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Motif Bio Plc

(MTFB-NASDAQ)

MTFB: Initiates NDA Submission for Iclaprim…

Based on our probability adjusted DCF model that takes into account potential future revenues from Iclaprim, MTFB is valued at $31 per share. This model is highly dependent upon continued clinical and commercial success of Iclaprim and will be adjusted accordingly based upon future clinical results and the company's execution.

Current Price (04/25/18)	$9.90
Valuation	**$31.00**

OUTLOOK

Motif Bio Plc recently announced that the company has initiated a rolling submission for the New Drug Application (NDA) for iclaprim. We anticipate the NDA submission being completed during the second quarter of 2018. The FDA informed the company that a small business waiver was granted such that the application fee for the NDA, which totals $2.4 million in 2018, does not need to be payed. We anticipate a 6-month review period, thus the drug could be approved in the first quarter of 2019.

Motif presented three abstracts at the 28th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID 2018) on the REVIVE-2 study, cost savings associated with iclaprim use, and surveillance of iclaprim activity against various *Staphylococcus aureus* strains collected from patients during 2015-2016.

SUMMARY DATA

52-Week High	**$11.84**
52-Week Low	**$6.97**
One-Year Return (%)	**-7.24**
Beta	**0.19**
Average Daily Volume (sh)	**1,419**
Shares Outstanding (mil)	**13**
Market Capitalization ($mil)	**$137**
Short Interest Ratio (days)	**N/A**
Institutional Ownership (%)	**43**
Insider Ownership (%)	**16**
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	**N/A**
P/E using 2019 Estimate	**N/A**

Risk Level	**Above Avg.**
Type of Stock	**Small-Growth**
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	0.0 A
2018	0.0 E	0.0 E	0.0 E	0.0 E	0.0 E
2019					11.0 E
2020					49.0 E

Earnings per ADS

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2017	-$1.50 A	-$1.50 A	-$1.07 A	-$1.07 A	-$3.87 A
2018	-$0.45 E	-$0.45 E	-$1.08 E	-$1.09 E	-$2.09 E
2019					-$1.85 E
2020					-$0.48 E

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WHAT'S NEW

Business Update

Motif Bio Plc (MTFB) is a biopharmaceutical company focused on the development of antibiotic compounds for difficult to treat bacterial infections. The company's lead asset, iclaprim, is a novel diaminopyrimidine molecule that has completed Phase 3 testing for the treatment of acute bacterial skin and skin structure infections (ABSSSI), with the company announcing positive results from the two studies earlier in 2017. In addition, the U.S. Food and Drug Administration (FDA) has granted iclaprim orphan drug designation (ODD) for the treatment of bacterial infections in patients with cystic fibrosis caused by *Staphylococcus aureus*.

NDA Submission Initiated

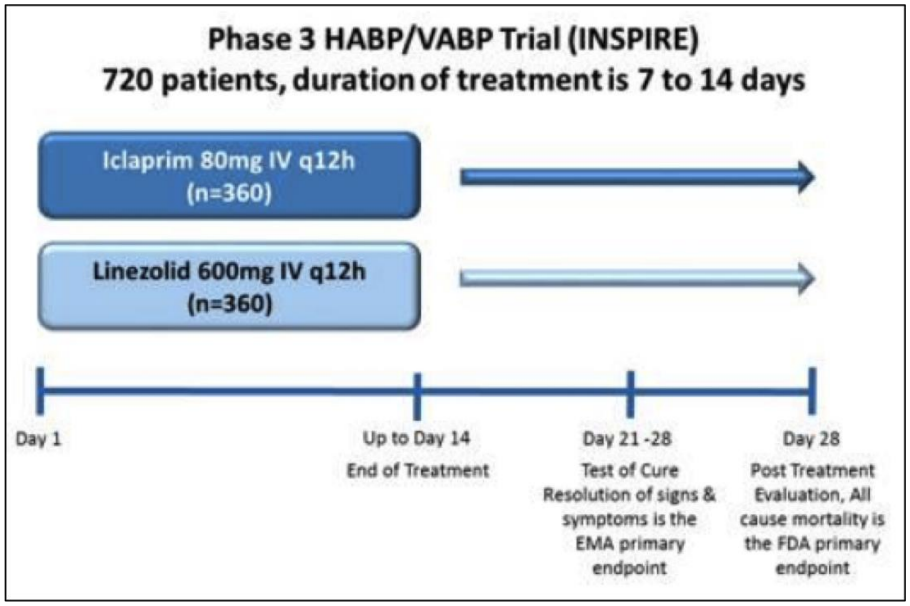
On April 3, 2018, Motif announced the initiation of a rolling submission for the New Drug Application (NDA) for iclaprim with the U.S. FDA. Importantly, the FDA informed the company that it was granted a small business waiver and that the NDA application fee, which is $2.4 million in 2018, will not have to be payed.

