Ringer Capital

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Regeneron Pharmaceuticals, Inc. (REGN – NASDAQ)

Summary:

Regeneron Pharmaceuticals, Inc. is a biopharmaceutical company that discovers, manufactures, and sells drugs in the United States and abroad in combination with several partners. Currently, the company has three drugs on the market: EYLEA – an injection for the treatment of wet age-related macular degeneration, ZALTRAP – an injection for patients with metastatic colorectal cancer, and ARCALYST – an injection meant to treat Cryopyrin-Associated Periodic Syndromes (CAPS). Additionally, Regeneron has thirteen drugs being tested for FDA approval ranging in stages from Phase I to Phase III. The company plans to add 24 more drugs to its FDA testing pipeline by 2017.

Key Statistics		
Current Price	$	215.96
52 Week High	$	216.13
52 Week Low	$	107.31
One-Year Return		77.75%
Beta		0.81
Avg. Daily Volume		735,247
Shares Outstanding		95,381,517
Market Cap ($M)	$	20,271.0
Total Enterprise Value ($M)	$	20,420.3
Institutional Ownership		78.9%
P/E Ratio		31.97
Return on Assets		16.8%
Return on Equity		86.7%
TEV/EBITDA		44.6x
P/BV		16.2x

Outlook:

Regeneron's first blockbuster drug, EYLEA, first gained U.S approval in November 2011. Since then, the company has formalized a partnership with Bayer Healthcare to sell EYLEA abroad starting in December 2012. As a result, Regeneron generated $856.9 million in EYLEA sales, $20.2 million in ARCALYST sales, and $31.7 million in ZALTRAP sales during fiscal year 2012 – leading to the first profitable year in the company's 25 year history. While the stock price has risen greatly over the past two years, Regeneron is still greatly undervalued due to its incredibly robust current and future pipeline of drugs, lucrative partnerships, and the technology it has developed to more efficiently test its products.

Rating	OUTPERFORM	One Year Target Price	$ 249.00
Percent Gain	15.3%	Risk Profile	Medium

Competitive Advantages:

Regeneron has two incredibly strong competitive advantages that have contributed to the development of a robust pipeline of drugs, minimal development costs, and a global sales force that will be a catalyst for significant growth in the near future.

1) Partnerships

In order to achieve the company's goal of having 40 drugs in FDA trials by the year 2017, Regeneron has leveraged its industry experience and network to sign a lucrative deal with Sanofi (SNY) – their largest shareholder. The deal states Sanofi will provide up to $160 million to Regeneron each year to support nearly 100% of the company's preclinical work and clinical development costs for new drugs. In return, all profits from these drugs sold in the U.S will be split 50/50 between the two companies. Additionally, Regeneron will retain 45% of all sales abroad for each of the same drugs. While Sanofi currently owns 16% of Regeneron, the contract allows them to own a maximum of 30% of the company - which it is in the process of obtaining. Compared to most pharmaceutical companies, this deal is unique and lucrative because Regeneron is able to have all development costs covered while building up a huge pipeline of potential blockbuster drugs. The company is only obligated to pay back 50% of the development costs and profits on any drug that obtains FDA approval and is sold on the market.

Regeneron has another lucrative partnership with Bayer Healthcare in order to leverage the company's incredible global distribution, sales, and marketing network. At the moment, the deal only pertains to Regeneron's current blockbuster, EYLEA, and gives Bayer exclusive rights to market and sell the drug outside the U.S. This will be an important growth factor in the near future as EYLEA was only recently approved in the EU, Australia, Japan, and several South American countries. The deal states Regeneron will earn 40% of all profits from the Japanese market in addition to 50% of profits in all other countries. Further, Regeneron is eligible to receive milestone payments of $135 million as soon as EYLEA reaches international sales of $200 million. While many pharmaceutical companies have incredibly high overhead costs due to bulky sales and marketing teams across the globe, Regeneron has been able to keep fixed costs to a minimum in order to focus solely on selling within the U.S market, developing new drugs, and diversifying their portfolio to maximize shareholder value.

2) Technology

Regeneron has also been able to gain a leg up in the industry through the creation of innovative technology used to invent, test, and more efficiently produce new drugs. Since almost none of their costs are burdened by high overhead or development costs, the company has been able to invest in the creation of VelocImmune™ technology. Effectively, the technology is able to create human monoclonal antibodies, which are then injected into a mouse in order to test new drugs. This gives Regeneron the ability to test their early stage products on human antibodies without risking human lives. While most companies are forced to test their products using animal antibodies (i.e. mice), Regeneron can more accurately predict how the human body will react to their medication. As a result, the company is able to develop promising new drugs much more efficiently while being able to more accurately predict FDA trial data on their pipeline.

