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David Bautz, PhD
312-265-9471
dbautz@zacks.com

scr.zacks.com
10 S. Riverside Plaza, Chicago, IL 60606

Avivagen, Inc. (VIVXF-OTC)

VIVXF: Positive Results from New Zealand Livestock Dairy Trial…

Using an EV/EBITDA multiple of 16 applied to 2024 revenues and a discount rate of 20% (derived from CAPM), VIVXF is valued at $2.20/share. This model is highly dependent upon commercial success of OxC-beta™ Livestock and will be adjusted accordingly based on future commercial results.

Current Price (03/11/20)	$0.47
Valuation	**$2.20**

OUTLOOK

On February 24, 2020, Avivagen, Inc. (VIVXF) announced positive and statistically significant results from its New Zealand dairy trial showing that OxC-beta™ has an effect against subclinical mastitis. There was a 13.9% rate of resolution of bacterial infection in cows fed feed containing OxC-beta compared to a 6.9% resolution rate in the group fed the control feed containing no antibiotics. Mastitis is a very costly condition for the dairy industry as treatment involves antibiotics, which means infected cows must be removed from milk production until off antibiotics. These results show that OxC-beta can provide significant benefits for dairy producers and supports the use of OxC-beta in the dairy industry. We anticipate these results having a positive effect on Avivagen's marketing efforts in jurisdictions where OxC-beta is approved, including the U.S., New Zealand, and Mexico.

SUMMARY DATA

52-Week High	**$0.56**
52-Week Low	**$0.29**
One-Year Return (%)	**N/A**
beta	**N/A**
Average Daily Volume (sh)	**17,756**
Shares Outstanding (mil)	**41**
Market Capitalization ($mil)	**$20**
Short Interest Ratio (days)	**1**
Institutional Ownership (%)	**0**
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 2019 Estimate	**N/A**
P/E using 2020 Estimate	**N/A**

Risk Level	**High**
Type of Stock	**Small-Growth**
Industry	**Med Products**

ZACKS ESTIMATES

Revenue
(in millions of CAD$)

	Q1 (Jan)	Q2 (Apr)	Q3 (Jul)	Q4 (Oct)	Year (Oct)
2019	0.3 A	0.3 A	0.0 A	0.3 A	1.0 A
2020	0.2 A	0.3 E	0.3 E	0.3 E	1.2 E
2021					3.0 E
2022					5.0 E

Earnings per Share
(in CAD$)

	Q1 (Jan)	Q2 (Apr)	Q3 (Jul)	Q4 (Oct)	Year (Oct)
2019	-$0.03 A	-$0.04 A	-$0.04 A	-$0.03 A	-$0.14 A
2020	-$0.04 A	-$0.03 E	-$0.03 E	-$0.03 E	-$0.10 E
2021					-$0.10 E
2022					-$0.06 E

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WHAT'S NEW

Business Update

Avivagen, Inc. (VIVXF) is developing products to support animal health, which includes replacing antibiotics in livestock feeds with proprietary compounds that promote the growth and overall health of the animal through support of the host's innate immune system. Avivagen discovered that β-carotene polymerizes with oxygen into a unique class of compounds (oxidized β-carotene, OxBC) that promote immunological health and are the basis of Avivagen's OxC-beta™ technology. Antibiotic resistance is a growing worldwide public health problem, and since 80% of antibiotics are used in livestock feeds in the U.S., replacement of antibiotics in animal feed may help alleviate the rise in antibiotic resistant organisms. In addition, regulatory agencies worldwide are calling for the decreased use of or outlawing the use of antibiotics in livestock feed. Numerous studies conducted by Avivagen and its partners has shown that supplementation of feed with parts-per-million levels of OxC-beta Livestock can be used as a replacement for growth-promoting antibiotics while offering the same or better growth and health benefits without contributing to the development of antibiotic resistant organisms. OxC-beta Livestock is currently approved in eight countries, including the U.S. The company has a number of upcoming catalysts over the next six to 12 months, including:

- A trial will be initiated soon to determine if OxC-beta can decrease salmonella in chickens
- Potential approval of OxC-beta Livestock in Brazil, which is the third largest livestock feed market in the world, in the first half of 2020
- Potential for first sale to dairy producers in New Zealand
- Potential for first sale in Mexico, would be the first sale in North America
- Potential for first sale in U.S.

