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Avivagen, Inc.

(VIVXF-OTC)

VIVXF: Positive Field Tests in Mexico Leads to Increased Order for OxC-beta™ Livestock…

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 (06/09/20)	$0.38
Valuation	**$2.20**

OUTLOOK

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. The company recently announced an upsized order of OxC-beta™ Livestock from Mexico-based Industrias Melder following positive results from two dairy animal tests conducted by one of Industrias Melder's key customers. This initial sale could lead to a formal long-term relationship and help Avivagen enter the Mexican market, which has annual feed sales of 36 million tonnes.

SUMMARY DATA

52-Week High	**$0.56**
52-Week Low	**$0.29**
One-Year Return (%)	**N/A**
beta	**N/A**
Average Daily Volume (sh)	**3,461**
Shares Outstanding (mil)	**42**
Market Capitalization ($mil)	**$16**
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	0.0 A	0.3 E	0.3 E	0.9 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 A	-$0.03 E	-$0.03 E	-$0.10 E
2021					-$0.12 E
2022					-$0.09 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, including China which has announced a plan to eliminate the use of antibiotic growth promoters (AGPs) by July 2020. 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 AGPs 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:

- Results from a trial 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
- Potential for first sale to dairy producers in New Zealand
- Potential for long-term sales agreement in Mexico
- Potential for first sale in U.S.

Positive Results from Dairy Studies in Mexico Leads to Increased Order of OxC-beta Livestock

On May 20, 2020, Avivagen announced that its first purchase order in North America, by Mexico-based Industrias Melder, was increased from 300 kgs to 2000 kgs. Industrias Melder increased the order on the basis of positive results from two dairy animal tests conducted by one of Industrias Melder's key customers. Both were 42-day trials that were designed to evaluate the ability of OxC-beta to improve animal health, productivity, and milk quality. One of the outcomes of the tests was the effect on the somatic cell count (SCC). The SCC is a main indicator of milk quality. Somatic cells mainly consist of leukocytes, what increase during an immune response to a pathogen that causes mastitis. The SCC is the number of cells per mL of milk, and generally a SCC <100,000 indicates an 'uninfected' cow, a SCC >200,000 would indicate mastitis in at least one quarter, and a SCC >300,000 indicates the cow is infected with a serious pathogen. Dairy farmers can be rewarded financially for milk with low SCCs and penalized for milk with high SCCs since there is a direct correlation between the quality of the milk and the SCC.

- The first test was conducted on a group of the farm's best producing cows. Results showed a 54% reduction in the farm's bulk tank milk SCC. There was also a reduced SCC from milk sampled from individual cows. These low SCCs led to three separate financial awards to the farm from a global dairy processor based on improvements in milk yield, quality, and reduced bacterial levels.

- The second test was conducted at the same farm with a different group of cows that had chronic health issues, including low milk productivity and quality. The results showed increased milk quality as a result of an overall improvement in the cow's health. In addition, the bulk tank SCC was reduced by 67% and there was an 8% increase in the number of cows deemed "healthy" by the attending veterinarian, which is a very encouraging result given the chronic health issues in that group of animals.

These results are largely in line with what was seen previously in a dairy cattle study in New Zealand (discussed below) and adds additional support for the use of OxC-beta Livestock in cows.

Largest Order Yet of OxC-beta Livestock

On April 7, 2020, Avivagen announced it had received the largest order yet of OxC-beta Livestock from UNAHCO, the company's long-time partner in the Philippines. The 3,000 kg order is 50% larger than the previous largest order and thus far UNAHCO has ordered more than 18,000 kg. The company shipped the order to UNAHCO on May 15, 2020. Avivagen's relationship with UNAHCO has proven to be a successful model for adoption of OxC-beta Livestock as initial small orders were followed up with larger orders as demand grows more consistent. The company is utilizing this same model in other areas where OxC-beta is approved, including Malaysia, Mexico, Thailand, and Taiwan, with approval in Brazil anticipated shortly. For example, Avivagen's first customer in Thailand, Top Feed, has increased the size and frequency of orders for OxC-beta Livestock from 25 kgs every six months to 50 kgs every month for the last four months.

Positive Results from Dairy Cattle Study in New Zealand

In February 2020, Avivagen, 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.

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).

Accelerating Plans for Commercial Launch of OxC-beta Technology for Human Use

In March 2020, Avivagen announced plans to accelerate its plans for commercial launch of OxC-beta as a supplement for human use as a response to the COVID-19 pandemic. Multiple studies show that the OxC-beta product supports and primes the innate immune system while decreasing exaggerated inflammatory responses. We anticipate additional updates from the company on the timeline of the launch of the product in the U.S. and other markets.

Financial Update

On June 2, 2020, Avivagen announced financial results for the second quarter of fiscal year 2020 that ended April 30, 2020. Revenues for the three months ending Apr. 30, 2020 were CAD$29,625 compared to CAD$303,984 for the three-month period ending Apr. 30, 2019. The decrease was primarily due to decreased proceeds from sales of OxC-beta products. Selling, general, and administrative expenses were approximately CAD$0.93 million for the second quarter of fiscal years 2020 and 2019. Research costs were approximately CAD$0.1 million for the three months ending Apr. 30, 2020 compared to approximately CAD$0.3 million for the three months ending Apr. 30, 2019. The decrease was primarily due to a termination payment that occurred in 2019.