Valuation:

Despite a 20% increase in share price over the last two weeks, my valuation suggests the stock is still greatly undervalued. While today's stock price accurately reflects the potential of Regeneron's products currently on the market, it greatly undervalues the company's incredible pipeline and future developments. In fact, the recent 20% gain in share price can be attributed to the release of positive trial data within the

company's pipeline and hints at the potential that has yet to be revealed by the market. As a result, in order to uncover the intrinsic value of Regeneron, I first conducted a discounted cash flow analysis through 2017 – followed by a sum of the parts valuation on several of the later stage drugs in the company's pipeline. Because of the lengthy FDA testing process, none of the pipeline drugs will be released before 2017 – allowing the DCF to more accurately imply a share price based on the expected cash flows of the three drugs on the market today. Exhibit 1 shows a detailed summary of the DCF model and inputs used which implies a share price of **$168.43**.

However, in order to find the value of Regeneron's pipeline, it's necessary to dive into each of the 13 drugs individually. A chart of each pipeline drug can be seen below[1]:

Name	Phase	Effect
Eylea Injection	3	Diabetic Macular Edema
		Macular Edema Following Branch Retinal Vein Occlusion
Alirocumab (REGN727)	3	LDL cholesterol reduction
Sarilumab (REGN88)	3	Rheumatoid arthritis
Fasinumab (REGN475)	2*	Knee osteoarthritis
		Other pain indications
Dupilumab (REGN668)	2	Eosinophilic asthma
		Atopic dermatitis
Enoticumab (REGN421)	1	Advanced malignancies
Nesvacumab (REGN910)	1	Advanced malignancies
Zaltrap	1	Advanced malignancies
REGN1033	1	Metabolic Disorders
REGN1400	1	Advanced malignancies
REGN846	1	Atopic dermatitis
REGN1154	1	Undisclosed
REGN1500	1	Undisclosed

My research suggests the later stage drugs most likely to pass FDA approval are Eylea Injection, Alirocumab, Sarilumab, and Dupilumab – some of which have blockbuster potential. I was then able to conduct a sensitivity analysis of the future peak sales estimates[2] (given by several different analysts) compared to the potential market share Regeneron could achieve. In summary, the analysis generates three cases for potential peak sales of each of the four drugs:

Peak Revenue Estimates (in millions)	EYLEA	Alirocumab	Sarilumab	Dupilumab	Total
Conservative	$ 40	$ 200	$ 100	$ 300	$ 640
Base	$ 150	$ 900	$ 300	$ 400	$ 1,750
Aggressive	$ 300	$ 2,000	$ 600	$ 500	$ 3,400

Using this information, I was able to find the Net Present Value of the Regeneron's cash flows in order to deduce the value per share each of the drugs are able to add to the DCF implied share price. Therefore, the total value per share of each scenario was added to the implied share price of $168.43 in order to reach the Total Share Price estimates.

Conservative Case

	Peak Sales	Year	NPV	Value/Share
EYLEA	$ 40	2017	$ 140	$ 1
Alirocumab	$ 200	2018	$ 855	$ 9
Sarilumab	$ 100	2017	$ 350	$ 4
Dupilumab	$ 300	2020	$ 1,700	$ 18
Total				**$ 32**

Base Case

	Peak Sales	Year	NPV	Value/Share
EYLEA	$ 150.00	2017	$ 530	$ 6
Alirocumab	$ 900.00	2018	$ 3,840	$ 40
Sarilumab	$ 300.00	2017	$ 1,050	$ 11
Dupilumab	$ 400.00	2020	$ 2,275	$ 24
Total				**$ 81**

[1] Only Fasinumab (REGN475) has shown negative trial data and the FDA has put a pause on its trials. As a result, the drug is not considered in my valuation.

[2] All peak sales figures are shown in millions of dollars.

Aggressive Case	Peak Sales	Year	NPV	Value/Share
EYLEA	300	2017	$ 1,050	$ 11
Alirocumab	2000	2018	$ 8,550	$ 90
Sarilumab	600	2017	$ 2,100	$ 22
Dupilumab	500	2020	$ 2,840	$ 30
Total				$ 152

Total Share Price	
Conservative	$ 200
Base	$ 249
Aggressive	$ 321

We are left with a share price estimate for Regeneron over the next one to three years of $249 as more trial data is released and pipeline drugs become closer to hitting the market. Given today's price per share of $215.96, the base case would lead us to a 15.3% increase in share price.

