

# Avivagen

## Antibiotic-free alternative for animal feed

Avivagen is advancing feed additives based on its OxC-beta (fully oxidized beta-carotene) technology, which improves immune function and promote growth. The recent approval in New Zealand should build upon commercial sales already secured in parts of Asia.

### OxC-beta Livestock intended for global feed markets

OxC-beta Livestock aims to reduce the use of antibiotic growth promoters (AGP) in feed. It has been studied in over 25 trials, with data showing that it can lead to significant weight gain improvements in broiler poultry and swine and protect against certain gastrointestinal afflictions. The use of AGPs in the feedstock of cattle, swine and poultry has been banned since 2006 in Europe. Restrictions began in the US in 2017 as their use has become a source of concern to health authorities and consumers alike. The removal of antibiotics from feeds can reduce the promotion of antibiotic resistant pathogens that can affect human health.

### Sales opportunities in feed and other markets

Following approvals in Asia, industrial-scale sales began in FY17, with lead customer, UNAHCO of the Philippines, purchasing 800 kg of OxC-beta Livestock 10% premix, which can supplement c 45,000 tons of commercial feed. Avivagen estimates the global animal feed market for which OxC-beta can be used (in targeted species of poultry, swine and cattle) exceeds 900m tons. It estimates that 10% market penetration in global feed markets can provide up to US\$120m gross profit per year, although it must also compete with other non-antibiotic additives. Avivagen also markets OxC-beta supplements for the companion animal market.

### Recent approval for New Zealand opens market

Avivagen reported on 30 May 2018 that it has received GRAS (generally regarded as safe) regulatory approval for OxC-beta for use in livestock in New Zealand, representing Avivagen's first approval outside Asia. With 6.5m dairy cows (c 70% of the US herd size), New Zealand is a significant exporter of dairy products and beef.

### Valuation: Current share price implies EV of C\$20m

Avivagen had C\$3.1m in net cash at 31 January (C\$4.1m cash and equivalents offset by C\$1.0m in debt), and in the prior 12 months recorded C\$0.36m in revenue and an average quarterly operating cash burn rate of c C\$1.1-1.2m. Revenue may increase as new approvals and sales wins are obtained, but given the current burn rate the firm may need to raise additional funds by the end of CY18.

#### Historical financials

Year end	Revenue (C\$m)	PBT (C\$m)	EPS (C\$)	DPS (C\$)	P/E (x)	Yield (%)
10/16	0.01	(2.7)	(0.12)	0.0	N/A	N/A
10/17	0.26	(5.0)	(0.17)	0.0	N/A	N/A

Source: Company data

#### Pharma & biotech

12 June 2018

**Price** C\$0.64  
**Market cap** C\$21m  
 C\$1.29/US\$

#### Share price graph



#### Share details

Code VIV  
 Listing TSX-Venture  
 Shares in issue 33.4m

#### Business description

Ottawa, Ontario-based Avivagen is developing and commercializing products based on its OxC-beta (fully oxidized beta-carotene) technology for livestock (reducing use of antibiotic drugs), companion animal and human applications that are intended to support immune function and promote general health.

#### Bull

- OxC-beta sales efforts targeted in jurisdictions with high motivation to eliminate the use of antibiotics and/or with lower regulatory hurdles
- Companion animal (pets) and human dietary supplement markets provide upside opportunities to core animal feed targeted market
- OxC-beta intellectual property protection into late 2020s

#### Bear

- Heterogeneity in regulatory requirements across different jurisdictions for which OxC-beta approval is sought requires firm to customize each filing and may require studies to be repeated
- Competition from existing feed alternatives to antibiotics (probiotics, prebiotics, acidifiers, metals such as copper and zinc, etc)
- Limited sales to date and need for future funding

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