1, ISSUE 2

Government shutdown affects FDA; healthcare sector sets a strong start with multiple M&A transactions in Jan'19. As of 1/16/19, the U.S. government has shutdown for 26 days. The shutdown has significantly negative effect on FDA. Due to FDA commissioner Gottlieb, applications submit after the shutdown will not be reviewed until the government re-open. FDA currently uses Prescription Drug User Fee Act funding to support operations; however, the fund will run out soon. Another harm from shutdown is SEC's delayed review process for IPO filings given to the fact that only 285 from 4,400 SEC employees are on duty, especially we are expecting large IPOs to come online this year, such as Uber ad Lyft.

Key stock takeaways: Entering to 2019, **DOW** gradually exits the correction territory, and the sentiment is cooling down. However, we believe if the government shutdown takes over for more than a month, Q1'19 earnings will be hugely affected. **Biotech Industry:** NASDAQ Biotech Index was closed at 3043.62 on Dec 31, down 9.3% YOY, while the Index bounds back in Jan'19 and closed at 3434.92 on Jan 15, up 12.9% YTD, fueled by strong M&A transactions. **Individual stocks:** stocks under our screening set for a strong start in 2019, and the top three gains are NVCR, SGEN and ALXN, up 35.4%, 27.2% and 17.4%, respectively.



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



GRANDATIONCAPITAL

- **Lilly acquired LOXO for \$8bn.** On 1.7.19, Lilly announced to acquire LOXO in cash of \$8bn, equivalent of \$235/share, representing 68% share price premium. Key pipeline for LOXO includes LOXO-292, treating for multiple cancers; LOXO-305, treating for B-cell leukemias and lymphomas and Vitrakvi, on market, treating multiple cancers (**upside ▲ for LLY and LOXO**).
- **Intuitive Surgical announced preliminary Q4'18 results.** On 1.9.19, ISRG reported revenue is up 17% YoY and announced Intuitive-Fosun JV in China will begin operations in Jan'19. ISRG stock was up 7.3% on 1/9/19 (**upside ▲ for ISRG**).
- **Perspectives on Chinese healthcare market from JP Morgan Health Conference:** CDA has implemented a series of actions in the past years, aiming to encourage innovations among Chinese pharmaceutical companies. On the other hand, issues on high price of generic drugs are under control by disputing the inefficient cost hided in the distribution channels.

What's coming up?

Date	Ticker	Company Name	Event	Location	Note
1/22/19	JNJ	Johnson&Johnson	Q4'18 Earnings	NYSE	Pre-Market
1/23/19	ABT	Abbott Lab	Q4'18 Earnings	NYSE	Pre-Market
1/24/19	BMY	Bristol-Myers Squibb	Q4'18 Earnings	NYSE	Pre-Market
1/24/19	ISRG	Intuitive Surgical	Q4'18 Earnings	NASDAQ	Pre-Market
1/29/19	BIIB	Biogen	Q4'18 Earnings	NASDAQ	Pre-Market
1/29/19	DHR	Danaher	Q4'18 Earnings	NYSE	Pre-Market
1/30/19	TMO	Thermo Fisher	Q4'18 Earnings	NYSE	Pre-Market
1/30/19	ANTM	Anthem	Q4'18 Earnings	NYSE	Pre-Market
1/31/19	CELG	Celgene	Q4'18 Earnings	NASDAQ	Pre-Market
1/31/19	EW	Edwards Lifesciences	Q4'18 Earnings	NYSE	Pre-Market

Data Tracker:

- **We add a pipeline tracker of our screening portfolio (Exhibit 1).** From the table, we believe the companies in our portfolio remain healthy pipeline.
- **Transaction table update (Exhibit 2):** Entering to 2019, the two major M&A transactions are worth \$82bn.
- **Catalyst table update (Exhibit 3):** FDA will review three major cases in Jan'19. They are Sotagliflozin for Sanofi, Romosozumab for Amgen and Uloric for Takeda.
- **We add an estimated earning schedule table (Exhibit 4).** CELG, ISRG, BIIB and DHR will release their earnings in Jan'19. ISRG announced its preliminary results on 1/9/19.
- **Consensus Book (Exhibit 5):** We changed our consensus book to estimates surprise method to provide more accurate indicators on companies' performance.
- **Stock performance (Exhibit 6-19):** Entering to Jan'19, Biotech Index, up 13% MTD, outperformed the S&P 500. NVCR and SGEN were up 35.4% and 27.2% MTD, respectively.
- **We add a table to track the Biotech Index performance vs. S&P 500 (Exhibit 10-11).** In 2018, Biotech Index underperformed S&P 500 by 3.1%.
- **Short interest tracker (Exhibit 12):** The latest short interest data with an 12/31/18 settlement was released on 1/14/19. Short interest, when compared with the 12/14/18 settlement data is up 2.08% for DNLI and 1.13% for MGX.
- **Currency Tracker (Exhibit 14-18):** Entering to 2019, USD has depreciated against the CNY, CAD, JPY, EUR and GBP.



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



GRANDATIONCAPITAL

Exhibit 1: Pipeline Tracker----From the table, we believe the companies in our portfolio remain healthy pipeline.

