Zacks Small-Cap Research

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Spring Bank Pharmaceuticals Inc. (SBPH - NASDAQ)

Spring Bank Enters 3rd Collaboration.

Based on our DCF model and a 20% discount rate, SBPH is valued at approximately $33.00 per share. Our model applies a 15% probability of SB9200 sales for chronic hepatitis B virus based on historical Phase 2 success ratios. Our valuation includes geographic contributions from the US, Europe and Asia.

Current Price (12/19/2016)	$7.69
Valuation	**$33.00**

OUTLOOK

Spring Bank Pharma is currently conducting a Phase 2 trial for SB 9200, an immunomodulatory agent built on their small molecule nucleic acid hybrid chemistry platform. The drug targets the RIG-I and NOD2 signaling proteins, engaging the body's immune response to potentially address a variety of diseases including HBV, RSV, HIV Latency and HDV.

In June 2016, the company began dosing its first patient in its ACHIEVE trial with initial data expected in 1H:17. Following a recent $15 million fundraising, SBPH has sufficient capital to complete its Phase 2a and 2b trials, through anticipated full enrollment in 2H:18.

At the current price, we view Spring Bank shares as undervalued, with substantial upside given the size of the Hepatitis B market. We maintain our target price of $33.00 per share and believe that expansion into new diseases and the STING program can provide additional upside to our valuation.

SUMMARY DATA

52-Week High	**13.25**
52-Week Low	**7.14**
One-Year Return (%)	**N/A**
Beta	**N/A**
Average Daily Volume (sh)	**9,421**
Shares Outstanding (mil)	**7.77**
Market Capitalization ($mil)	**78.9**
Short Interest Ratio (days)	**1.77**
Institutional Ownership (%)	**N/A**
Insider Ownership (%)	**N/A**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**N/A**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2017 Estimate	**N/A**
P/E using 2018 Estimate	**N/A**
Zacks Rank	**N/A**

Risk Level	**Above Average**
Type of Stock	**Small-Growth**
Industry	**Med-Biomed/Gene**

ZACKS ESTIMATES

Revenue

(In millions of US$)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2015	$0.3 A	$0.3 A	$0.3 A	$0.1 A	$0.9 A
2016	$0.3 A	$0.1 A	$0.0 A	$0.0 E	$0.4 E
2017					$0.0 E
2018					$0.0 E

Earnings per Share

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2015	-$0.37 A	-$0.39 A	-$0.58 A	-$0.67 A	-$2.03 A
2016	-$1.11 A	-$0.62 A	-$0.53 A	-$0.58 E	-$2.84 E
2017					-$1.79 E
2018					-$1.85 E

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WHAT'S NEW

Spring Bank Inks 3rd Collaboration Agreement

On December 19, 2016, Spring Bank Pharmaceuticals Inc. (NASDAQ: SBPH) announced a collaboration between its SB9200 immunomodulator and Arbutus Biopharma's (NASDAQ: ABUS) AB-423, a capsid inhibitor. The collaboration will begin with preclinical combination work with the two compounds. As a reminder, a capsid is the protein shell of a virus which encloses its genetic material. Arbutus' capsid assembly inhibitors prevent the virus from propagating by interfering with the assembly of the viral shell.

Currently, Arbutus is in the IND enabling phase for AB-423 and has conducted preclinical combination data along with Entecavir both *in vitro* and in a mouse model. The collaboration between Spring Bank and Arbutus will generate data on the efficacy of an immunomodulator and capsid inhibitor used in tandem. Spring Bank will donate the drug and have access to the data generated but will not be required to make a further financial commitment as a result of the deal.

On October 6th of this year, Spring Bank announced a collaboration with Arrowhead Pharmaceuticals (NASDAQ: ARWR) to use Arrowhead's AR-520, an RNAi gene silencer, and Spring Bank's SB9200. The ARC-520 compound uses a small interfering RNAs (siRNAs) upstream of the reverse transcription process to inhibit HBV cccDNA-derived mRNA and reduce the production of HBV viral proteins. Regulatory agencies raised safety concerns regarding preclinical work in non-human primates employing Arrowhead's proprietary "EX1" liver-targeted, intravenously administered delivery vehicle. At the highest doses of AR-520, some of the animal models died, however, in the human trials, only 3 serious adverse events occurred and were related to a temporary and, ultimately resolved, fever and an instance of hepatic carcinoma which was judged to be unrelated to the arc-520 therapy. However, due to the adverse events in the *in vivo* preclinical work, all of the HBV-related clinical trials were halted in early December 2016.

Following the termination of the HBV clinical programs, Arrowhead chose to return to the pre-clinical stage administering the AR-520 subcutaneously as compared to the intravenous route previously employed. The collaboration between Arrowhead and Spring Bank will continue in the lab.

