Antibe Therapeutics Inc. | ATE-TSX

Update

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ATE-TSX

Rating:	**Speculative BUY**
Target:	**$17.75↑(was $15.00)**
Price:	$5.76
Return:	208%
Valuation:	NPV, 25x EPS, 12.5x EBITDA (F2025 ests.)

Market Data

Basic Shares O/S (M)	38.8
FD Shares O/S (M)	46.4
Market capitalization ($M)	223.2
Enterprise Value ($M)	182.3
Cash ($M, most rec Q)	41.0
LT debt ($M, most rec Q)	0.0
52 Week Range	$3.05-$8.90
Avg. Weekly Volume (M)	0.53
Fiscal Year End	Mar-31

Key Milestones (calendar year)

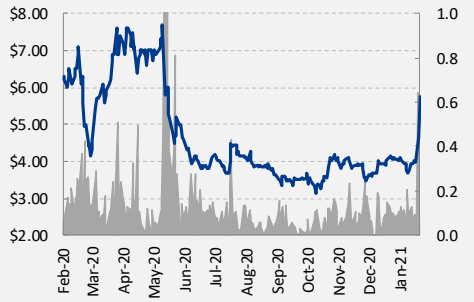
Data, Phase III ATB-346 OA pain trial	H123
Commence ATB-346 Phase III OA pain trial	H121
Phase II data, ATB-346 knee OA trial	Q220
Commence ATB-346 knee OA pain trial	Q418
Phase II, ATB-346, GI ulcer rate data	Q118
Phase II, open-label knee OA pain	Q316

Financial Metrics

In C$	2023E	2024E	2025E
Total Revenue ($000)	11,561	83,034	195,857
EBITDA ($000)	(4,468)	63,563	171,962
Adj net inc ($000)	(7,001)	42,722	118,601
EPS (basic)	($0.18)	$1.10	$3.06
EPS (FD)	($0.15)	$0.92	$2.56
P/E	NA	5.2x	1.9x
EV/EBITDA	NA	3.5x	1.3x

Company Description

Antibe is a clinical stage drug developer, with lead clinical asset - hydrogen sulfide-releasing naproxen analog ATB-346 - focused on knee osteoarthritis as initial pain market. Ketoprofen-based ATB-352 & aspirin-based ATB-340 are in preclinical testing



Source: Refinitiv, Leede Jones Gable

Regional ATB-346/Otenaproxesul Alliance in China De-Risks Development in that Geography – Spec BUY

ON-based small-molecule pain therapy developer Antibe Therapeutics announced its first sizable regional licensing deal for its flagship knee osteoarthritis pain drug ATB-346/otenaproxesul, realizing US$20M in upfront capital and potentially another US$80M in downstream clinical-regulatory-commercial milestones from China-based specialty pharmaceutical firm Nuance Pharma (Private). Recall that ATB-346 is Antibe's flagship clinical-stage pain drug based on its patented hydroxythiobenzamide conjugation chemistry and hydrogen sulfide pharmacology to modify the well-known non-steroidal anti-inflammatory drug naproxen, ostensibly to mitigate the GI-targeted cyclo-oxygenase 1 activity intrinsic to the drug that can lead to dose-limiting GI ulceration.

Already-published Phase I/II data has shown that ATB-346 at dosage strengths near its predicted therapeutic dose has far lower associated GI ulceration than naproxen itself, a key attribute embedded into our ATB-346-based royalty revenue projections and valuation. The full chemical name for ATB-346 is [2-(6-methoxynapthalen-2-yl)-propionic acid 4-thoicarbamoyl phenyl ester] and the '4-thiocarbamoyl phenyl ester' moiety is the part of the molecule that releases hydrogen sulfide in the gut (the rest is naproxen itself).

China-specific deal with Nuance provides upside to our model and valuation that had not previously contemplated Asia-based sales. The deal is specific to ATB-346, which is the most advanced clinical-stage hydrogen sulfide-releasing conjugated pain therapy in Antibe's pipeline. Presumably, Nuance could express regional interest in Antibe's drug portfolio if/when they transition to clinical stage, specifically the firm's ketoprofen analog drug ATB-352 and acetylsalicylic acid analog ATB-340. Our ATE model is however also solely focused on ATB-346, with pending Phase III knee osteoarthritis pain clinical trials expected by us to commence before end of calendar 2021. Recall that Antibe has pre-existing ATB-346 alliances with Kwangdong Pharma (South Korea; 00929-KR, NR), Laboratoires Acbel SA (specific EU/Middle East nations; private) and Knight Therapeutics (Canada; GUD-T, NR).