Drug Development												
Ticker	Company	Key Candidates	Application	IND	Phase I	Phase II	Phase III	NDA	Date Added	Key Focus	Note	
MRNA	Moderna	OX40L	ovarian cancer	✓					1.15.19	Immuno-Onco	planning for Phase II with Merck partner with Merck	
		mRNA-4157	cancer vaccine		✓				1.15.19	Immuno-Onco		
		OX40L+IL23+IL36y	solid tumors or lymphoma						1.15.19	Immuno-Onco		
		mRNA-3704	methylmalonic acidemia	✓					1.15.19	Rare Disease		
DNLI	Denali	DNL747	ALS		✓				1.8.19	Neuro	partner with Sanofi	
		DNL201	Parkinson		✓				12.10.18	Neuro		
BIIB	Biogen	Aducanumab	Alzheimer's						1.15.19	Neuro		
		BIIB093	stroke						1.15.19	Neuro		
		BIIB092	Alzheimer's			✓			1.15.19	Neuro		
		BIIB098	multiple sclerosis					✓	1.15.19	Neuro		
		Elenbecestat	Alzheimer's			✓			1.15.19	Neuro		
SGEN	Seattle Genetics	Brentuximab	NHL			✓			1.15.19	CD30		
		Enfortumab	solid tumors			✓		✓	1.15.19	Tectin-4		
		Tisotumab	solid tumors			✓			1.15.19	Tissue factor		
		Tucatinib	breast cancer			✓			1.15.19	HER2+		
		Ladiratumumab	breast cancer			✓			1.15.19	TNBC		
		SGN-2FF	solid tumors						1.15.19	Immono-Onco		Prior IND
		ACTR-BCMA	multiple myeloma						1.15.19	Immono-Onco		Prior IND
		SGN-CD48A	relapsed multiple myeloma						1.15.19	Immono-Onco		Prior IND
		SEA-BCMA	multiply myeloma						1.15.19	Immono-Onco		Prior IND
IMGN	ImmunoGen	Mirvetuximab	ovarian cancer			✓			1.15.19	Immono-Onco		
		IMGN779	Leukemia		✓				1.15.19	Immono-Onco		
		IMGN632	Hematologic Malignancies		✓				1.15.19	Immono-Onco		

Source: Company Profile, Grandation

Exhibit 2: Major Biotech M&A activities in 2018 and 2019----Entering to 2019, M&A transactions are active for Biotech sector. BMY acquired CELG, valued at \$84bn on 1/3/19, and LLY acquired LOXO, valued at \$8bn on 1/7/19.

Date	Acquirer	Ticker	Acquiree	Deal Size (\$ in bn)	Price/share (\$)	Description
1/7/2018	Celgene	CELG	Impact Biomedicines	\$ 1.10	N/A	\$1.1bn upfront payment and \$1.25bn contingent payments
1/22/2018	Celgene	CELG	Juno Therapeutics	\$ 9.00	\$ 87.00	Cash
1/22/2018	Sanofi	SNY	Bioerativ	\$ 11.60	\$ 105.00	Cash
1/29/2018	Sanofi	SNY	Ablynx	\$ 4.80	\$ 55.00	Cash per ADS Shares
5/18/2018	Takeda	4502.JP	Shire	\$ 62.20	\$ 30.33	Cash plus 1.678 Takeda's ADS share
6/7/2018	Bayer	BAYA. AG	Monsanto	\$ 63.00	\$ 122.00	Cash, equivalent of 36% premium of MON's 30 day avg
11/20/2018	Boston Scientific	BSX	BTG	\$ 4.24	\$ 11.20	Cash, equivalent of 36.6% premium of BTG's 30 day avg.
12/3/2018	GSK	GSK	Tesaro	\$ 5.10	\$ 75.00	Cash, equivalent of 110% premium of TSRO's 30 day avg.
1/3/2019	Bristol-Myers Squibb	BMY	Celgene	\$ 74.00	\$ 102.43	\$50 Cash per share plus 1 BMY share
1/7/2019	Lilly	LLY	LOXO Oncology	\$ 8.00	\$ 235.00	Cash

Source: Company Profile, Grandation



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



GRANDATIONCAPITAL

Exhibit 3: Major catalysts during 1/16/19-1/30/19----Due to government shutdown, FDA reviewing process is delayed. Three major cases are under reviewing, which are Sotagliflozin for Sanofi, Romosozumab for Amgen and Uloric for Takeda.

Date	Company	Ticker	Drug/Therapy	Area of Practice	Stage/Status	Catalyst
1/17/2019	Sonofi-Aventis	SAN.F	Sotagliflozin	Type I Diabetes	NDA Submission	↑
1/16/2019	Amgen	AMGN	Romosozumab	Osteoporosis	Safety Review	↓
1/11/2019	Takeda	4502.JP	Uloric	Hyperuricemia	NDA Submission	↑
12/24/2018	Pfizer/Merck	PFE/MRK	Bavencio	Ovarian Cancer	Phase III Discontinued	
12/21/2018	Loxo Oncology	LOXO	LOXO-305	Genomically Defined Cancers	Phase I/II Initiation	
12/21/2018	AbbVie Inc	ABBV	Upadacitinib	RA(rheumatoid arthritis)	NDA Submission	
12/21/2018	Alexion	ALXN	Ultomiris	PNH(Paroxysmal Nocturnal Hemoglobinuria)	FDA Early Approval	
12/17/2018	Biogen	BIIB	BIIB098 (Diroximel Fumarate)	MS (multiple sclerosis)	NDA Submission	

Source: Company Profile, Grandation

Exhibit 4: Estimated earning schedule----CELG, ISRG, BIIB and DHR will release their earnings in Jan'19. ISRG announced its preliminary results on 1/9/19.

Next Earnings Schedule (Est)	Company	Ticker	Comment/Pre-earning Announcement
1/23/2019	Celgene Corp	CELG.O	Pre-Market
1/24/2019	Intuitive Surgical Inc	ISRG.O	Preliminary report released on 1/9/19
1/29/2019	Biogen Inc	BIIB.O	Pre-Market
1/29/2019	Danaher Corp	DHR	Pre-Market U.S.: 866-503-8675
2/1/2019	IDEXX Laboratories Inc	IDXX.O	
2/4/2019	Alexion Pharmaceuticals Inc	ALXN.O	
2/4/2019	Seattle Genetics Inc	SGEN.O	
2/6/2019	Regeneron Pharmaceuticals	REGN.O	
2/6/2019	Neuronetics Inc	STIM.O	
2/6/2019	Boston Scientific Corp	BSX	
2/7/2019	ImmunoGen Inc	IMGN.O	
2/25/2019	MacroGenics Inc	MGNX.O	
2/27/2019	Loxo Oncology Inc	LOXO.O	
2/28/2019	Novocure Ltd	NVCR.O	
3/1/2019	Horizon Pharma PLC	HZNP.O	
3/21/2019	Denali Therapeutics Inc	DNLI.O	
NA	Moderna Inc	MRNA.O	

Source: Thomson Reuters, Grandation



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



GRANDATIONCAPITAL

Exhibit 5: Consensus Book of Q3'18---- Below indicates the percentages of surprise between actual results and the street consensus.

