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ATE-TSX

Rating:	Speculative BUY
Target:	$15.00
Price:	$4.06
Return:	269.5%
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 ($M)	157.3
Enterprise Value ($M)	134.9
Cash ($M, most rec Q)	22.5
LT debt ($M, most rec Q)	0.0
52 Week Range	$3.05-$8.90
Avg. Weekly Volume (M)	0.40
Fiscal Year End	Mar-31

Key Milestones (calendar year)

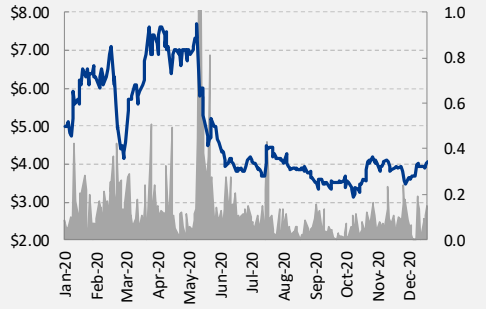
Data, Phase III ATB-346 OA pain trial	H123
Commence ATB-346 Phase III OA pain trial	H121
Phase II data, ATB-346 knee OA trial	Q220
Commence ATB-346 knee OA pain trial	Q418
Phase II, ATB-346, GI ulcer rate data	Q118
Phase II, open-label knee OA pain	Q316

Financial Metrics

In C$	2023E	2024E	2025E
Total Revenue ($000)	11,561	83,034	185,625
EBITDA ($000)	(4,468)	63,563	162,140
Adj net inc ($000)	(7,001)	42,722	111,725
EPS (basic)	($0.18)	$1.10	$2.88
EPS (FD)	($0.15)	$0.92	$2.41
P/E	NA	3.7x	1.4x
EV/EBITDA	NA	2.5x	1.0x

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

Initiating Coverage on Innovative Pain Therapy Developer with a Speculative BUY Rating

We are initiating coverage with a Speculative BUY rating and price target of $15.00 on Antibe Therapeutics, an ON-based diversified pharma firm. The firm's pipeline consists of gastrointestinal (GI)-protective nonsteroidal anti-inflammatory drug (NSAID) derivatives, led by a patented hydrogen sulfide-releasing derivative of the NSAID naproxen called ATB-346/Otenaproxesul. ATB-346 works by releasing hydrogen sulfide in the gut thereby conferring gastrointestinal protection and thus reducing the frequency/severity of gastro-duodenal ulcers (and bleeding associated with them) that can arise from chronic NSAID use.

The scientific underpinnings supporting the utility of hydrogen sulfide as a gastroprotective agent is well-documented in the medical literature, and Antibe's founding scientist JL Wallace has published many of the mechanistic studies on this theme. More recently, hydrogen sulfide's gastroprotective activity (as part of ATB-346's molecular structure) is also well-documented clinically in already-completed Phase II testing that we will describe below and which substantially reduces clinical risk not just for ATB-346 but for Antibe's entire portfolio of similarly conjugated small-molecule pain drugs for which gastrointestinal side effects are limiting.

Separately, the firm has a revenue-generating regenerative medicine arm Citagenix, with sales into dental and orthopedic markets, although management has expressed its intentions to divest this segment over time and this operation does not contribute materially to our valuation other than indirectly through the pipeline-sustaining cash it could generate on divestiture.

Investment Summary

ATB-346 demonstrated superior GI-sparing pain relief benefit validated in mid-stage trial. Final Phase II data for lead asset ATB-346 was reported in Jun/20 from a 384-patient trial, demonstrating the superiority of ATB-346 over placebo for the reduction of osteoarthritis (OA) pain in the 200mg and 250mg dose arms respectively. Importantly, the drug was considered safe on a core side effect measure (gastroduodenal ulceration rate) that limits chronic use of other non-steroidal anti-inflammatory drugs, including parent drug naproxen itself.

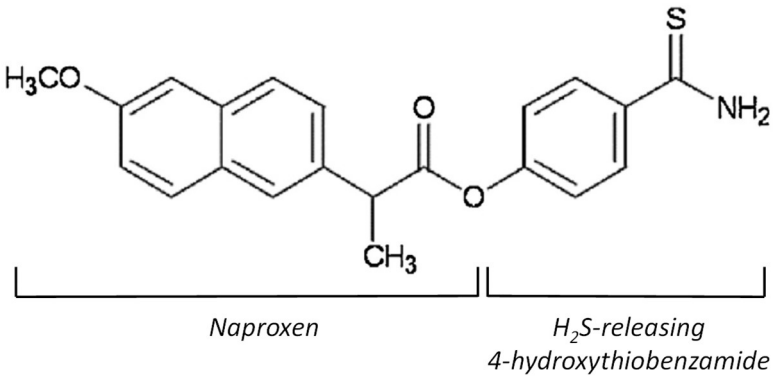
Initiating pivotal trials for ATB-346 as our seminal milestone. Antibe is seeking to file an IND to initiate pivotal Phase III trial testing, and separately have an End-of-Phase II meeting with the FDA, both by H121. Subsequently, we expect the formal initiation of Phase III trials to commence by CQ321 (consistent with Antibe's own projections on Phase III timelines published earlier today) and with data by C2023. On trial specifics, the primary endpoint will likely be impact on WOMAC-quantified pain intensity from baseline, in comparison to placebo at 12-week follow-up. Multiple doses tested in the trial will be at or lower than the lowest dose (150mg once-daily). The trial could also be an adaptive design, that if merited, allow the firm to shift patient enrollment to lower dosage strengths if/when acute pain relief is apparent at those dosages.