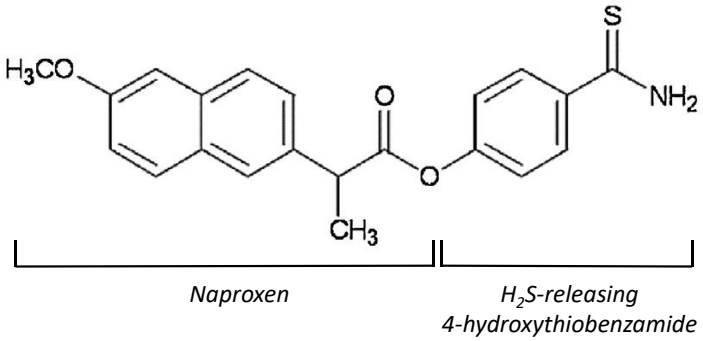
Nuance has legacy presence in China through prior licensing deals, including those consummated by Nuance principals in an earlier venture. We have not encountered Nuance in our coverage history before, but the firm is gathering momentum in the Chinese market and seems to be well-capitalized and thus able to fund its imminent cash obligations to Antibe. Nuance was founded in 2014 by the management team that ran another China-based specialty pharm firm NovaMed Pharmaceuticals, which was acquired in 2011 for US$105M by Zadaxin/thymalfasin developer SciClone Pharmaceuticals, which itself was acquired in 2017 by GL Capital and other China-based investors for US$605M.

Nuance raised US$35M in equity capital from China-based private equity firm CBC Group (was C-Bridge Capital) back in 2018 (which we believe is the largest healthcare-specific fund in China), and more recently added another US$181M in funding last quarter from a new investor consortium that included Matrix Partners China, in part we assume to fund a development/commercialization deal for another

pain drug, the injectable liposomal DepoFoam-based bupivacaine formulaton Exparel developed by NJ-based Pacira Pharmaceuticals (PCRX-Q, NR). Accordingly, there is minimal financial risk incurred by Nuance in funding upfront capital to Antibe, as described in the licensing deal just announced, nor in our view is there measurable financial risk in Nuance's ability to fund future Phase III ATB-346 clinical trials or regulatory activities that ensue.

Diversified Paladin-like partner has a diversified Rx portfolio in China already, though encouragingly with some existing expertise in pain drug development/marketing. Nuance has licensed other Rx assets for regional sale in China, including the polysaccharide-iron complex Niferex (from Belgian pharma firm UCB; UCB-EU, NR) and the oncology-targeted bendamustine formulation Treanda (presumably from Cephalon/Teva (TEVA-NY, NR)), we are encouraged that it has at least one pain therapy in its portfolio already and thus has some existing expertise in pain drug development-marketing. Nuance has geographic reach into South Africa as well, but that region is not relevant to the ATB-346 licensing deal just announced, though presumably it could be in future negotiations between Antibe and Nuance if China-based activities advance to partnership expectations.

Exhibit 1. Molecular structure of Hydrogen Sulfide-Releasing Naproxen Analog ATB-346



Source: *Pharmacological Research* (2016). Vol. 111, pp. 652-658

Deal terms seem reasonable to us as a compromise balance between upfront capital and downstream economics, especially when considering Nuance's obligations to fully fund regional ATB-346 clinical/regulatory activities. The deal is positive to our investment thesis not just through the new upfront capital that the alliance instantaneously generates for Antibe, but it is separately positive to our ATB-346 royalty revenue projections that until now had not contemplated ATB-346 sales in Asia generally, or China specifically, and we are revising our model accordingly.

Exhibit 2. Income Statement & Financial Forecast Summary for Antibe Therapeutics

Year-end Mar 31										
(C$000, except EPS)	*2019A*	*2020A*	*2021E*	*2022E*	*2023E*	*2024E*	*2025E*	*2026E*	*2027E*	*2028E*
Product Sales, Citagenix	9,539	9,987	10,486	11,011	11,561	12,139	12,746	13,384	14,053	14,755
Royalty revenue, ATB-346	0	0	0	0	0	70,895	183,110	270,484	335,025	397,947
Total revenue	**$9,539**	**$9,987**	**$10,486**	**$11,011**	**$11,561**	**$83,034**	**$195,857**	**$283,867**	**$349,078**	**$412,703**
Revenue growth (%)	*12%*	*5%*	*5%*	*5%*	*5%*	*618%*	*136%*	*45%*	*23%*	*18%*
EBITDA	**($8,786)**	**($13,686)**	**($6,170)**	**($5,803)**	**($4,468)**	**$63,563**	**$171,962**	**$258,002**	**$321,759**	**$384,572**
EBITDA growth (%)	57%	56%	(55%)	(6%)	(23%)	(1523%)	171%	50%	25%	20%
EBITDA margin (%)	*(92%)*	*(137%)*	*(59%)*	*(53%)*	*(39%)*	*77%*	*88%*	*91%*	*92%*	*93%*
Non-operating expenses	$3,928	$4,479	$1,348	$1,348	$1,348	$1,348	$1,348	$1,348	$1,348	$1,348
Net interest exp/inc	$525	$531	$1	$1	$1	$1	$1	$1	$1	$1
Net income, fully-taxed	($12,816)	($19,342)	($8,703)	($8,336)	($7,001)	$42,722	$118,601	$178,829	$223,458	$267,428
Fully-taxed EPS (basic)	($0.06)	($0.07)	($0.22)	($0.22)	($0.18)	$1.10	$3.06	$4.61	$5.77	$6.90
Fully-taxed EPS (fd)	**($0.05)**	**($0.06)**	**($0.19)**	**($0.18)**	**($0.15)**	**$0.92**	**$2.56**	**$3.85**	**$4.82**	**$5.76**
P/E (basic)	*NA*	*NA*	*NA*	*NA*	*NA*	*5.2x*	*1.9x*	*1.2x*	*1.0x*	*0.8x*
EV/EBITDA	*NA*	*NA*	*NA*	*NA*	*NA*	*3.5x*	*1.3x*	*0.9x*	*0.7x*	*0.6x*
S/O, basic (M)	*220.0*	*293.7*	*38.8*	*38.8*	*38.8*	*38.8*	*38.8*	*38.8*	*38.8*	*38.8*
S/O, fd (M)	*259.8*	*340.2*	*46.4*	*46.4*	*46.4*	*46.4*	*46.4*	*46.4*	*46.4*	*46.4*

