Zacks Small-Cap Research
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AmpliPhi Biosciences Corp. (APHB-NYSE American)

APHB: Successful Case Reports Presented for AB-SA01 and AB-PA01…

Based on our probability adjusted DCF model that takes into account potential future revenues from the company's personalized phage therapies, AB-SA01, and AB-PA01, APHB is valued at $4.00/share. This model is highly dependent upon continued clinical and regulatory success and will be adjusted accordingly based upon future results.

Current Price (06/12/18)	$1.24
Valuation	**$4.00**

OUTLOOK

On June 7, 2018, AmpliPhi Biosciences Corp. (APHB) announced two presentations regarding the use of the company's bacteriophage development products in critically ill patients. At the American Society for Microbiology 2018 annual meeting data was presented from four critically ill patients treated with AB-SA01 that were suffering from *Staphylococcus aureus* infections. The treatment was well tolerated in all patients and bacterial elimination was shown in three out of four patients. At the 41st European Cystic Fibrosis Conference, data was presented on a cystic fibrosis (CF) patient that was treated with AB-PA01 for a multidrug resistant Pseudomonas aeruginosa infection. Following eight weeks of treatment with AB-PA01 the patient's infection resolved and there has been no recurrence of pneumonia or CF exacerbation.

SUMMARY DATA

52-Week High	**$1.87**
52-Week Low	**$0.72**
One-Year Return (%)	**47.62**
Beta	**2.88**
Average Daily Volume (sh)	**165,515**
Shares Outstanding (mil)	**16**
Market Capitalization ($mil)	**$20**
Short Interest Ratio (days)	**N/A**
Institutional Ownership (%)	**8**
Insider Ownership (%)	**2**
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 2018 Estimate	**-1.4**
P/E using 2019 Estimate	**-1.5**

Risk Level	**High**
Type of Stock	**Small-Value**
Industry	**Med-Biomed/Gene**

ZACKS ESTIMATES

Revenue
(in millions of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2017	0.0 A	0.0 A	0.0 A	0.0 A	0.1 A
2018	0.0 A	0.0 E	0.0 E	0.0 E	0.0 E
2019					0.0 E
2020					0.0 E

Earnings per Share

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2017	-$1.94 A	-$1.21 A	-$0.09 A	-$0.24 A	-$2.01 A
2018	-$0.23 A	-$0.19 E	-$0.14 E	-$0.14 E	-$0.69 E
2019					-$0.63 E
2020					-$0.66 E

Business Update

Multiple Case Reports Presented for Patients Treated with AB-SA01 and AB-PA01

On June 7, 2018, AmpliPhi Biosciences Corp. (APHB) reported that multiple case reports on patients treated with the company's lead bacteriophage development products, AB-SA01 and AB-PA01, were presented at the American Society of Microbiology (ASM) Annual Meeting and the 41st European Cystic Fibrosis Conference. Topline results from these cases had previously been announced by AmpliPhi with the presentations providing additional details.

At ASM, a presentation described four cases of severe *Staphylococcus aureus* infection treated with AB-SA01. Three of the cases involved patients with endovascular infection and one case of severe vertebral osteomyelitis with epidural abscess. For all the patients, medical and surgical therapy options had been exhausted. Patients were treated with $3x10^9$ plaque-forming units of AB-SA01 intravenously twice-daily for two weeks in combination with the best antibiotic therapy available. The bacteriophage therapy was well tolerated in all patients with no reports of serious adverse events. Three of the patients had elimination of their infection while the fourth patient only received two days of bacteriophage treatment after suffering from uncontrolled septic shock and valve necrosis and passed away during surgery due to dehiscence of newly implanted valves. This is summarized in the following chart.

Patient Hospital ID:	WMP001	WMP003	WMP004	WMP005
Total number of doses	28	6	28	28
Post Phage treatment observations:	C-reactive protein subsided over the course of bacteriophage therapy. Staphylococcal presence in the blood was knocked down after bacteriophage administration and became undetectable after 3 days.	Staphylococcal presence in the blood appeared little effected by 6 doses of AB-SA01 and was present at very high levels (not different scale on vertical axis) until death. Blood cultures were also positive throughout.	C-reactive protein and procalcitonin subsided over the course of bacteriophage therapy	Staphylococcal presence in the blood was knocked down after bacteriophage administration and became undetectable after 3 days
Phage resistant Bacterial isolates at the end of treatment?	No, none cultured	No	No, none cultured	No, none cultured
28-, 60-, 90-day Mortality	No, No, No	Yes	No, No, No	No, No, No