Partnering discussions underway for ATB-346 could represent separate transformative opportunity. With superior safety data now in hand and with Phase II efficacy data for ATB-346 also in the public domain, we believe that ATB-346 specifically (and perhaps the broader hydrogen sulfide-releasing thiobenzamide chemistry platform) is now squarely in the cross-hairs of larger pharma partners seeking to augment their respective Rx pain portfolio. Virtually all global pharma firms have pain/analgesia assets in their commercial prescription or over-the-counter (OTC) portfolios, including of course naproxen innovator Bayer (BAYN-EU, NR) which continues to market branded naproxen formulation Aleve as an OTC medication (Exhibit 9). Antibe's current regional partners for ATB-346 includes Kwangdong Pharmaceutical (00929-KR, NR), Laboratoires Acbel SA (Private) and Knight Therapeutics (GUD-T, NR).

Streamlining Antibe's corporate structure is both necessary and ongoing. Additionally, Antibe indicated last month that it is actively exploring mechanisms by which it can integrate Antibe Holdings, the corporate entity under which Antibe Therapeutics operates, into Antibe's broader corporate framework. Antibe Holdings owns 1.5M ATE shares and 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 with those chemistries. Company founder and University of Calgary Professor JL Wallace is the key inventor on Antibe's core US patents, the most recent of which is US#8,541,398 (which is appropriately entitled *Hydrogen Sulfide Derivatives of Non-Steroidal Anti-Inflammatory Drugs*) that was filed in Feb/10 and thus expires in Feb/30.

We have no specific insight into how Holdings will be valued, or when, but we endorse the decision to simplify Antibe's overly-complex corporate structure to match the corresponding simplicity of its (for now single-product-focused) drug development efforts. Regardless of outcome, our model assumes that Antibe Therapeutics can receive a 30% net royalty on future ATB-346 sales. As described in Antibe's F2020 annual information form, Antibe Holdings is at present entitled to a 15% royalty on any future royalty revenue (or alternatively, a 4% royalty on net sales, though it seems highly unlikely to us that Antibe would ever oversee its own marketing efforts) that Antibe Therapeutics receives from future marketing partners for any of its development-stage hydrogen sulfide-releasing conjugated drugs. As described throughout our report, Antibe's patents are not at all limited to ATB-346/naproxen, but for now, our valuation is primarily focused on ATB-346 just because of the extent to which its development has already been de-risked by already-completed Phase II testing.

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



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

FQ221 data reflecting revenue growth in the quarter, although broader long-term growth hampered by COVID-19 challenges. Citagenix generated FQ221 revenue/gross margin/EBT of $2.9M/$0.9M (32.2%)/($0.2M), reflecting on an almost 30% y/y increase in revenue against FQ220 corresponding data of $2.2M/$0.9M (43.1%)/($0.3M) despite COVID-19 pandemic challenges. On a sequential basis, FQ221 revenue/gross margin reflects improvements from FQ121 (June-end quarter) as well, with revenue/gross margin in that quarter of $1.2M/$0.5M (41.7%)/($0.2M). The revenue growth is not representative of the firm's forward expectations, with further losses anticipated from pandemic challenges as dental clinic closures and reduced patient count hamper demand for medical instruments. If we review the broader T6M data, T6M revenue for F2021 was $4.0M and was down by -18.5% when compared to T6M revenue for F2020 at $4.9M.