Source: Company filings, Analyst forecasts and estimates

Antibe will be entitled to a double-digit royalty on future ATB-346 sales in China (which also includes Taiwan), which our model will assume is 15%. This is lower than would be usual in our view for a soon-to-be-Phase III-stage clinical asset like ATB-346. But a higher rate would ignore the reality that this is a licensing deal that obligates Nuance to fund its own regional ATB-346 clinical studies, even though it can presumably leverage all of the Phase I/II clinical data that Antibe has already published, including on GI safety and on ATB-346 dosing that continues to trend lower with each completed study. Encouragingly, Antibe will still participate in ATB-346 clinical activities in China, and we see this as a prudent decision by the new alliance to leverage Antibe's (and founding researcher John Wallace's) expertise in ATB-346 clinical pharmacology garnered so far.

Exhibit 3. Valuation summary for Antibe Therapeutics

NPV, discount rate	20%	25%	30%	35%	40%	50%
Implied value per share	$38.85	$27.14	**$19.33**	$14.01	$10.31	$5.83
Price/earnings multiple, F2025	**10x**	**15x**	**20x**	**25x**	**30x**	**35x**
Implied share price[1]	$8.95	$13.42	**$17.90**	$22.37	$26.85	$31.32
EV/EBITDA multiple, F2025	**5x**	**10x**	**12.5x**	**15x**	**17.5x**	**20x**
Implied share price[1,2]	$6.18	$12.67	**$15.91**	$19.16	$22.40	$25.64
One-year Antibe target price (C$) [1]			**$17.71**			

[1] *Based on F2025 fd fully-taxed EPS of $2.56; EBITDA of $172.0M, discounted at 30%, fully-diluted shares outstanding of 46.4M (10-for-1 share consolidation completed in late Nov/20)*

[2] *EV incorporates pro forma cash of $41.0M (FQ221 cash of $22.5M plus $25.5M in upfront cash from Nuance, less presumed cash-burn-to-date since end-of-FQ221), total debt of nil*

Source: Company filings, Analyst forecasts and estimates

New Nuance-derived cash greatly mitigated development risk for Antibe's own forthcoming ATB-346 Phase III clinical activities. Deal terms are in our view a reasonable balance between upstream and downstream economics for Antibe. The US$20M in upfront cash is clearly attractive for funding Antibe's own pending Phase III knee osteoarthritis pain studies (the firm now has pro forma cash of about $41.0M, based on FQ221 cash of $22.5M added to new Nuance-derived cash, less assumed cash burn-to-date of about $7.0M) but with residual upside as Nuance develops ATB-346 through its own clinical programs, presumably also in knee osteoarthritis pain though the drug is not limited pharmacologically to that indication. As importantly, the alliance shifts responsibility for ATB-346 clinical-regulatory-commercial activities all to Nuance, thus preserving Antibe's singular focus on ATB-346 Phase III activities in North America, and eventually the EU, unless new regional alliances transpire during our forecast period.

ATB-346-relevant patents are simultaneously relevant to Antibe Holdings valuation and to the drug's duration of market exclusivity, including now in China. We are of course aware that parent company and publicly-traded entity Antibe Therapeutics is negotiating valuation on ATB-346-relevant patents held by Antibe Holdings and we assume that this negotiation can wind down before quarter-end and on terms that minimally impact our valuation and model. The most recently issued US patent that is germane to ATB-346 is US#8,541,398 (hydrogen sulfide derivatives of non-steroidal anti-inflammatory drugs) that was issued to Antibe and scientific founder JL Wallace in Sep/13 but was submitted in Feb/10, so its duration of exclusivity expired in Feb/30. We assume that Antibe is actively creating new patentable innovations around ATB-346 that could eventually extend its US patent life, independent of the duration of market exclusivity that a future FDA approval itself would confer.

As we described in our Jan/21 initiation report, Antibe Holdings owns 1.5M ATE shares but more importantly, holds the core intellectual property that described Antibe's hydrogen sulfide-releasing chemistries and their relevance to modifying non-steroidal anti-inflammatory drugs to confer gastroprotective properties. As before, our model makes no overt assumptions on how Holdings will be valued, but we endorse the decision to simplify Antibe's corporate structure to match simplicity of its single-product (ATB-346, for now) business model.