As of Apr. 30, 2020, Avivagen had approximately CAD$1.5 million in cash and cash equivalents. We estimate the company has sufficient capital to fund operations into the fourth quarter of fiscal year 2020. As of Apr. 30, 2020, Avivagen had approximately 41.7 million shares outstanding and when considering the approximately 8.7 million warrants and 2.8 million stock options a fully diluted share count of approximately 53.2 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$1.5 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$154 million. Dividing this by the fully diluted share count of 53.2 million leads to a valuation of approximately CAD$2.89 per share. Using the current exchange ratio of $1 CAD = $0.75 USD leads to a valuation for VIVXF of approximately $2.20.

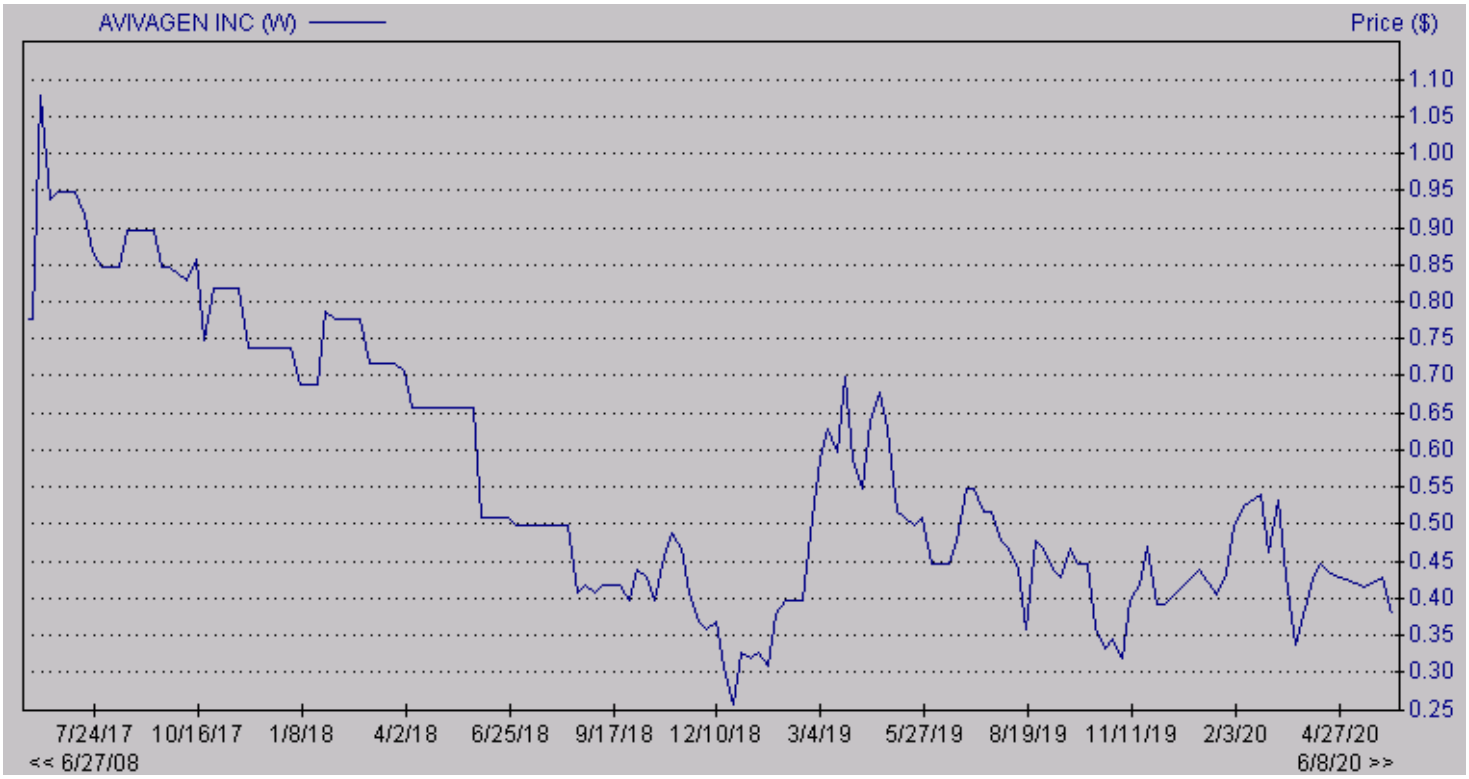
PROJECTED FINANCIALS

Avivagen, Inc. (in Canadian Dollars)	FY2019 A	1QFY20 A	2QFY20 A	3QFY20 E	4QFY20 E	FY2020 E	FY2021 E	FY2022 E
OxC-beta™ Livestock	$1.0	$0.2	$0.0	$0.3	$0.3	$0.9	$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**	**$0.0**	**$0.3**	**$0.3**	**$0.9**	**$3.0**	**$5.0**
Cost of Sales	$0.5	$0.1	$0.0	$0.1	$0.1	$0.4	$2.2	$2.2
Product Gross Margin	*54%*	*41%*	*50%*	*53%*	*53%*	*50%*	*27%*	*56%*
Selling, General and Administration	$3.8	$0.9	$0.9	$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
Depreciation of right-of-use assets	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.1	$0.1
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
Investment Loss in Associate	$0.0	$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)	($1.4)	($1.4)	($1.4)	($4.1)	($6.2)	($4.8)
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)	($1.4)	($1.4)	($1.4)	($4.1)	($6.2)	($4.8)
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)**	**($1.4)**	**($1.4)**	**($1.4)**	**($4.1)**	**($6.2)**	**($4.8)**
Net Margin	-	-	-	-	-	-	-	-
Reported EPS	**($0.14)**	**($0.04)**	**($0.03)**	**($0.03)**	**($0.03)**	**($0.10)**	**($0.12)**	**($0.09)**
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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