The share price estimate of $249, however, only accounts for four of the thirteen drugs in the pipeline. Therefore, there are an additional nine drugs already in FDA trials as well as twenty-four future pipeline drugs that this implied share price has not yet valued. Since Sanofi is locked in to pay 100% of the development costs for each and every one of these drugs until they become FDA approved, the risk-reward profile of Regeneron is incredibly low. In fact, the company has almost no risk of running out of cash in the process of developing several more blockbuster drugs in the medium to long-term while the share price will begin to reflect any additional trial data that is released.

Near-term Catalysts:

1) *European roll-out of EYLEA:* One of the main revenue drivers for Regeneron over the next year will be the roll-out of EYLEA in the European market. Because EYLEA just recently achieved European approval in December 2012, we can expect a similar growth trajectory in Europe compared to the United States. As Bayer Healthcare begins to market and sell EYLEA in more and more EU countries over the next one to two years, Regeneron will certainly continue to experience hefty sales growth.
2) *Avastin Mishaps:* In February 2012 and April 2012 authorities discovered batches of counterfeit Avastin within the United States. The batches had been made in Turkey and Egypt under the umbrella of fake pharmaceutical companies and were then exported and sold in the U.S. As a result, the market share of Roche's drug, Avastin, has fallen from 65% to 35% over the last year. While sales of competing drug, Lucentis, have remained around $400 million over the last five quarters, it appears previous Avastin customers will continue switching to EYLEA over the next year.
3) *New trial data:* Due to Regeneron's robust pipeline, there are several important dates throughout 2013 and 2014 where trial data will be released and serve as a major catalyst for the company's stock price.

Risks:

1) *New Competing Drugs:* Two drugs in particular, Opthotech and Allergan, have been cited as threats to EYLEA. However, both drugs are currently being tested by the FDA, and if approved as soon as possible, they will still not be available for sale until 2017. That said, positive trial data over that time period could be reflected negatively in Regeneron's share price.
2) *FDA rejection of pipeline drugs:* It is always possible for the FDA to reject any of the drugs within REGN's pipeline and would create a very bearish move in the company's stock price.
3) *Patent lawsuits:* Regeneron currently has 185 issued patents in the U.S as well as 777 patents in foreign countries effective until 2028. In the past, the company has been sued by competitors such as Genentech and serves as a risk for the company going forward. While the patent portfolio of Regeneron is very strong, news of a lawsuit would negatively affect their stock price.

Exhibit 1: DCF Analysis

REGN Financial Projections

Fiscal Year Ending ($MMs)	12/31/13	12/31/14	12/31/15	12/30/16	12/30/17
Revenue	**$2,274.5**	**$3,298.0**	**$4,122.5**	**$4,740.9**	**$5,215.0**
EBIT	750.6	1,088.3	1,360.4	1,564.5	1,720.9
Depreciation and Amortization	5.7	8.2	10.3	11.9	13.0
EBITDA	$756.3	$1,096.6	$1,370.7	$1,576.3	$1,734.0
Capital Expenditures	(102.4)	(148.4)	(185.5)	(213.3)	(234.7)
Working Capital Requirements	(179.2)	(204.7)	(164.9)	(123.7)	(94.8)

Discounted Cash Flow (DCF) Analysis

Fiscal Year Ending ($MMs)	12/31/13	12/31/14	12/31/15	12/30/16	12/30/17
Revenue	**$2,274.49**	**$3,298.0**	**$4,122.5**	**$4,740.9**	**$5,215.0**
EBIT	$750.6	$1,088.3	$1,360.4	$1,564.5	$1,720.9
Less: Taxes	(300.2)	(435.3)	(544.2)	(625.8)	(688.4)
Debt-Free Earnings	**$450.3**	**$653.0**	**$816.3**	**$938.7**	**$1,032.6**
Less: Capital Expenditures	(102.4)	(148.4)	(185.5)	(213.3)	(234.7)
Less: Working Capital Requirements	(179.2)	(204.7)	(164.9)	(123.7)	(94.8)
Add: Depreciation and Amortization	5.7	8.2	10.3	11.9	13.0
Total Net Investment	**($275.9)**	**($344.9)**	**($340.1)**	**($325.2)**	**($316.5)**
Net Debt-Free Cash Flows:	**$174.5**	**$308.1**	**$476.2**	**$613.5**	**$716.1**
Discount Period (end convention)	0.72	1.72	2.72	3.72	4.72
Discount Period (mid year convention)	0.36	1.22	2.22	3.22	4.22
Discount Factor @ 5.5%	0.96	0.91	0.86	0.82	0.78
PV of Net Debt-Free Cash Flows:	**$167.8**	**$280.9**	**$411.4**	**$502.4**	**$555.7**