Regardless, our model assumes that Antibe Therapeutics can receive a 30% net royalty on future ATB-346 sales in North America, and 15% on ATB-346 sales in China, as indicated above. Antibe Holdings is contractually entitled (until merged into Antibe Therapeutics of course) to a 15% royalty on any future royalty revenue (corresponding to a 4% royalty on net sales, which we believe is the top end for royalties normally ascribed to patent holders of any approved therapeutic). This royalty level for Holdings is effectively embedded into our consolidated royalty rate for ATB-346 in our model.

Exhibit 4. Revenue Forecast for Antibe – ATB-346

Year-end March 31 (C$, except per share data)	2019A	2020A	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
ATB-346, US										
Current Population, US (M)	329.9	332.2	334.6	336.9	339.3	341.6	344.0	346.4	348.9	351.3
Proportion, Doctor-diagnosed arthritis (M)	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*
Proportion, with Osteoarthritis (M)	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*
Proportion, high risk of failing on NSAID regimen (M)	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*
Target patient population, US (M)	**37.3**	**37.6**	**37.9**	**38.1**	**38.4**	**38.7**	**38.9**	**39.2**	**39.5**	**39.8**
Price per treatment, annually (US$)	$1,656	$1,656	$1,656	$1,656	$1,656	$1,656	$1,656	$1,656	$1,656	$1,656
Target medical market (US$M)	$61,847	$62,280	$62,716	$63,155	$63,597	$64,043	$64,491	$64,942	$65,397	$65,855
% Market Share	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.3%*	*0.7%*	*1.0%*	*1.2%*	*1.4%*
Gross revenue, ATB-346 (US$M)	0.0	0.0	0.0	0.0	0.0	192.1	451.4	649.4	784.8	922.0
Gross revenue, ATB-346 (C$M)	$0.0	$0.0	$0.0	$0.0	$0.0	$236.3	$555.3	$798.8	$965.3	$1,134.0
Royalty rate on gross sales (%)	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*
ATB-346, royalty rev, US (C$M)	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$70.9**	**$166.6**	**$239.6**	**$289.6**	**$340.2**
ATB-346, Select EU/Middle Eastern Countries (EME)										
Current population, blended (M)	103.4	104.5	105.5	106.6	107.6	108.7	109.8	110.9	112.0	113.1
Proportion, Doctor-diagnosed arthritis (M)	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*
Proportion, with Osteoarthritis (M)	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*
Proportion, high risk of failing on NSAID regimen (M)	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*
Target pat pop, select EU/Middle East nations (M)	**11.7**	**11.8**	**11.9**	**12.1**	**12.2**	**12.3**	**12.4**	**12.6**	**12.7**	**12.8**
Price per treatment, annually (€)	€ 1,325	€ 1,325	€ 1,325	€ 1,325	€ 1,325	€ 1,325	€ 1,325	€ 1,325	€ 1,325	€ 1,325
Target medical markets (€, M)	€ 15,512	€ 15,667	€ 15,824	€ 15,982	€ 16,142	€ 16,304	€ 16,467	€ 16,631	€ 16,798	€ 16,966
% Market Share	*0%*	*0%*	*0%*	*0.0%*	*0.0%*	*0.0%*	*0.5%*	*0.8%*	*1.1%*	*1.2%*
Gross revenue, ATB-346 (€, M)	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 0.0	€ 82.3	€ 133.1	€ 184.8	€ 203.6
Gross revenue, ATB-346 (C$M)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$126.0	$203.6	$282.7	$311.5
Royalty rate from Laboratoires Acbel on gross sales (%)	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*
ATB-346, royalty rev, select EU/Middle East markets (C$M)	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$6.3**	**$10.2**	**$14.1**	**$15.6**
ATB-346, China										
Current population, blended (M)	1,439.3	1,453.7	1,468.3	1,482.9	1,497.8	1,512.7	1,527.9	1,543.1	1,558.6	1,574.2
Proportion, Doctor-diagnosed arthritis (M)	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*	*23%*
Proportion, with Osteoarthritis (M)	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*	*59%*
Proportion, high risk of failing on NSAID regimen (M)	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*
Target pat pop, China (M)	**162.9**	**164.6**	**166.2**	**167.9**	**169.5**	**171.2**	**173.0**	**174.7**	**176.4**	**178.2**
Price per treatment, annually (¥)	¥1,000	¥1,000	¥1,000	¥1,000	¥1,000	¥1,000	¥1,000	¥1,000	¥1,000	¥1,000
Target medical markets (¥, M)	¥162,928	¥164,557	¥166,202	¥167,864	¥169,543	¥171,238	¥172,951	¥174,680	¥176,427	¥178,191
% Market Share	*0%*	*0%*	*0%*	*0.0%*	*0.0%*	*0.0%*	*0.2%*	*0.4%*	*0.6%*	*0.8%*
Gross revenue, ATB-346 (¥, M)	¥0.0	¥0.0	¥0.0	¥0.0	¥0.0	¥0.0	¥345.9	¥698.7	¥1,058.6	¥1,425.5
Gross revenue, ATB-346 (C$M)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$68.2	$137.8	$208.7	$281.1
Roy rate from Nuance on gross sales (%)	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*
ATB-346, royalty rev, China (C$M)	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$10.2**	**$20.7**	**$31.3**	**$42.2**
ATB-346 royalty revenue (C$M)	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$70.9**	**$183.1**	**$270.5**	**$335.0**	**$397.9**