Ticker	Company Name	Earnings Release	Revenue	GM	EBITDA	EBIT	EPS
MRNA.O	Moderna Inc	-	-	-	-	-	-
DNLI.O	Denali Therapeutics Inc	11/8/2018	-71.7%	-	-42.5%	-51.9%	-50.0%
BIIB.O	Biogen Inc	10/23/2018	3.2%	-0.5%	5.0%	5.9%	9.1%
CELG.O	Celgene Corp	10/25/2018	1.0%	-0.4%	-	1.6%	3.0%
MGNX.O	MacroGenics Inc	11/7/2018	312.7%	-	41.4%	38.2%	38.8%
IMGN.O	ImmunoGen Inc	11/2/2018	-16.3%	-	7.9%	-4.8%	0.0%
LOXO.O	Loxo Oncology Inc	11/8/2018	18.8%	-	-	-22.6%	-1.5%
NVCR.O	Novocure Ltd	10/25/2018	-0.9%	3.0%	-	9.9%	11.0%
ALXN.O	Alexion Pharmaceuticals Inc	10/24/2018	0.9%	0.3%	-1.7%	10.7%	16.1%
REGN.O	Regeneron Pharmaceuticals	11/6/2018	1.4%	1.4%	6.1%	10.3%	14.4%
STIM.O	Neuronetics Inc	11/6/2018	7.1%	3.2%	27.2%	30.7%	53.4%
BSX	Boston Scientific Corp	10/24/2018	-0.4%	1.1%	0.9%	0.7%	3.1%
DHR	Danaher Corp	10/18/2018	1.1%	-1.7%	2.9%	2.8%	2.3%
ISRG.O	Intuitive Surgical Inc	10/18/2018	0.4%	0.9%	3.3%	4.3%	6.3%
IDXX.O	IDEXX Laboratories Inc	11/1/2018	0.0%	0.1%	0.6%	2.0%	8.3%
HZNP.O	Horizon Pharma PLC	11/7/2018	4.3%	1.2%	24.3%	26.2%	31.4%
SGEN.O	Seattle Genetics Inc	10/25/2018	1.5%	2.3%	4.2%	-3.7%	-55.6%

Source: Thomson Reuters, Grandation

Exhibit 6: Stock Performance----Entering to Jan'19, Biotech Index, up 13% MTD, outperformed the S&P 500. NVCR and SGEN were up 35.4% and 27.2% MTD, respectively.

Ticker	Name	Price 1/16/19	Market Cap (\$bn)	WTD	MTD	YTD
Index:						
.NBI	NASDAQ Biotech Index	3414.96	NA	0.3%	12.9%	12.9%
.SPX	Standard & Poor's Corp	2616.1	NA	0.7%	4.3%	4.3%
Companies:						
NVCR.O	Novocure Ltd	45.26	4.21	4.8%	35.4%	35.4%
SGEN.O	Seattle Genetics Inc	71.67	11.57	0.9%	27.2%	27.2%
ALXN.O	Alexion Pharmaceuticals Inc	111.7	24.92	2.9%	17.4%	17.4%
HZNP.O	Horizon Pharma PLC	21.92	3.67	2.2%	14.4%	14.4%
BIIB.O	Biogen Inc	332.03	66.90	0.3%	11.1%	11.1%
REGN.O	Regeneron Pharmaceuticals	404.54	43.01	0.3%	9.8%	9.8%
ISRG.O	Intuitive Surgical Inc	515.93	58.92	2.8%	8.5%	8.5%
MRNA.O	Moderna Inc	16.26	5.27	-3.2%	7.8%	7.8%
IDXX.O	IDEXX Laboratories Inc	197.24	17.01	2.5%	6.3%	6.3%
BSX	Boston Scientific Corp	36.62	50.67	3.4%	4.1%	4.1%
DNLI.O	Denali Therapeutics Inc	21.17	2.01	1.7%	2.9%	2.9%
IMGN.O	ImmunoGen Inc	4.99	0.74	-11.9%	2.6%	2.6%
DHR	Danaher Corp	104.49	73.24	-0.6%	1.5%	1.5%
MGNX.O	MacroGenics Inc	12.83	0.54	-11.3%	-0.1%	-0.1%
STIM.O	Neuronetics Inc	14.96	0.26	-14.0%	-23.6%	-23.6%