The company was able to use a rolling NDA submission, in which the company submits portions of the NDA has they are completed, due to the fact that iclaprim has been granted Fast Track Designation. In addition, iclaprim has been designated a Qualified Infectious Disease Product (QIDP), which allows for the drug to receive a Priority Review of up to six months instead of the typical 10 months. Lastly, QIDP designation also makes iclaprim eligible for 10 years of market exclusivity; five years due to being a new chemical entity and an additional five years from QIDP designation. We anticipate a PDUFA date for iclaprim in the first quarter of 2019.

Looking to Initiate Phase 3 in HABP/VABP in 2018

While the company's focus remains on iclaprim in ABSSSI and getting the NDA submitted, the company is also planning for a Phase 3 randomized, double blind, comparator study to determine the safety and efficacy of iclaprim in hospital acquired bacterial pneumonia (HABP) and ventilator associated bacterial pneumonia (VBAP) compared with linezolid. HBAP refers to a pneumonia that is acquired following at least 48 hours in the hospital while VABP refers to pneumonia that develops 48 hours or more after mechanical ventilation.

Treatment with both iclaparim and linezolid is expected to be 7 to 14 days. A total of approximately 720 subjects will be studied with a non-inferiority margin of -10%. The primary endpoint of the study will be all cause mortality at Day 28, with a key secondary endpoint of clinical cure at one to two weeks after ending antibiotic treatment. The study should satisfy requirements for both FDA and EMA regulatory approval. An outline of the study is provided in the following graphic.



Source: Motif Bio Plc

Motif has previously presented data showing that iclaprim's concentration in epithelial lining fluid (ELF) and alveolar macrophages (AM) is elevated in comparison to serum levels, as shown in the following chart following dosing of healthy volunteers. The concentration of iclaprim in ELF and AM was 20 to 30 times the serum concentration, which could lead to positive outcomes for treating lung infections.

Antibiotic	Dose	Epithelial lining fluid (mg/L)	Alveolar macrophages (mg/L)	Serum (mg/L)	ELF/serum concentration	AM/serum concentration
Iclaprim	1.6 mg/kg IV, single dose	40.9	67.7	1.8	22.7	37.6
Linezolid	600 mg q12h PO, 5 doses	622.8	27.2	190.0	3.3	0.14
Vancomycin	1 g q12h IV, 9 doses	92	926	367	0.25	2.5

Source: Motif Bio Plc

Arpida (which was developing iclaprim prior to Motif) conducted a double blind, randomized, dose ranging Phase 2 proof of concept study in patients with HABP, including VABP. A total of 70 patients were randomized 1:1:1 to receive 0.8 mg/kg iclaprim, 1.2 mg/kg iclaprim, or 1 g vancomycin either two or three times daily. Results showed a clinical cure rate of 73.9% (17/23 patients) with 0.8 mg/kg iclaprim, 62.5% (15/24 patients) with 1.2 mg/kg iclaprim, and 52.2% (12/23 patients) with 1 g vancomycin. Results are summarized in the table below.

Phase 2 Trial of Iclaprim in Patients with HBAP (N=70)

	0.8 mg/kg iclaprim	1.2 mg/kg iclaprim	1 g vancomycin
Intent to Treat Population (N=)	23	24	23
Clinical Cure (N=)	17	15	12
% Clinical Cure	*73.9%*	*62.5%*	*52.2%*
Fatalities within 28 days	2	3	5
% Death rate	*8.7%*	*12.5%*	*21.7%*

Source: Motif Bio Plc

The initiation of the INSPIRE Phase 3 trial of iclaprim in patients with HABP and VABP will occur if and when additional funding is obtained.

Presentations at ECCMID 2018

On April 11, 2018, Motif announced that three abstracts related to iclaprim will be presented at the 28th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID 2018):

1) A presentation on the results from REVIVE-2. For an overview of the REVIVE-2 results please see our previous report.
2) A poster on potential cost savings from using iclaprim compared to vancomycin in hospitalized patients with ABSSSI. Based on the cost of monitoring for acute kidney injury from the use of vancomycin and the extended hospital stay as a result, iclaprim at an acquisition cost of $150-$300/day could potentially reduce the economic burden of ABSSSIs.
3) A poster on iclaprim activity against *Staphylococcus aureus* and streptococci species isolated from patients during 2015-2016. 618 isolates of *S. aureus* and 313 isolates of beta-hemolytic streptococci underwent *in vitro* susceptibility testing to iclaprim, with results showing iclaprim was active against *S. aureus* strains resistant to clindamycin/tetracycline and streptococci strains resistant to macrolide/tetracycline.