Discount Rate and Tax Rate Assumptions	
Discount Rate	5.5%
Tax Rate	40.0%

Terminal Value Analysis	
Terminal Year EBITDA	$1,734.0
Terminal Multiple	10.0x
Terminal Value	**$17,339.82**
Discount Period	4.72
Discount Factor @ 5.5%	0.78
PV of Terminal Value	**$13,456.5**

Projection Period Value Analysis	
PV of Proj. Period FCFs	**$1,918.3**

Distribution of Value	
Period Cash Flow	12.5%
Terminal Cash Flow	87.5%
Total	100.0%

Implied TEV & Equity Value	
Implied TEV	**$15,374.8**
Less: Debt	$457.3
Less: Pref.	$2.7
Less: Min. Int.	$0.0
Plus: Cash	$230.2
Implied Equity Value	**$16,065.0**

Key Assumptions		
72.3%	Stub Period	
12/31/13	Current Fiscal Year Ending	
04/11/13	Transaction/Valuation Date	
$1,378.5	Revenue Last Fiscal Year	12/31/12
65.0%	Revenue Growth	
33.0%	EBIT Margin	
40.0%	Tax Rate	
0.3%	D&A % of Revenue	
4.5%	CapEx % of Revenue	
20.0%	WC Requirement as a % of Incrimental Revenue	
10.0x	Terminal Multiple (EBITDA)	
5.5%	Discount Rate	
NO	Mid Year Convention (YES or NO)	
2.0x	Terminal Multiple Increment	
2.0%	Discount Rate Increment	
10.0x	Terminal Multiple	
5.5%	Discount Rate	
95.38	Basic Shares	
95.38	FD Shares	
$168.43	Implied Share Price	

$168.43 Implied Share Price

TEV - Sensitivity Analysis

Discount Rate \ Terminal Multiple	6.0x	8.0x	10.0x	12.0x	14.0x
9.5%	8,474.8	10,732.4	12,989.9	15,247.5	17,505.0
7.5%	9,194.1	11,657.0	14,119.9	16,582.8	19,045.7
5.5%	9,992.2	12,683.5	**15,374.8**	18,066.1	20,757.4
3.5%	10,879.4	13,825.3	16,771.2	19,717.1	22,663.0
1.5%	11,867.9	15,098.2	18,328.4	21,558.7	24,789.0

Equity Value - Sensitivity

Discount Rate \ Terminal Multiple	6.0x	8.0x	10.0x	12.0x	14.0x
9.5%	9,165.0	11,422.6	13,680.1	15,937.7	18,195.2
7.5%	9,884.3	12,347.2	14,810.1	17,273.0	19,735.9
5.5%	10,682.4	13,373.7	**16,065.0**	18,756.3	21,447.6
3.5%	11,569.6	14,515.5	17,461.4	20,407.3	23,353.2
1.5%	12,558.1	15,788.4	19,018.6	22,248.9	25,479.2

Current Year TEV/REV - Sensitivity

Discount Rate \ Terminal Multiple	6.0x	8.0x	10.0x	12.0x	14.0x
9.5%	3.7x	4.7x	5.7x	6.7x	7.7x
7.5%	4.0x	5.1x	6.2x	7.3x	8.4x
5.5%	4.4x	5.6x	**6.8x**	7.9x	9.1x
3.5%	4.8x	6.1x	7.4x	8.7x	10.0x
1.5%	5.2x	6.6x	8.1x	9.5x	10.9x

Share Price- Sensitivity

Discount Rate \ Terminal Multiple	6.0x	8.0x	10.0x	12.0x	14.0x
9.5%	$96.1	$119.8	$143.4	$167.1	$190.8
7.5%	$103.6	$129.5	$155.3	$181.1	$206.9
5.5%	$112.0	$140.2	**$168.4**	$196.6	$224.9
3.5%	$121.3	$152.2	$183.1	$214.0	$244.8
1.5%	$131.7	$165.5	$199.4	$233.3	$267.1

Current Year TEV/EBITDA - Sensitivity

Discount Rate \ Terminal Multiple	6.0x	8.0x	10.0x	12.0x	14.0x
7.5%	12.2x	15.4x	18.7x	21.9x	25.2x
5.5%	13.2x	16.8x	20.3x	23.9x	27.4x
3.5%	14.4x	18.3x	**22.2x**	26.1x	30.0x
1.5%	15.7x	20.0x	24.2x	28.5x	32.8x
0.0%	16.8x	21.4x	26.0x	30.5x	35.1x