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	172,879	249,816	303,713	355,780
Total revenue	**$9,539**	**$9,987**	**$10,486**	**$11,011**	**$11,561**	**$83,034**	**$185,625**	**$263,199**	**$317,766**	**$370,535**
Revenue growth (%)	*12%*	*5%*	*5%*	*5%*	*5%*	*618%*	*124%*	*42%*	*21%*	*17%*
EBITDA	**($8,786)**	**($13,686)**	**($6,170)**	**($5,803)**	**($4,468)**	**$63,563**	**$162,140**	**$238,057**	**$291,386**	**$343,459**
EBITDA growth (%)	57%	56%	(55%)	(6%)	(23%)	(1523%)	155%	47%	22%	18%
EBITDA margin (%)	*(92%)*	*(137%)*	*(59%)*	*(53%)*	*(39%)*	*77%*	*87%*	*90%*	*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	$111,725	$164,867	$202,197	$238,649
Fully-taxed EPS (basic)	($0.06)	($0.07)	($0.22)	($0.22)	($0.18)	$1.10	$2.88	$4.25	$5.22	$6.16
Fully-taxed EPS (fd)	**($0.05)**	**($0.06)**	**($0.19)**	**($0.18)**	**($0.15)**	**$0.92**	**$2.41**	**$3.55**	**$4.36**	**$5.14**
P/E (basic)	*NA*	*NA*	*NA*	*NA*	*NA*	*3.7x*	*1.4x*	*1.0x*	*0.8x*	*0.7x*
EV/EBITDA	*NA*	*NA*	*NA*	*NA*	*NA*	*2.5x*	*1.0x*	*0.7x*	*0.5x*	*0.5x*
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

Citagenix remains minimally impactful on our F2021+ forecasts. Selling the Citagenix segment has been a previously expressed goal by management. On that, we observed that the firm announced the sale of a Citagenix subsidiary, BMT Medizintechnik GmbH to BMT's Managing Director at a nominal sum of EUR1. The subsidiary is a German manufacturer and distributor of surgical instruments, and currently accounts for sub-10% of Citagenix's consolidated revenue (generated $0.189M/$0.046M (24%) in revenue/gross margin on a T6M basis). The move represents the first step in divesting the Citagenix segment.

Exhibit 3. Valuation summary for Antibe Therapeutics

NPV, discount rate	20%	25%	30%	35%	40%	50%
Implied value per share	$25.19	$17.78	**$12.80**	$9.38	$6.99	$4.04
Price/earnings multiple, F2025	**10x**	**15x**	**20x**	**25x**	**30x**	**35x**
Implied share price[1]	$8.43	$12.65	**$16.86**	$21.08	$25.29	$29.51
EV/EBITDA multiple, F2025	**5x**	**10x**	**12.5x**	**15x**	**17.5x**	**20x**
Implied share price[1,2]	$5.95	$12.07	**$15.12**	$18.18	$21.24	$24.30
One-year Antibe target price (C$) [1]			**$14.93**			

[1] *Based on F2025 fd fully-taxed EPS of $2.41; EBITDA of $162.1M, discounted at 30%, fully-diluted shares outstanding of 46.3M (10-for-1 share consolidation completed in late Nov/20)*

[2] *EV incorporates FQ221 cash of $22.5M, total debt of nil, residual debt of $2.2M paid down during FQ121*

Source: Company filings, Analyst forecasts and estimates

Sufficient liquidity in place for clinical trial initiatives into 2021. At FQ221 quarter-end, the firm exited with $22.5M in cash and no LT debt. Cash of this magnitude also incorporates the $28.8M offering that took place at end-Jun/20, and saw the sale of 62.5M units. Each unit consisted of one share and one-third of a common share purchase warrant. As noted earlier, we have also adjusted our shares outstanding to reflect the 10-for-1 share consolidation, with final fully diluted shares outstanding at 46.3M. With the proceeds of the offering already embedded in the firm's cash balance for the quarter, this should be in our view, sufficient to fund ATB-346 development efforts into 2021.

We are formally initiating coverage on ATE with a $15.00 price target. Our price target methodology is the average of three methodologies: NPV and multiples of our F2025 EBITDA and EPS. In that year, we forecast EBITDA of $162.1M, and EPS of $2.41. Our fully diluted EPS estimate also reflects the new shares outstanding of 46.3M following a 10-for-1 share consolidation completed in late Nov/20. We are separately watching for evidence of interest in ATB-346 from cash-contributing strategic partners prior to the future commercialization of ATB-346. We believe that pain-focused drug developers could be comparably

enthralled with future upside from Antibe's thiobenzamide conjugation chemistry and expertise in hydrogen sulfide biology, and its applications to other anti-inflammatory drugs like ATB-352/ATB-340 (conjugated analogs of ketoprofen and acetylsalicylic acid, respectively). As timing of future corporate alliances are always difficult to predict with certainty, our model will make no overt assumptions on timing, or economic magnitude, of such alliances until they transpire. ATB-346 is well-characterized both chemically and pharmacologically in the medical literature. 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).