Positive Results from Dairy Cattle Study in New Zealand

On February 24, 2020, Avivagen, Inc. (VIVXF) announced positive and statistically significant results from a study of dairy cattle in New Zealand examining the effect of OxC-beta™ on subclinical mastitis. The trial was conducted over 42 days at four commercial dairy farms in New Zealand and cows were enrolled into the study based on having a somatic cell count of at least 200,000 cells/mL and a positive test for the presence of mastitis-associated bacteria. Treatment consisted of either control feed with no antibiotics or feed with OxC-beta added. Results of the trial showed that:

- There was a 13.9% rate of resolution in the OxC-beta group compared to a 6.9% resolution rate in the control group.

- In the OxC-beta group, there was only a single udder-quarter that developed clinical mastitis during the trial compared to six udder-quarters that developed clinical mastitis in the control group.

Mastitis is one of the largest problems for the dairy industry, for example it costs more than $2 billion in lost production each year in the U.S. (thecattlesite.com) and $400 million in Canada (betterfarming.com). The results announced by Avivagen should have a positive effect on marketing efforts in areas where OxC-beta is currently approved (e.g., U.S., New Zealand, Mexico) and could open a new market opportunity in the high-value dairy industry.

Distribution Agreement with INPHILCO Finalized

On Feb. 18, 2020, Avivagen announced a binding distribution agreement has been reached with INPHILCO, Inc., in which INPHILCO will become a new, key distribution partner for OxC-beta™ Livestock in the Philippines. INPHILCO will sell OxC-beta™ Livestock to large integrated feed producers as part of INPHILCO's premix offerings as well as a standalone product. The agreement follows the memorandum of understanding announced in December 2019.

The Philippines is expected to have an estimated annual feed production of 18.2 million metric tons in 2020, with swine and broiler poultry representing approximately 82% of all feed consumption.

Preparing for OxC-beta™ Approval in China

In Dec. 2019, Avivagen announced it has entered into an agreement with COFCO Biotechnology Co. Ltd. in which COFCO will assist Avivagen in securing regulatory approval for OxC-beta™ Livestock in China. COFCO is a leading supplier of agriculture products in China, and with 12,000 employees and sales of more than $17.5 billion in 2018 we believe they are a great partner to assist Avivagen in determining what trials of OxC-beta™ Livestock will be necessary to secure approval for use in chicken feed along with advising on other aspects of the Chinese regulatory pathway.

China represents a tremendous opportunity for Avivagen as the Chinese government has announced a plan to ban all antibiotics in livestock feed by July 2020. In addition, African Swine Fever (ASF) decimated China's swine herd in 2019, with an increase in poultry production set to fill the protein supply gap. This increased demand for poultry is being filled by both increased imports to China as well as increased domestic poultry production, which is up 20% since 2018. Some estimates call for Chinese poultry feed production to nearly double over the next five years (Feed Strategy).

OxC-beta™ Approved in Malaysia

On December 5, 2019, Avivagen announced the approval of OxC-beta™ Livestock for broilers and swine in Malaysia, bringing the total number of countries in which Avivagen has approval to eight, including the U.S., Mexico, New Zealand, Taiwan, Thailand, Australia, and the Philippines. Shortly thereafter, Avivagen announced the first order of 100 kg for OxC-beta™ Livestock in Malaysia.

Malaysia's government intends to move all chicken production to be antibiotic-free by 2020, thus representing a nice growth opportunity for Avivagen. Most of the 4.8 million metric ton Malaysian feed market is directed toward poultry broilers and layers due to the growing popularity of chicken-based fast food restaurants in the country, including Kentucky Fried Chicken, Nando's, The Chicken Rice Shop, Kenny Rogers Roasters, and Ayamas (USDA, 2017).

Financial Update

On March 4, 2020, Avivagen announced financial results for the first quarter of fiscal year 2020 that ended January 31, 2020. Revenues for the three months ending Jan. 31, 2020 were CAD$247,805 compared to CAD$322,125 for the three months ending Jan. 31, 2019. The decrease was primarily due to decreased proceeds from the sale of OxC-beta products. Selling, general, and administration costs were approximately CAD$0.95 million for the first quarter of fiscal year 2020 compared to approximately CAD$1.1 million for the first quarter of fiscal year 2019. The decrease was primarily due to decreased share-based payments and salary expenses. Research costs were approximately CAD$0.17 million for the three months ending Jan. 31, 2020 compared to CAD$0.16 million for the three months ending Jan. 31, 2019. The increase was due to an increase in trial expenses to support registration.