Adapted from: Iredell *et al.*, 2018

At the European Cystic Fibrosis Conference, a presentation described the case of a 26-year-old cystic fibrosis patient who was unable to get a double lung transplant due to recurrent bouts of pneumonia caused by multidrug resistant *Pseudomonas aeruginosa* infection. The patient had received multiple courses of antibiotics, including colistin, but due to renal failure the colistin had to be stopped. AB-PA01 was administered every six hours for eight weeks intravenously as an adjunctive treatment to systemic antibiotics. There were no bacteriophage-related adverse events reported. The following chart shows the patient's baseline symptoms before bacteriophage treatment began and at the end of treatment. The infection resolved by Day 7 and there was no recurrent pneumonia or CF exacerbations during treatment or 90 days after the end of bacteriophage therapy.

Baseline:

- Hospitalized and bedbound
- Lung Allocation Score* >90
- Temp: 99.7ºF, WBC: 8.9
- Supplemental O_2: 30L/min, high flow blender, Mechanical ventilation: 40% FiO2

End of Treatment:

- Hospitalized with increased physical activity and ambulatory beyond hospital room
- Lung Allocation Score* 48.9,
- Temp: 98.5ºF, WBC: 7.7
- Supplemental O_2: 3L/min via nasal cannula, Mechanical ventilation: 40% FiO2
- Day 7: Pneumonia resolved
- Post-Treatment Days 30, 60, and 90: No recurrence of pneumonia and no CF exacerbation

Source: Aslam *et al*., 2018

Conclusion

The data presented on these cases provide additional details regarding the results that were previously announced by AmpliPhi on the use of AB-SA01 and AB-PA01 in the expanded access setting. We believe the data that AmpliPhi has compiled thus far has been very encouraging. We continue to believe that the company will have compiled sufficient data by mid-2018 to approach the FDA about a registration pathway for AB-SA01 and AB-PA01 with a Phase 2 trial possibly starting in the fourth quarter of 2018. Our current valuation is $4.00 per share. However, we believe there is likely to be significant upside to our model once we learn more about what indications the company will be targeting later in 2018 for Phase 2 studies, at which time we may also get a better sense of timelines for approval.

PROJECTED FINANCIALS

AmpliPhi Bio	2017 A	Q1 A	Q2 E	Q3 E	Q4 E	2018 E	2019 E	2020 E
AB-PA01 (*P. aeruginosa*)	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
YOY Growth								
AB-SA01 (*S. aureus*)	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
YOY Growth								
Licensing & Royalties	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
YOY Growth	-	-	-	-	-	-	-	-
Total Revenues	**$0.1**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**
YOY Growth	-	-	-	-	-	-	-	-
Cost of Sales	$0	$0	$0	$0	$0	$0	$0	$0
Product Gross Margin	-	-	-	-	-	-	-	-
General & Administration	$7.6	$1.6	$1.5	$1.5	$1.6	$6.2	$7.0	$8.0
Research & Development	$2.9	$1.5	$1.2	$1.2	$1.2	$5.1	$5.5	$6.5
Other Operating Expenses	$5.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Operating Income	($16.2)	($3.0)	($2.7)	($2.7)	($2.8)	($11.3)	($12.5)	($14.5)
Operating Margin	-	-	-	-	-	-	-	-
Non-Operating Expenses (Net)	$2.0	($0.1)	$0.0	$0.0	$0.0	($0.1)	$0.0	$0.0
Pre-Tax Income	($14.1)	($3.1)	($2.7)	($2.7)	($2.8)	($11.3)	($12.5)	($14.5)
Income Taxes Paid	($1)	$0	$0	$0	$0	$0	$0	$0
Tax Rate	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Deemed Dividends	$0	$0	$0	$0	$0	$0	$0	$0
Net Income	($12.8)	($3.1)	($2.7)	($2.7)	($2.8)	($11.3)	($12.5)	($14.5)
Net Margin	-	-	-	-	-	-	-	-
Reported EPS	**($2.01)**	**($0.23)**	**($0.19)**	**($0.14)**	**($0.14)**	**($0.69)**	**($0.63)**	**($0.66)**
YOY Growth	*-92%*	-	-	-	-	*-66%*	*-9%*	*5%*
Basic Shares Outstanding	6.4	13.3	14.0	19.0	19.5	16.4	20.0	22.0

Source: Zacks Investment Research, Inc. *David Bautz, PhD*

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