Source: Thomson Reuters, Grandation



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648

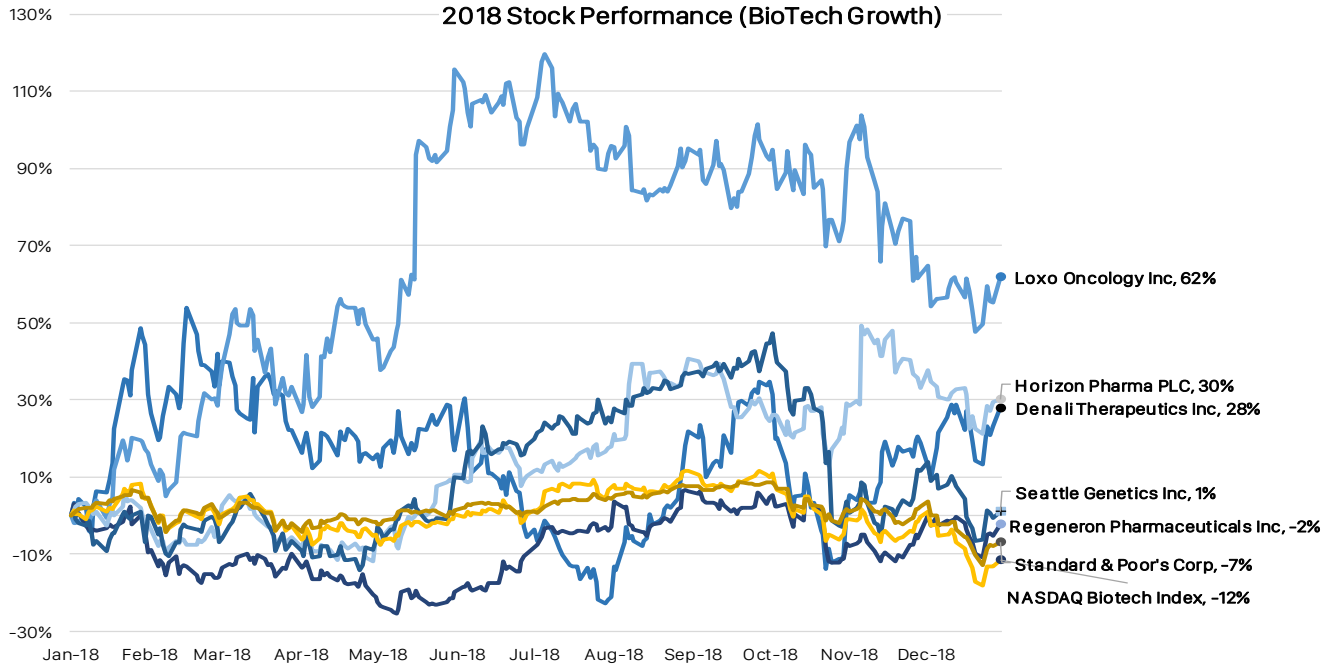


WWW.GRANDATIONCAPITAL.COM



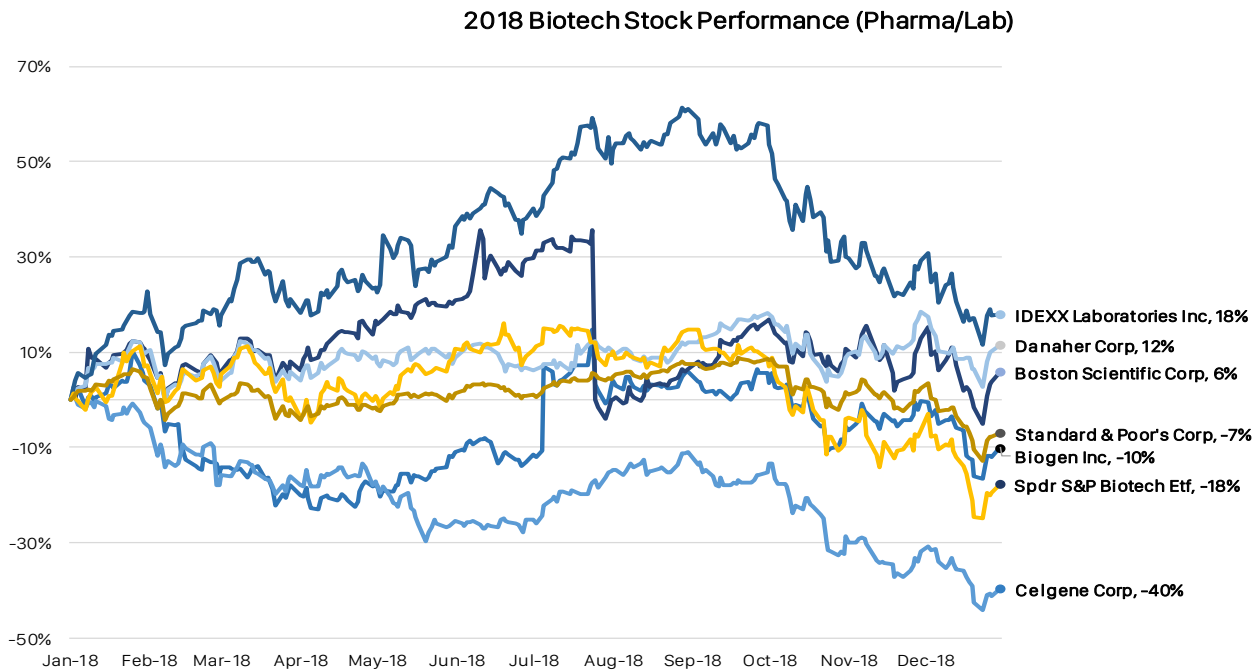
GRANDATIONCAPITAL

Exhibit 7: In 2018, the most gain in growth sector is LOXO, up 62% YTD, prior to the acquisition in Jan'19.



Source: Thomson Reuters, Grandation

Exhibit 8: In 2018, CELG, down 40% YTD, underperformed the biotech sector, prior to the acquisition in Jan'19.