Spring Bank's collaboration with Gilead Sciences (NASDAQ: GILD) continues as the partner contributes Viread (tenofovir) to combination studies performed in the phased trials. Gilead has recently launched an improved version of tenofovir which demonstrates ten times the efficacy of its precursor as well as improved renal and bone safety. The new drug named Vemlidy is expected to replace the currently used Viread in the next stage of trials.

Spring Bank recently raised $15 million in gross proceeds with the sale of 1.64 million shares of common stock and warrants. The securities were sold at a price of $9.12 per share and the warrants have a strike price of $10.79 and a five year duration. The proceeds from the financing, along with the $15.6 million on the balance sheet as of the end of 3Q:16 are expected to provide sufficient funding to support the Phase 2a and 2b programs for SB 9200 and support preclinical work for the STING agonist program. The company anticipates that current cash and equivalents are sufficient to support operations until the second half of 2018.

The company is currently enrolling for the first cohort of its Phase 2a dose finding study and expects to complete this by year end or early January. Canada has contributed the largest number of patients at this point, but we expect that Korea will make up the majority of participants in the months ahead. Topline results for the initial dose should be available three months following full enrollment. We remind investors that expectations for the initial dose of 25 mg are minimal given the objective of developing a dose response curve. The second, third and fourth cohorts will double the dose of SB9200 each iteration to 50 mg, 100 mg and 200 mg respectively and are where we should expect to see the highest rate of response.

Review of Spring Bank Thesis

As a reminder, we currently have a $33.00 price target based on our estimates of a 2022 worldwide launch of SB 9200 either alone or with a global pharmaceutical partner. SB 9200 is a small dinucleotide developed as a prodrug using the company's small molecule nucleic acid hybrid (SMNH) platform technology. The product is designed to activate specific intracellular sensor proteins including RIG-I, NOD 2 and STING which activate the body's immune system to fight viral infections including hepatitis B (HBV).

The company's lead product is in Phase 2a trials for chronic HBV. SB 9200 is pan-viral and could be a future treatment option in addressing certain viral respiratory diseases, HIV latency, hepatitis D (HDV) and potentially other diseases caused by RNA viruses. The compound functions by selectively modulating the antiviral signaling proteins, RIG-I and NOD2, in virally-infected cells. This selective immune-modulation has the capability to up-regulate the host immune response and potentially destroy the virally-infected cell.

SBPH also has a very exciting immuno-oncology drug in the pre-clinical phase that targets the STING (STimulator of INterferon Genes) protein. Initial work performed by Spring Bank and others pursuing this pathway have engendered a lot of interest and investment given the promising early-stage preclinical data.

Below we summarize the key elements of our thesis:

- **Positive public health environment for the development CHB functional cure**
- **Potential addressable market size of near 4 million patients in the U.S. and EU alone**
- **Lack of other effective immunomodulators available in the market**
- **Promising proof of concept data in important animal models for chronic HBV**
- **Well tolerated lead compound with no dose limiting toxicities and promising antiviral activity**
- **Proprietary technology platform that can be broadly applied in multiple therapeutic indications**

PROJECTED FINANCIALS

Spring Bank Pharmaceuticals Inc. - Income Statement

Spring Bank Pharmaceuticals	2015 A	Q1 A	Q2 A	Q3 A	Q4 E	2016 E	2017 E	2018 E
Grant Revenue	**$0.9**	**$0.3**	**$0.1**	**$0.0**	**$0.0**	**$0.4**	**$0.0**	**$0.0**
YOY Growth	-	-	-	-	-	-	-	-
SB9200	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**
YOY Growth								
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
YOY Growth								
Total Revenues	**$0.9**	**$0.3**	**$0.1**	**$0.0**	**$0.0**	**$0.4**	**$0.0**	**$0.0**
CoGS	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Product Gross Margin								
R&D	$7.5	$5.6	$2.9	$2.7	$2.8	$14.0	$10.4	$12.0
G&A	$5.0	$1.2	$1.5	$1.5	$1.7	$5.8	$6.9	$8.0
Other expenses	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Operating Income	($11.6)	($6.5)	($4.3)	($4.2)	($4.5)	($19.5)	($17.3)	($20.0)
Operating Margin	-					-	-	-
Total Other Income	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Pre-Tax Income	($11.6)	($6.5)	($4.3)	($4.1)	($4.5)	($19.5)	($17.3)	($20.0)
Taxes & Other	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Tax Rate	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Net Income	($11.6)	($6.5)	($4.3)	($4.1)	($4.5)	($19.5)	($17.3)	($20.0)
Reported EPS	**($2.03)**	**($1.11)**	**($0.62)**	**($0.53)**	**($0.58)**	**($2.84)**	**($1.79)**	**($1.85)**
YOY Growth						-	-	-
Shares Outstanding	5.7	5.9	6.9	7.8	7.8	7.1	9.7	10.8

Source: Company Filing // Zacks Investment Research, Inc. Estimates

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