As of Jan. 31, 2020, Avivagen had approximately CAD$2.7 million in cash and cash equivalents. During the first quarter of fiscal year 2020, the company raised total gross proceeds of CAD$3.0 million from the sale of 6.0 million units, with each unit consisting of one share of common stock and one-half of one common share purchase warrant with an exercise price of $0.75. We estimate that Avivagen has sufficient financing to fund operations into the first part of 2021. As of Jan. 31, 2020, Avivagen had approximately 41.5 million common shares outstanding and when factoring in approximately 2.3 million stock options and approximately 8.7 million warrants the company has a fully diluted share count of approximately 52.5 million.

Valuation

We value Avivagen using an EV/EBITDA multiple based on projected revenues of OxC-beta Livestock. We believe Avivagen is laying the groundwork for a very steep growth rate in revenues in the coming years through a combination of new market opportunities and market expansion. For example, the company is making steady progress on sales in the Philippines and we believe it is only a matter of time before sales

begin to ramp up considerably in Asia and other parts of the world, particularly as additional data showing the benefits of the OxBC technology is published.

Due to the fact that Avivagen has a limited commercial history, the financial forecasts we have prepared are educated guesses and are heavily reliant on the company continuing to execute on its business plan to get OxC-beta Livestock approved in as many jurisdictions as possible, signing distribution agreements in each of those jurisdictions, and continuing market expansion through adoption of OxC-beta Livestock by major animal producers.

Our model estimates sales of OxC-beta Livestock of CAD$60 million in 2025, as we believe the company will hit an inflection point following the adoption of OxC-beta Livestock by multiple major animal producers over the next couple of years. Using an EV/EBITDA ratio of 16 (which is derived from the average for pharmaceutical companies found here) and an EBITDA of CAD$23 million leads to an EV of CAD$368 million. Using a discount rate of 20% (derived from CAPM) we arrive at a present day EV of approximately CAD$148 million. The company has approximately CAD$3.5 million in debt, approximately CAD$2.7 million in cash (estimated following the January 2020 financing), and CAD$7.8 million in potential financing from warrant exercises. Accounting for that leads to an NPV of CAD$155 million. Dividing this by the fully diluted share count of 52.5 million leads to a valuation of approximately CAD$2.95 per share. Using the current exchange ratio of $1 CAD = $0.74 USD leads to a valuation for VIVXF of approximately $2.20.

PROJECTED FINANCIALS

Avivagen, Inc. (in Canadian Dollars)	FY2019 A	1QFY20 A	2QFY20 E	3QFY20 E	4QFY20 E	FY2020 E	FY2021 E	FY2022 E
OxC-beta™ Livestock	$1.0	$0.2	$0.3	$0.3	$0.3	$1.1	$3.0	$5.0
Other Income	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Total Revenues	**$1.0**	**$0.2**	**$0.3**	**$0.3**	**$0.3**	**$1.1**	**$3.0**	**$5.0**
Cost of Sales	$0.5	$0.1	$0.1	$0.1	$0.1	$0.6	$2.2	$2.2
Product Gross Margin	*54%*	*41%*	*53%*	*53%*	*53%*	*51%*	*27%*	*56%*
Selling, General and Administration	$3.8	$0.9	$1.0	$1.0	$1.0	$3.9	$5.0	$5.5
Research	$0.6	$0.2	$0.1	$0.2	$0.2	$0.7	$0.7	$0.8
Depreciation of Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Finance Cost	$0.9	$0.3	$0.3	$0.3	$0.3	$1.2	$1.2	$1.2
Joint Venture Termination	$0.1	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Other (Income) Expense	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Operating Income	($4.8)	($1.3)	($1.2)	($1.3)	($1.3)	($4.0)	($4.9)	($3.5)
Operating Margin	-	-	-	-	-	-	-	-
Non-Operating Expenses (Net)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Pre-Tax Income	($4.8)	($1.3)	($1.2)	($1.3)	($1.3)	($4.0)	($4.9)	($3.5)
Income Taxes	$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	**($4.8)**	**($1.3)**	**($1.2)**	**($1.3)**	**($1.3)**	**($4.0)**	**($4.9)**	**($3.5)**
Net Margin	-	-	-	-	-	-	-	-
Reported EPS	**($0.14)**	**($0.04)**	**($0.03)**	**($0.03)**	**($0.03)**	**($0.10)**	**($0.10)**	**($0.06)**
YOY Growth	-	-	-	-	-	-	-	-
Basic Shares Outstanding	34.4	36.3	41.5	41.5	45.0	41.1	50.0	55.0