Source: Thomson Reuters, Grandation



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648

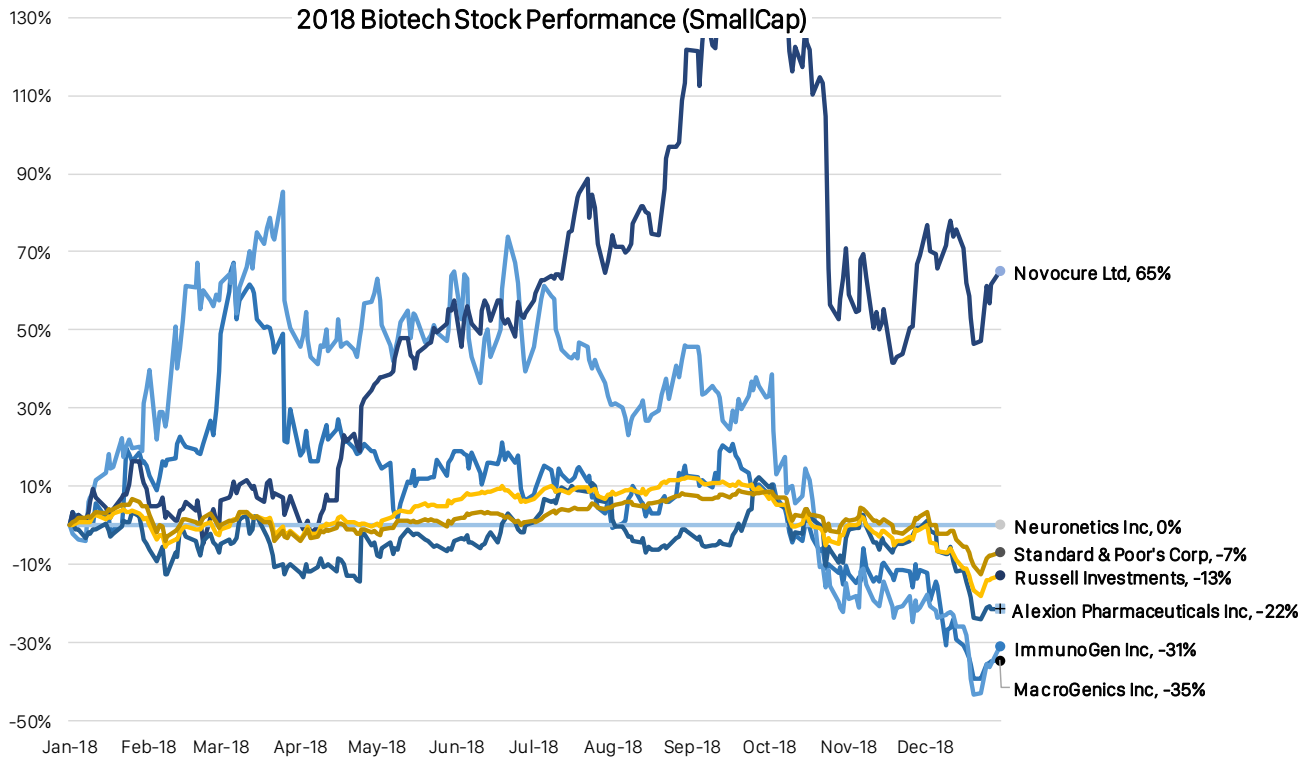


WWW.GRANDATIONCAPITAL.COM



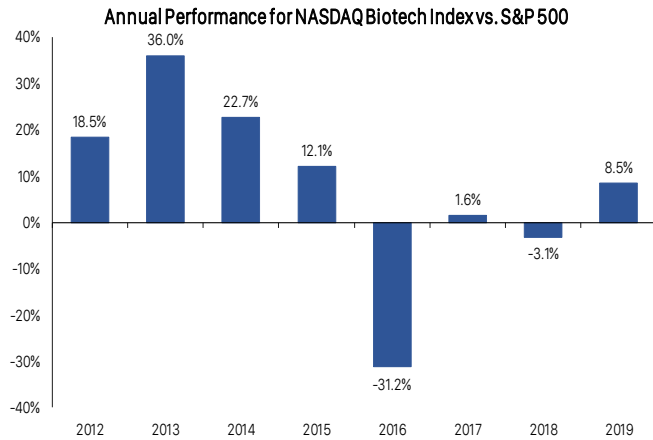
GRANDATIONCAPITAL

Exhibit 9: In 2018, the most gain in smallcap sector is NVCR, up 65% YTD.



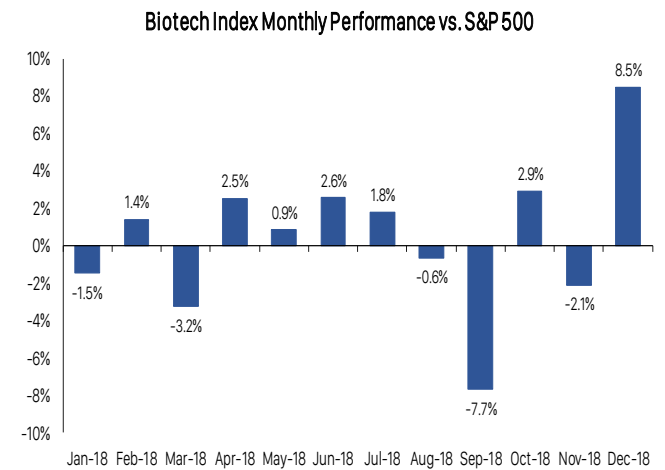
Source: Thomson Reuters, Grandation

Exhibit 10: Entering to 2019, NASDAQ Biotech Index outperformed S&P 500 by 8.5%.



Source: Thomson Reuters, Grandation

Exhibit 11: In 2018, Biotech Index are volatile vs. S&P 500 in Sep and Dec.



Source: Thomson Reuters, Grandation



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



GRANDATIONCAPITAL

Exhibit 12: Short Interest Tracker. ---- The latest short interest data with an 12/31/18 settlement was released on 1/14/19. Short interest, when compared with the 12/14/18 settlement data is up 2.08% for DNLI and 1.13% for MGX.