Source: Leede Jones Gable

We are introducing China-specific ATB-346 royalty revenue projections for Antibe, with corresponding increase in our PT. So on model implications, we now incorporate ATB-346 economics from future China-based sales into our model, though with our investment thesis assuming that future China-based Phase III knee osteoarthritis pain testing will commence patient enrollment a bit later than for Antibe (say, by end-of-C2022), based on our expectation that some regional Phase I safety/PK testing may be required before Nuance can proceed directly into pivotal testing. Nuance clearly can benefit from Antibe's clinical history on ATB-346 dosing, which has seen effective dose shift downward with each subsequent Phase I/II pain study and is now likely to be in the 75mg-to-150-mg once-daily dosing range.

Similar to our population-based assumptions for knee osteoarthritis pain market size in other ATB-346 target markets, and using Bayer's (BAYN-EU, NR) annual sales for naproxen formulation Aleve as a benchmark for achievable peak sales (€351M in annual global sales in 2018, down from €375M in 2017 on discontinuation of one product line in the US, but >€400M globally in prior years). The US National Institutes of Health estimates that over 10M prescriptions for naproxen are filled each year, excluding over-the-counter sales that are likely equally substantial, and we believe that China-based sales can be population-proportionate once peak sales are achieved. For model simplicity, we will assume that ATB-346's target market in China of knee osteoarthritis pain patients for whom refractoriness to NSAIDs or presumed susceptibility to NSAID-induced GI ulceration is proportionately similar to US/EU markets previously embedded into our forecasts (Exhibit 4).

Exhibit 5. Consolidated Income Statement and Financial Forecasts for Antibe Therapeutics

Year-end March 31 (C$, except per share data)	2020A	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Revenue									
Product Sales, Citagenix	9,987,000	10,486,350	11,010,668	11,561,201	12,139,261	12,746,224	13,383,535	14,052,712	14,755,348
Royalty revenue, ATB-346	0	0	0	0	70,895,206	183,110,354	270,483,899	335,025,272	397,947,270
Total revenue	**$9,987,000**	**$10,486,350**	**$11,010,668**	**$11,561,201**	**$83,034,467**	**$195,856,578**	**$283,867,434**	**$349,077,983**	**$412,702,618**
Y/Y revenue growth(%)	*4.7%*	*5.0%*	*5.0%*	*5.0%*	*618.2%*	*135.9%*	*44.9%*	*23.0%*	*18.2%*
Operating Expenses									
Cost of Sales, Citagenix	6,098,000	6,291,810	6,055,867	6,358,660	6,676,594	7,010,423	7,360,944	7,728,992	8,115,441
Gross margin, Citagenix	$3,889,000	$4,194,540	$4,954,800	$5,202,540	$5,462,667	$5,735,801	$6,022,591	$6,323,720	$6,639,906
Gross margin, Citagenix (%)	*38.9%*	*40.0%*	*45.0%*	*45.0%*	*45.0%*	*45.0%*	*45.0%*	*45.0%*	*45.0%*
Total gross margin, inc ATB-346	**3,889,000**	**4,194,540**	**4,954,800**	**5,202,540**	**76,357,874**	**188,846,155**	**276,506,490**	**341,348,992**	**404,587,177**
G&A expense	5,706,000	4,194,540	4,404,267	4,624,480	4,855,704	5,098,490	5,353,414	5,621,085	5,902,139
Selling and marketing expense	3,792,000	3,670,223	3,853,734	4,046,420	7,439,026	11,785,593	14,151,174	14,969,207	15,113,053
R&D Expense	8,077,000	10,000,000	10,000,000	8,500,000	8,000,000	7,500,000	6,500,000	6,500,000	6,500,000
Milestones from future partners	0	-7,500,000	-7,500,000	-7,500,000	-7,500,000	-7,500,000	-7,500,000	-7,500,000	-7,500,000
EBITDA	**($13,686,000)**	**($6,170,223)**	**($5,803,200)**	**($4,468,360)**	**$63,563,144**	**$171,962,073**	**$258,001,902**	**$321,758,700**	**$384,571,984**
EBITDA margin (%)	*(137.0%)*	*(58.8%)*	*(52.7%)*	*(38.6%)*	*76.6%*	*87.8%*	*90.9%*	*92.2%*	*93.2%*
Non-Operating Expenses									
Amortization expense, PP&E	0	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Amortization expense, Intang assets	572,000	572,000	572,000	572,000	572,000	572,000	572,000	572,000	572,000
Stock option expense	3,376,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000
Interest expense	531,000	1,322	1,322	1,322	1,322	1,322	1,322	1,322	1,322
Effective interest rate (%)	*33.1%*	*33.1%*	*33.1%*	*33.1%*	*33.1%*	*33.1%*	*33.1%*	*33.1%*	*33.1%*
Interest income	(99,000)	(99,000)	(99,000)	(99,000)	(99,000)	(99,000)	(99,000)	(99,000)	(99,000)
Currency exchange loss (gain)	0	0	0	0	0	0	0	0	0
Loss (gain) on one-time items	1,283,000	1,283,000	1,283,000	1,283,000	1,283,000	1,283,000	1,283,000	1,283,000	1,283,000
EBT	**($19,349,000)**	**($8,702,545)**	**($8,335,523)**	**($7,000,683)**	**$61,030,822**	**$169,429,751**	**$255,469,580**	**$319,226,377**	**$382,039,662**
Tax expense	-7,000	0	0	0	18,309,246	50,828,925	76,640,874	95,767,913	114,611,899
Effective tax rate (%)	*30.0%*	*30.0%*	*30.0%*	*30.0%*	*30.0%*	*30.0%*	*30.0%*	*30.0%*	*30.0%*
Net income, fully-taxed	**($19,342,000)**	**($8,702,545)**	**($8,335,523)**	**($7,000,683)**	**$42,721,575**	**$118,600,826**	**$178,828,706**	**$223,458,464**	**$267,427,764**
EPS (basic, fully-taxed)	($0.07)	($0.22)	($0.22)	($0.18)	$1.10	$3.06	$4.61	$5.77	$6.90
Adjusted EPS (fd, fully-taxed)	**($0.06)**	**($0.19)**	**($0.18)**	**($0.15)**	**$0.92**	**$2.56**	**$3.85**	**$4.82**	**$5.76**
Shares out (basic)	293,681,767	38,754,063	38,754,063	38,754,063	38,754,063	38,754,063	38,754,063	38,754,063	38,754,063
Shares out (fd)	340,216,941	46,397,302	46,397,302	46,397,302	46,397,302	46,397,302	46,397,302	46,397,302	46,397,302