Financial Update

On April 10, 2018, Motif announced financial results for 2017. The company reported a net loss of $44.8 million, or $0.19 per share, in 2017 compared to a net loss of $40.3 million, or $0.35 per share, in 2016. Research and development expenses in 2017 were $29.5 million compared to $34.8 million in 2016. The decrease was primarily due to lower clinical costs from the completion of the two Phase 3 trials in ABSSSI partially offset by increased CMC

costs, employee benefits, and other R&D expenses. General and administrative expenses in 2017 were $8.5 million compared to $4.9 million in 2016. The increase was primarily due to being a publicly traded company in both the U.S. and U.K. along with increased employee salaries and consulting services.

The company exited 2017 with approximately $22.7 million in cash and cash equivalents. As a reminder, in Nov. 2017 Motif entered into an agreement with Hercules Capital, Inc. (HTGC) for up to $20 million in debt financing. The first tranche of $15 million was drawn down immediately, with the second tranche of $5 million available upon the company achieving certain milestones in 2018. There is a 15-month interest only period (which may be extended up to 21 months if certain milestones are achieved) followed by a 30-month repayment period. The interest rate is 10% and is tied to the US prime rate.

As of Dec. 31, 2017, the company had 263,519,128 common shares outstanding that trade on the London stock exchange. The company also has American Depository Shares (ADSs) that trade on the Nasdaq Capital Market. Each ADS represents 20 of the company ordinary shares. When factoring in stock options and warrants the fully diluted share count is approximately 338.9 million, or 16.9 million ADSs.

Valuation

There are an estimated 3.6 million people hospitalized with ABSSSI every year. We conservatively estimate that 20% of patients have renal insufficiency, based on published data (Halilovic *et al*., 2012). We believe iclaprim could attain peak market share among these patients of 20%. We model for a full course of treatment costing $3000 and an inflation rate of 2%, which leads to peak sales of approximately $500 million in the U.S. Outside the U.S., we believe Motif will sign a commercialization agreement that will result in an average 15% royalty on net sales, which we estimate will peak at approximately $225 million. Using a 90% probability of approval and a 15% discount rate leads to a net present value for iclaprim in ABSSSI of $475 million. After factoring in the company's cash position, potential cash from the exercise of outstanding warrants, and dividing by the fully diluted ADS share count of 16.9 million leads to a valuation of $31 per share. The stock continues to trade at a significant discount to our valuation, thus offering investors plenty of upside at the current price.

PROJECTED FINANCIALS

Motif Bio Plc
Income Statement

Motif Bio Plc	2017 A	1H18	2H18	2018 E	2019 E	2020 E
Iclaprim (ABSSSI)	$0	$0	$0	$0	$11	$49
YOY Growth		-	-			
Iclaprim (HABP)	$0	$0	$0	$0	$0	$0
YOY Growth		-	-			
Iclaprim (CF)	$0	$0	$0	$0	$0	$0
YOY Growth		-	-			
Grants & Collaborative Revenue	$0	$0	$0	$0	$0	$0
YOY Growth		-	-			
Total Revenues	**$0**	**$0**	**$0**	**$0**	**$11**	**$49**
YOY Growth		-	-			
Cost of Sales	$0	$0	$0	$0	$2	$8
Product Gross Margin		-	-			
Research & Development	$29.5	$6.0	$8.0	$14.0	$18.0	$20.0
General & Administrative	$8.5	$4.4	$8.0	$12.4	$25.0	$30.0
Other Expenses	$0	$0	$0	$0	$0	$0
Operating Income	($38.02)	($10.4)	($16.0)	($26.4)	($34.0)	($9.0)
Operating Margin		-	-			
Non-Operating Expenses (Net)	($6.8)	($1.5)	($1.5)	($3.0)	($3.0)	($3.0)
Pre-Tax Income	($44.8)	($11.9)	($17.5)	($29.4)	($37.0)	($12.0)
Income Taxes Paid	$0	$0	$0	$0	$0	$0
Tax Rate	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Net Income	**($44.8)**	**($11.9)**	**($17.5)**	**($29.4)**	**($37.0)**	**($12.0)**
Net Margin		-	-			
Net Loss per Share	**($0.19)**	**($0.05)**	**($0.06)**	**($0.10)**	**($0.09)**	**($0.02)**
Net Loss per ADS	**($3.87)**	**($0.90)**	**($1.17)**	**($2.09)**	**($1.85)**	**($0.48)**
YOY Growth		-	-			
Basic Shares Outstanding	231.5	264.0	300.0	282.0	400.0	500.0
ADS Oustanding	11.6	13.2	15.0	14.1	20.0	25.0

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

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