Ticker	Company	3mon avg daily volume	Short Interest	Days To Cover	Company Shares	Free Float	% of Free Float	Short interest /Float	Short interest /Float vs. Prior (% change)
MRNA.O	Moderna Inc	NA	6,480,950	2.73	324,411,226	NA	72.0%	NA	NA
DNLI.O	Denali Therapeutics Inc	407,969	9,918,450	20.31	94,957,092	74,887,846	78.9%	13.24%	2.08%
BIIB.O	Biogen Inc	1,376,699	3,814,596	2.81	201,482,595	200,660,437	99.6%	1.90%	0.08%
CELG.O	Celgene Corp	9,341,709	15,432,614	2.04	699,251,840	696,885,075	99.7%	2.21%	-0.04%
MGX.O	MacroGenics Inc	391,375	2,770,529	6.77	42,259,080	38,804,465	91.8%	7.14%	1.13%
IMGN.O	ImmunoGen Inc	2,757,793	13,505,005	5.89	149,090,770	146,643,717	98.3%	9.21%	0.54%
LOXO.O	Loxo Oncology Inc	820,373	2,305,647	6.20	30,614,536	27,315,551	82.4%	8.44%	0.03%
NVCR.O	Novocure Ltd	825,646	2,985,383	4.72	93,013,564	74,141,113	79.4%	4.03%	-0.64%
ALXN.O	Alexion Pharmaceuticals Inc	1,723,632	3,709,030	2.19	223,096,632	222,675,989	99.8%	1.67%	-0.42%
REGN.O	Regeneron Pharmaceuticals	789,199	1,982,242	2.68	106,323,210	77,938,110	72.9%	2.54%	-0.42%
STIM.O	Neuronetics Inc	126,943	817,893	5.82	17,579,491	17,370,653	98.8%	4.71%	0.49%
BSX	Boston Scientific Corp	7,777,498	12,004,999	1.51	1,383,800,781	1,380,535,428	99.7%	0.87%	0.02%
DHR	Danaher Corp	2,847,827	6,811,339	2.28	700,902,703	619,340,506	88.4%	1.10%	0.38%
ISRG.O	Intuitive Surgical Inc	902,090	1,462,614	1.76	114,200,264	113,117,257	99.0%	1.29%	-0.34%
IDXX.O	IDEXX Laboratories Inc	596,552	1,481,329	2.54	86,233,649	84,814,394	98.3%	1.75%	0.23%
HZNP.O	Horizon Pharma PLC	1,839,852	6,532,371	3.73	167,625,915	165,891,545	98.5%	3.94%	-0.02%
SGEN.O	Seattle Genetics Inc	1,137,109	10,315,521	9.42	161,366,636	159,499,736	98.8%	6.47%	-0.88%

Source: Thomson Reuters, Grandation

Exhibit 13: Valuation/Comp Sheet

Ticker	Company	Market Cap (\$bn)	Price 1/16/19	YTD Δ	MTD Δ	Revenue Growth		EPS		FCF Yield FY1	EV /Sales FY1	EV /EBITDA FY1	PE		PEG FY1	Div. Yield	
						This yr /Last yr	Next yr /this yr	FY0	FY1				LTM	FY0			FY1
MRNA.O	Moderna Inc	5.27	16.26	6.5%	6.5%	NA	-1.9%	(1.58)	-1.36	-17.5%	49.7x	NA	NA	(10.3x)	(11.9x)	NA	NA
DNLI.O	Denali Therapeut	2.01	21.17	2.5%	2.5%	NA	461.2%	(1.34)	-1.69	NA	64.9x	NA	NA	(15.8x)	(12.6x)	NA	NA
BIIB.O	Biogen Inc	66.9	332.03	10.3%	10.3%	8.4%	3.1%	25.81	27.99	7.7%	5.0x	8.9x	15.8x	12.9x	11.9x	1.5x	NA
CELG.O	Celgene Corp	61.04	87.30	36.2%	36.2%	17.2%	11.8%	8.80	10.39	6.9%	4.5x	8.5x	15.7x	9.9x	8.4x	0.4x	NA
MGX.O	MacroGenics In	0.54	12.83	1.0%	1.0%	-62.8%	60.5%	(4.28)	-4.22	NA	4.7x	NA	NA	(3.0x)	(3.0x)	NA	NA
IMGN.O	ImmunoGen Inc	0.74	4.99	4.0%	4.0%	-54.6%	17.2%	(1.24)	-1.19	NA	6.9x	NA	NA	(4.0x)	(4.2x)	NA	NA
LOXO.O	Loxo Oncology I	7.14	233.26	66.5%	66.5%	736.5%	38.9%	(2.16)	-3.38	2.9%	32.9x	NA	NA	(107.8x)	(69.1x)	NA	NA
NVCR.O	Novocure Ltd	4.21	45.26	35.2%	35.2%	40.8%	33.3%	(0.66)	-0.09	NA	12.4x	NA	NA	(69.0x)	(514.3x)	NA	NA
ALXN.O	Alexion Pharma	24.92	111.70	14.7%	14.7%	14.5%	18.1%	7.61	8.70	NA	5.6x	10.9x	100.7x	14.7x	12.8x	0.7x	NA
REGN.O	Regeneron Pha	43.01	404.54	8.3%	8.3%	10.7%	11.6%	21.70	22.69	NA	5.8x	14.0x	21.9x	18.6x	17.8x	1.4x	NA
STIM.O	Neuronetics Inc	0.26	14.96	-22.7%	-22.7%	NA	21.0%	(2.31)	-1.27	NA	NA	NA	NA	(6.5x)	(11.8x)	NA	NA
BSX	Boston Scientifi	50.67	36.62	3.6%	3.6%	8.6%	8.9%	1.39	1.58	1.1%	5.4x	20.4x	33.6x	26.3x	23.2x	2.1x	NA
DHR	Danaher Corp	73.24	104.49	1.3%	1.3%	8.2%	2.7%	4.51	4.82	4.8%	4.1x	17.2x	26.8x	23.2x	21.7x	2.6x	0.6%
ISRG.O	Intuitive Surgic	58.92	515.93	7.7%	7.7%	18.8%	16.9%	11.09	12.76	2.1%	13.0x	33.5x	52.8x	46.5x	40.4x	2.5x	NA
IDXX.O	IDEXX Laborato	17.01	197.24	6.0%	6.0%	12.2%	9.3%	4.19	4.69	1.9%	7.4x	30.6x	48.5x	47.0x	42.0x	2.3x	NA
HZNP.O	Horizon Pharm	3.67	21.92	12.2%	12.2%	12.3%	4.7%	1.70	1.76	NA	3.8x	11.0x	NA	12.9x	12.4x	0.7x	NA
SGEN.O	Seattle Genetic	11.57	71.67	26.5%	26.5%	33.5%	36.5%	(1.10)	-0.67	-5.1%	13.1x	NA	NA	(65.0x)	(107.8x)	NA	NA

Source: Thomson Reuters, Grandation



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



GRANDATIONCAPITAL

Exhibit 14: Currency Tracker-----Entering 2019, the USD has depreciated against the CNY, CAD and JPY but flat EUR and GBP.