Source: Company filings, Leede Jones Gable

US-directed ATB-346 royalties still contribute substantively to our ATE valuation, but that market remains unpartnered while the higher-risk China market has been notably de-risked through new alliance partner just announced. So in summary, we are now introducing China-specific ATB-346 royalty revenue, based on projected price per annual course of therapy of ¥1,000 (below our assumed annual price per patient of US$1,600-to-US$1,700 in North America and €1,300-to-€1,400 in EU). Our model projects that Nuance can complete its own Phase III knee osteoarthritis pain clinical testing by end-of-F2024 and launch by end-of-F2025, an aggressive but achievable timeline in our view. As stated, we assume that Antibe will be entitled to a 15% royalty on Nuance's net sales in China, and in so doing, we project F2025 ATB-346 royalty revenue of $10.2M, increasing to $20.7M in F2026 and $31.3M in F2027. As before, our model does not yet ascribe formal market value to ketoprofen-based surgical pain-targeted ATB-352 or acetylsalicylic acid-based anti-thrombosis/anti-stroke-targeted ATB-340, though we expect to revisit that assumption if/when these hydroxythiobenzamide-conjugated NSAIDs advance into formal clinical programs.

Our prior ATB-346 royalty revenue projections in US/EU/Middle East markets are unchanged. As we described in our initiation report, our ATB-346 royalty revenue projections assume that the drug can capture substantial market share from naproxen itself in all of its branded (mainly Aleve) and generic forms, but also can compete successfully against naproxen formulations that incorporate proton pump inhibitor drugs (like esomepraxole in Horizon Pharma's (HZNP-Q, NR) Vimovo, or lansoprazole in

Takeda's (4502-JP, NR) Prevacid Naprapac, the former drug subjected to its own generic pressures in the US in recent quarters).

Summary and valuation. By incorporating new China-targeted ATB-346 royalty revenue into our model, **we now derive a new one-year PT for ATE of $17.75 (was $15.00) while maintaining our Speculative BUY rating on the stock**. Our valuation methodologies are unchanged and are still based on NPV (still using a discount rate of 30% that we will revisit only when ATB-346 has more substantially advanced into Phase III pivotal pain testing) and multiples of our F2025 EBITDA/fd EPS forecasts (now $172.0M/$2.56, were $162.1M/$2.41, respectively), as shown in Exhibit 3. Our EV determination now incorporates pro forma cash of $41.0M that we derive by adjusting FQ221 cash of $22.5M by $25.5M in new capital from Nuance, less our estimate for operating cash loss since end-of-FQ221 of about $7M. The firm no longer has any LT debt, paying down residual debt last year. The firm's revenue-positive regenerative medicine product manufacturer/marketer Citagenix, which generated FQ221 revenue/gross margin/EBT of $2.9M/$0.9M/($0.2M) is operating to our expectations but is not overly relevant to our longer-term revenue projections or our valuation.

We remain encouraged by the extent to which Antibe has already clinically de-risked ATB-346 development. This includes Antibe's 384-patient Phase II knee osteoarthritis pain trial that established statistically significant pain relief at three month follow-up (the widely-accepted WOMAC pain intensity scale was used to assess pain relief), as compared to baseline and to placebo at two distinct doses (200-mg and 250-mg daily). Data demonstrated that even lower doses (and thus with even lower probability of developing GI ulcers that are frequently associated with naproxen at its indicated dose, admittedly higher at 550-mg twice-daily) could still confer analgesic power, as will be tested in future Phase III studies.