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

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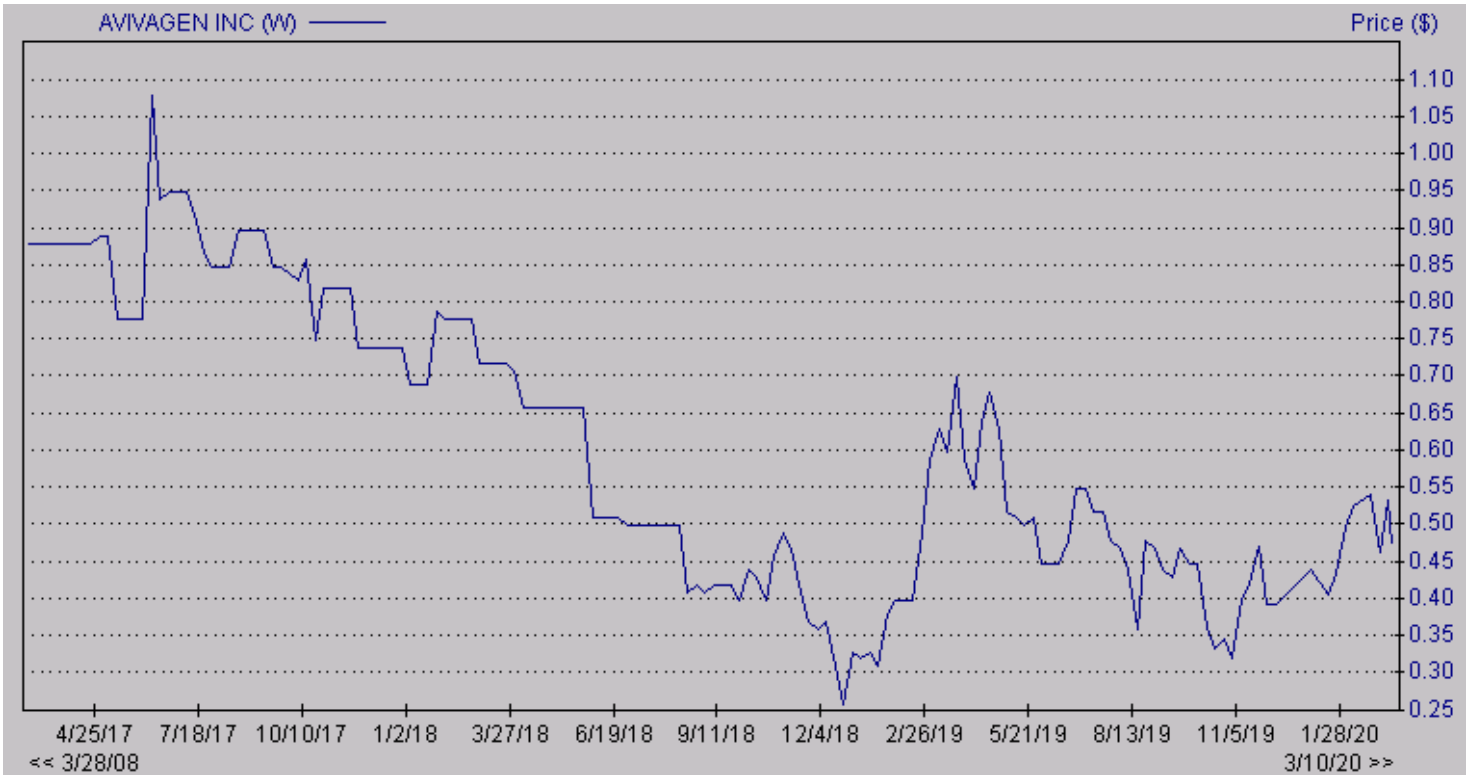
HISTORICAL STOCK PRICE



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