Currency	1/14/19	1/7/19	WoW Δ	YTD Δ	YoY Δ
USD/EUR	0.872	0.872	0.0%	-1.2%	6.9%
USD/JPY	108.160	108.700	-0.5%	-0.7%	-2.1%
USD/CNY	6.767	6.850	-1.2%	-1.4%	5.2%
USD/GBP	0.777	0.783	-0.7%	-2.0%	7.2%
USD/CAD	1.328	1.330	-0.1%	-2.2%	6.9%
USD/INR	70.750	69.781	1.4%	1.1%	11.4%

Source: Thomson Reuters, Grandation

Exhibit 15: CNY vs. USD is up 1.2% WoW to 6.77.

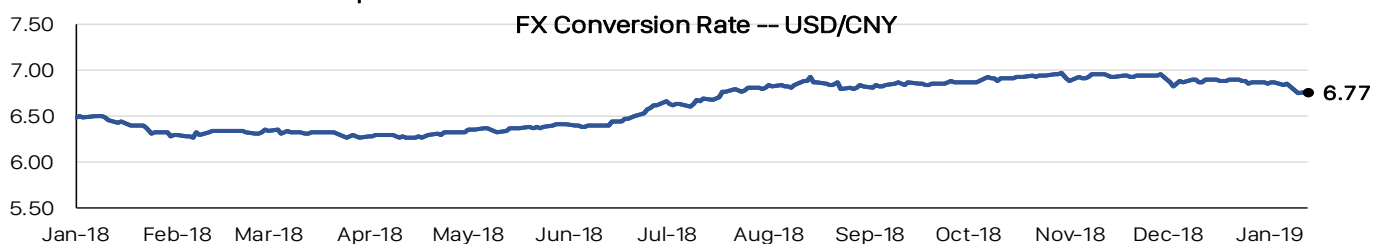


Exhibit 16: EUR vs. USD is flat WoW to 0.87.

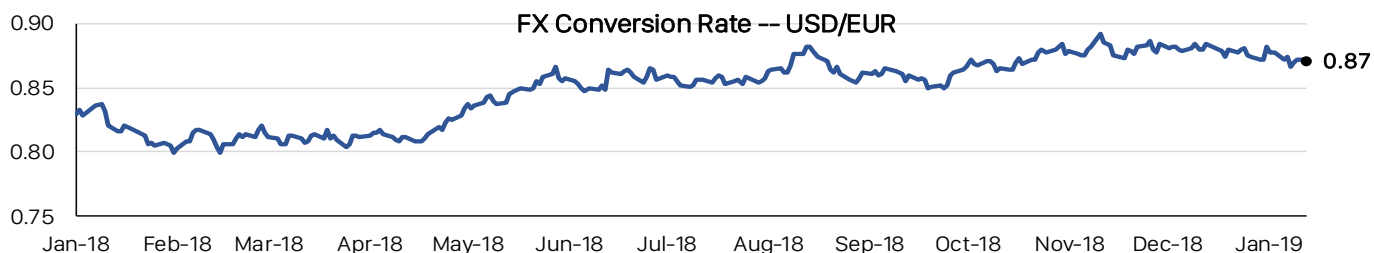


Exhibit 17: CAD vs. USD is up 0.1% WoW to 1.33.

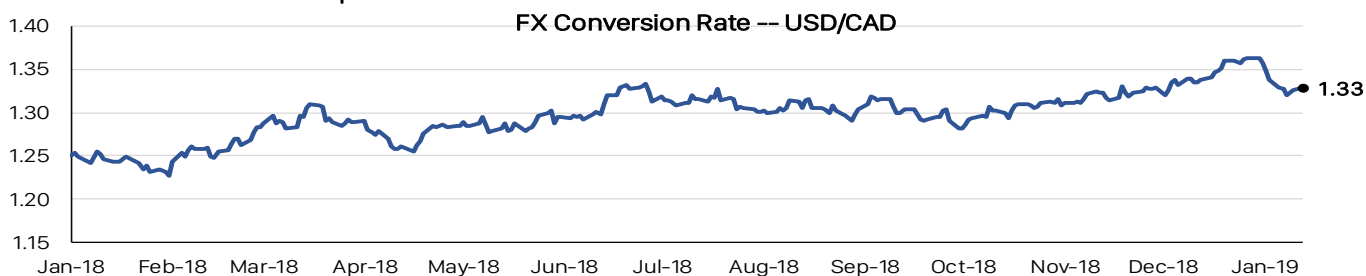
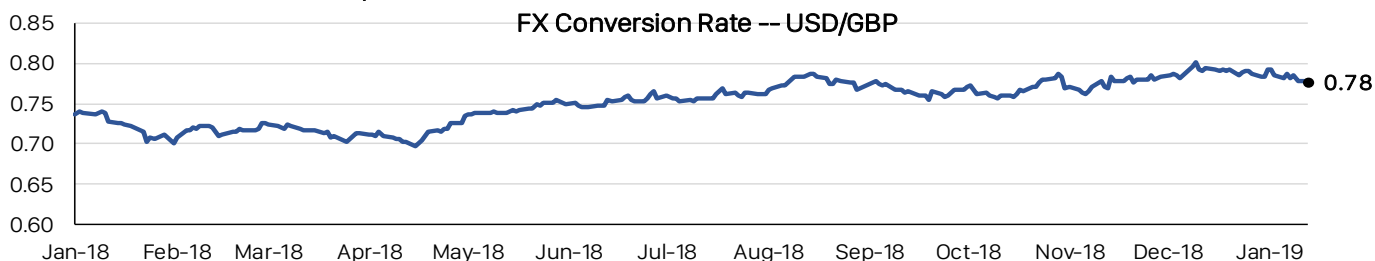


Exhibit 18: GBP vs. USD is up 0.7% WoW to 0.77.