Exhibit 6. Competitive Landscape: Nitric Oxide and Large-Cap Knee OA Drug Developers

Company	Curr	Sym	Shares out (M)	Share price 9-Feb	Mkt cap ($M) (curr)	Mkt cap ($M) (C$)	Ent val ($M) (curr)	Ent val ($M) (C$)	Status of lead program
Nitric Oxide peers									
Nicox SA	EUR	COX	37.0	€ 4.50	€ 167	$256	€ 119	$182	NCX 470, nitric oxide-donating bimatoprost analog, targeting glaucoma or ocular hypertension; Phase III data by FQ421; a nitric oxide derivative of aspirin (NCX 4016) for cancer pain was discontinued
Novan Inc	USD	NOVN	141.5	$1.98	$280	$356	$71	$90	SB206 is a topical nitric oxide releasing gel for the treatment of Molluscum; failed to meet primary endpoint in Phase III trial announced in Jan/20
Large-cap peers involved in osteoarthritis therapies									
Ono Pharmaceutical Co Ltd	JPY	4528	528.3	¥3,146	¥1,662,162	$20,170	¥1,154,290	$14,007	ONO-4474 is a tropomyosin receptor kinase inhibitor currently in a 280-pt Phase II trial; completed in early H118 and development was subsequently terminated in Q318
Pfizer Inc	USD	PFE	5,560.0	$34.97	$194,432	$246,792	$246,500	$314,312	Eli Lilly-partnered tanezumab is a nerve growth factor (NGF)-targeted mAb; positive data from 698-pt Phase III knee OA trial in Jul/18; data from separate 3,021-pt Phase III knee OA trial in Feb/19; PDUFA date set for Dec/20
Regeneron Pharmaceuticals Inc	USD	REGN	106.7	$490.68	$52,359	$66,459	$50,778	$64,452	Mitsubishi Tanabe/Teva-partnered Fasinumab/MT-5547 is an anti-Nerve Growth Factor fully human mAb aimed at the reduction of pain related to osteoarthritis, currently in parallel Phase III trials (3640-pt FACT OA1 and 2,700-FACTO OA2); results announced in Aug/20
Shionogi & Co Ltd	JPY	4507	311.6	¥5,841	¥1,819,975	$22,085	¥1,247,584	$15,139	V120083 is a Purdue-partnered analgesic that completed a 276-pt Phase II moderate-to-severe chronic knee osteoarthritis pain trial (Jan/18); compared against naproxen and placebo
Vertex Pharmaceuticals Inc	USD	VRTX	260.0	$213.82	$55,601	$70,575	$55,345	$70,249	VX-150 is a Nav 1.8 sodium channel blocker; completed a 124-patient Phase II knee osteoarthritis trial in Jan/17, saw decrease of 0.8 units on WOMAC pain subscale
Average						**$60,956**		**$68,347**	
Antibe Therapeutics Inc	**CAD**	**ATE**	**38.678**	**57.6**	**$223**	**$223**	**$182**	**$182**	**ATB-346 is a hydrogen sulfide derivative of naproxen, Phase I GI ulceration rate trial completed, Phase II knee OA trial reported in Jun/20**