Source: Thomson Reuters, Grandation



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648

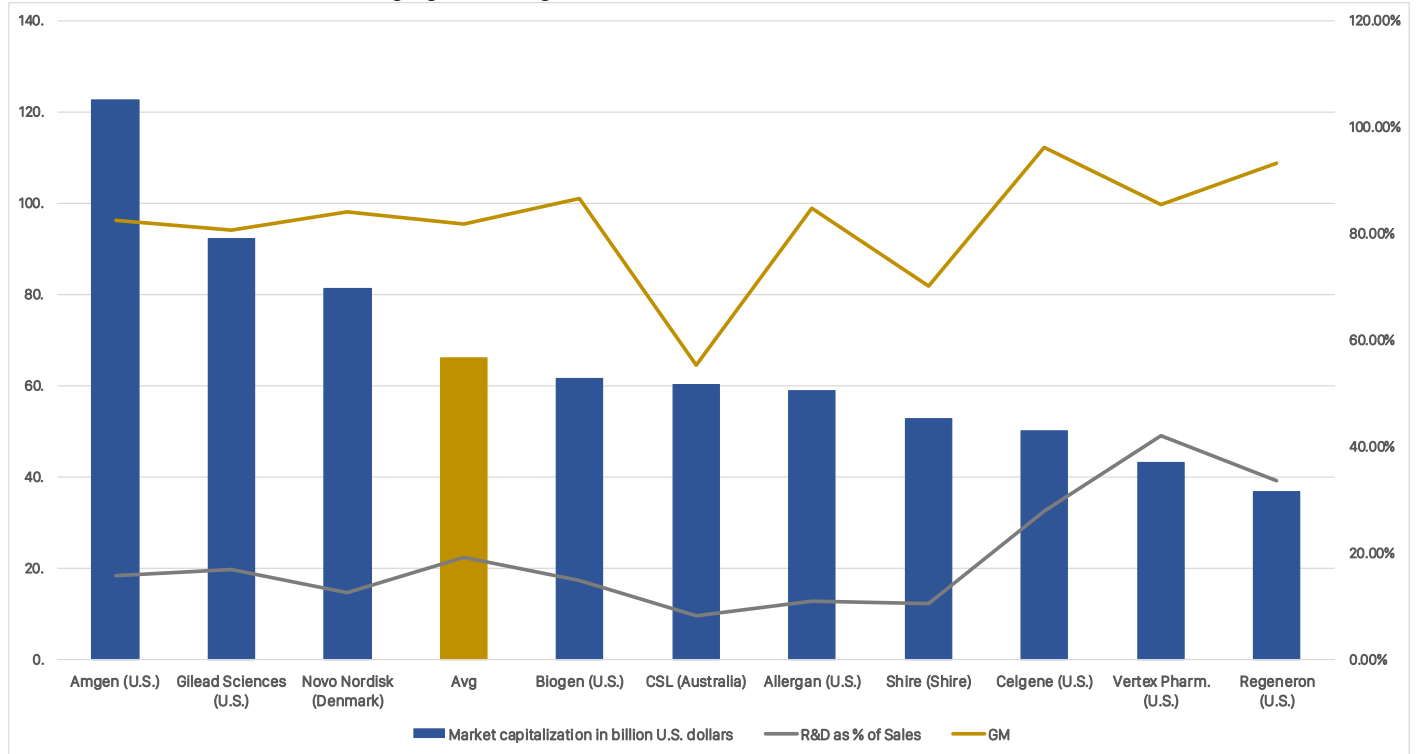


WWW.GRANDATIONCAPITAL.COM



GRANDATIONCAPITAL

Appendix 1: The top ten global biotech companies have an average market cap of \$66bn-----They averagely spend 19.28% of revenue in R&D and have an average gross margin of 81.91%.



Source: Statista, Grandation



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



GRANDATIONCAPITAL

Important Disclaimer and Disclosure

This research report is made available to our designated clients and may also be available through third- party vendors or alternate electronic version upon approval.

All information, material and facts in this report is from public sources and is not guaranteed to be complete or accurate but reflect our analysts' best views about the subject industry and companies. Our analysts do not receive any compensation directly and indirectly from the subject securities. Any estimates or recommendations in this report are subject to change without notice. This report should not be used as a complete analysis of the company, industry or security discussed in the report; therefore, readers should not make their investment decision solely based on this report. The adjustments should be made based on investors' risk profile, investment preference as well as their legal and regulatory constraints. Additionally, an investment in the securities may involve risks and uncertainties that could cause actual results to differ materially from the forward-looking statements.

For detailed disclaimer and disclosure information, please contact Grandation Capital at 626-345-5648 or mail inquiries to 150 S Los Robles Ave, Ste 930, Pasadena, CA 91101.

Rating on Investment Recommendations

Our rating system attempts to incorporate industry, company and/or overall market risks and volatilities; therefore, our investment recommendations on based on the security's 12-month price target from the date this report is issued.

- **STRONG BUY:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return exceeding 25% over the next 12-month period.
- **BUY:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return between 10% to 25% over the next 12-month period.
- **NEUTRAL:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return between -10% to 10% over the next 12-month period.
- **SELL:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return between -25% to -10% over the next 12-month period.
- **STRONG SELL:** A rating, which at the time it is instituted and or reiterated, that indicates an expected return exceeding -25% over the next 12-month period.

Grandation Capital Research Department

Office: Los Angeles, U.S.
Address: 150 S Los Robles, Ste 930
Pasadena, CA 91101
Website: grandationcapital.com
Phone: +1 626-345-5648
Email: info@grandationcapital.com

Effective Date: 1/1/2019



INFO@GRANDATIONCAPITAL.COM



+1 626 345 5648



WWW.GRANDATIONCAPITAL.COM



GRANDATIONCAPITAL