Source: Refinitiv, Company Filings, Leede Jones Gable

Exhibit 7. Competitive Landscape Continued: OA Drug Developers

Company	Curr	Sym	Shares out (M)	Share price 9-Feb	Mkt cap ($M) (curr)	Mkt cap ($M) (C$)	Ent val ($M) (curr)	Ent val ($M) (C$)	Status of lead program
Osteoarthritis Pain/Chronic Pain									
Ampio Pharmaceuticals Inc	USD	AMPE	185.1	2.3	$416	$529	$86	$109	AP-003-C/Ampion is an intra-articular injection, low molecular weight fraction of human serum albumin with the active in treatment of osteoarthritis pain; completed 125-pt Phase III trial in Dec/18
Anika Therapeutics Inc	USD	ANIK	14.2	38.3	$545	$691	$557	$707	CINGAL is cross-linked viscoelastic hyaluronic acid, approved in Canada; US-based 231-pt Phase III trial is ongoing in knee osteoarthritis; data expected by Nov/21
Assertio Holdings Inc	USD	ASRT	107.2	1.2	$127	$161	$410	$521	Commercial-stage drug delivery pain/CNS-focused; sells diclofenac form CAMBIA & extended-release tapentadol NYCYNTA ER; neuropathic pain drug cebranopadol in clinical testing
Axsome Therapeutics Inc	USD	AXSM	37.3	75.1	$2,803	$3,557	$3,617	$4,592	Disodium zoledronate tetrahydrate formulation AXS-02, an osteoclast inhibitor targeting knee osteoarthritis associated with bone marrow lesions; 346-pt Phase III trial completed in Sep/17
Bone Therapeutics SA	EUR	BOTHE	16.5	€ 2.78	€ 46	$70	€ 44	$68	JTA-004 is an injectable visco-antalgic product currently in a 676-pt Phase III trial in patients with symptomatic knee osteoarthritis; data expected in Dec/21
Camurus AB	SEK	CAMX	54.2	SEK 210	SEK 11,389	$1,736	SEK 4,032	$614	CAM2038 is a long-acting subcutaneous buprenorphine for the treatment of chronic pain
Collegium Pharmaceutical Inc	USD	COLL	34.6	26.0	$899	$1,142	$535	$679	Abuse-deterring extended-release oxycodone Xtampza, based on DETERx wax-based microsphere tchnology, was FDA-approved in Q216; acquired rights to transmucosal fentanyl form Onsolis from BioDelivery Sciences also in Q216
DURECT Corp	USD	DRRX	220.9	2.6	$570	$723	$698	$885	Diversified portfolio, not pain-focused, but oxycodone formulation RemoxyER based on Oradur platform; NDA resubmission in Q118. Post-operative pain drug SABER-bupivacaine failed in Phase III
Elite Pharmaceuticals Inc	USD	ELTP	1,009.2	0.1	$70	$89	$77	$98	Extended-release abuse-deterring bead-based naloxone-containing opioid forms based on ART platform; ANDA for extended-release oxycodone filed in Q317; FQ318 sales were US$2.5M
Endo International PLC	USD	ENDP	230.3	9.3	$2,146	$2,724	$8,040	$10,205	Diversified pain portfolio that includes Lidoderm (lidocaine patch), Opana ER (oxymorphone), Percodan (oxycodone-aspirin), Percocet (oxycodone-acetaminophen), Voltaren Gel (diclofenac)
Flexion Therapeutics Inc	USD	FLXN	49.3	12.1	$596	$757	$851	$1,080	Flexion's Zilretta received FDA approval in Oct/16 (non-opioid intra-articular triamcinolone acetonide formulation Zilretta) for knee osteoarthritis pain; pricing was estimated to be US$570/dose
Horizon Therapeutics PLC	USD	HZNP	220.7	87.0	$19,197	$24,367	$7,083	$8,990	Sells Nuvo's topical DMSO-based diclofenac formulation Pennsaid 2% in US; also naproxen-esomeprazole form Vimovo & ibuprofen-famotidine form Duexis; 2019 inflammation segment sales (including both drugs above) were US$370M
Mallinckrodt PLC	USD	MNKKQ	84.6	0.5	$39	$49	$4,874	$6,187	Diversified pharma firm with pain franchise, generic formulations of fentanyl, morphine, oxycodone, oxymorphone, hydromorphone; clinical pipeline iron-ically has few pain therapies in Phase I-III testing
Nektar Therapeutics	USD	NKTR	179.4	22.6	$4,056	$5,149	$2,734	$3,470	NKTR-181 is mu-opioid agonist analgesic, completed Phase III SUMMIT trials (638 patients, either opioid-naïve and opioid experienced) for treating chronic low back pain or chronic non-cancer pain
Omeros Corp	USD	OMER	61.7	21.6	$1,329	$1,687	$864	$1,097	Diversified portfolio, but GPCR-targeted pipeline has pain candidates (MRGE); FDA-approved Omidria (phenylephrine-ketorolac intraocular solution) targets post-ocular surgery (cataract removal) pain
Orexo AB	SEK	ORX	34.7	SEK 48	SEK 1,661	$253	SEK 1,560	$238	Markets Abstral (sublingual fentanyl) for breakthrough cancer pain; acute pain drug OX51 and opioid dependence/pain drug OX382 in Phase I/II
Pacira Biosciences Inc	USD	PCRX	43.4	75.2	$3,269	$4,149	$1,913	$2,428	DepoFoam liposome platform; lead drug is FDA-approved local anesthetic Exparel (injectible bupivacaine)
Taiwan Liposome Co Ltd	TWD	4152	84.2	TW$78.8	TW$6,631	$301	TW$5,569	$253	TLC599 is a lipsome encapsulated steroid currently in Phase III testing for the treatment of patients with osteoarthritis of the knee; data by Dec/20
Tetra Bio Pharma Inc	CAD	TBP	283.8	0.4	$99	$99	$77	$77	Dronabinol XL/PPP002 is an Intelgenx-partnered buccally-absorbed THC formulation targeting chronic pain; Phase II trial initiated in Q118
Zogenix Inc	USD	ZGNX	55.7	22.4	$1,248	$1,584	$2,109	$2,677	Lead is ZX008 (fenfluramine) in Dravet's disease & Lennox Gastaut Syndrome; legacy pain franchise (FDA-approved hydrocodone Zohydro ER) sold to Pernix in Q115 for US$100M plus US$283.5M milestones
Average						**$2,491**		**$2,249**	
Antibe Therapeutics Inc	**CAD**	**ATE**	**38.7**	**$5.76**	**$223**	**$223**	**$182**	**$182**	**ATB-346 is a hydrogen sulfide derivative of naproxen, Phase I GI ulceration rate trial completed, Phase II knee OA trial reported in Jun/20**

[1] *Share price adjusted to US$ where reporting currency is in US$ but where share value on TSX/TSXV is in C$*

Source: Refinitiv, Company Filings, Leede Jones Gable

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Buy	6	40.0%
Speculative Buy	8	53.3%
Hold	1	6.7%
Sell	-	-
Tender	-	-
Under Review	-	-