Exhibit 4. Antibe Therapeutics – Clinical Pipeline, Led by Soon-To-Be-Phase III-Stage Naproxen Analog ATB-346

Asset	Indication	Formulation	Clinical Development Stage: Pre-Clinical	Phase I	Phase II	Phase III
ATB-346	Knee Osteoarthritis	Hydrogen sulfide-releasing derivative of naproxen	Phase III: Expected to Start by CQ221			
ATB-352	Peri-Operative Pain	Hydrogen sulfide-releasing derivative of ketoprofen	Preclinical			
ATB-340	Anti-Thrombotic/ Anti-Cancer	Hydrogen sulfide-releasing derivative of low-dose aspirin	Preclinical			

Source: Company Filings, Leede Jones Gable

Hydrogen sulfide-releasing drugs have long been expected to confer additive benefits to drugs modified to release it, but drug development on this front has been met with challenges. That hydrogen sulfide has therapeutic potential in GI health would certainly come as a surprise to anyone who has ever inhaled trace amounts of the noxious gas. The rotten-egg-smelling colourless, flammable, water-soluble gas uncharitably referred to as swamp gas or sewer gas, can be fatally toxic if inhaled at concentrations at or higher than 1,000 parts per million. But the gas also demonstrates dramatic anti-inflammatory, cytoprotective, and pro-healing activity when released in the GI tract or in the bloodstream, and at much lower concentrations than those conferring lethal effects when inhaled.

Exhibit 5. Revenue Forecast for Antibe – ATB-346

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	172,878,582	249,815,719	303,712,979	355,780,049
Total revenue	**$9,987,000**	**$10,486,350**	**$11,010,668**	**$11,561,201**	**$83,034,467**	**$185,624,806**	**$263,199,254**	**$317,765,690**	**$370,535,397**
Y/Y revenue growth(%)	*4.7%*	*5.0%*	*5.0%*	*5.0%*	*618.2%*	*123.6%*	*41.8%*	*20.7%*	*16.6%*
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**	**178,614,383**	**255,838,310**	**310,036,699**	**362,419,956**
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	11,376,322	13,427,787	14,029,839	14,058,873
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**	**$162,139,572**	**$238,057,108**	**$291,385,776**	**$343,458,944**
EBITDA margin (%)	(137.0%)	(58.8%)	(52.7%)	(38.6%)	76.6%	87.3%	90.4%	91.7%	92.7%
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, Intangible 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**	**$159,607,249**	**$235,524,786**	**$288,853,453**	**$340,926,621**
Tax expense	-7,000	0	0	0	18,309,246	47,882,175	70,657,436	86,656,036	102,277,986
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**	**$111,725,075**	**$164,867,350**	**$202,197,417**	**$238,648,635**
EPS (basic, fully-taxed)	($0.07)	($0.22)	($0.22)	($0.18)	$1.10	$2.88	$4.25	$5.22	$6.16
Adjusted EPS (fd, fully-taxed)	**($0.06)**	**($0.19)**	**($0.18)**	**($0.15)**	**$0.92**	**$2.41**	**$3.55**	**$4.36**	**$5.14**
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: Leede Jones Gable

This activity has long been known and is well-characterized in the medical literature, but the challenge until recently has been how to design hydrogen sulfide-releasing analogs of pharmacologically active agents that actually release hydrogen sulfide. And to do so in a way that confers measurable and not just theoretical impact on disease processes, as well as preserve the core activity of the agent being modified. We now have strong Phase II data showing that ATB-346 embodies all three elements, enhancing naproxen's medical utility in the process.

Naproxen remains one of the most commonly used NSAIDs despite known GI safety issues. Naproxen has been approved for prescription sale in the US since 1976 and for over-the-counter use since 1994. 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. Presently, the highest profile naproxen brand is Bayer's Aleve. Aleve has consistently been a part of Bayer's top ten consumer health products, and last generated EUR351M in annual revenue for 2018.

Exhibit 6. 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	172,878,582	249,815,719	303,712,979	355,780,049
Total revenue	**$9,987,000**	**$10,486,350**	**$11,010,668**	**$11,561,201**	**$83,034,467**	**$185,624,806**	**$263,199,254**	**$317,765,690**	**$370,535,397**
Y/Y revenue growth(%)	*4.7%*	*5.0%*	*5.0%*	*5.0%*	*618.2%*	*123.6%*	*41.8%*	*20.7%*	*16.6%*
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**	**178,614,383**	**255,838,310**	**310,036,699**	**362,419,956**
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	11,376,322	13,427,787	14,029,839	14,058,873
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**	**$162,139,572**	**$238,057,108**	**$291,385,776**	**$343,458,944**
EBITDA margin (%)	(137.0%)	(58.8%)	(52.7%)	(38.6%)	76.6%	87.3%	90.4%	91.7%	92.7%
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**	**$159,607,249**	**$235,524,786**	**$288,853,453**	**$340,926,621**
Tax expense	-7,000	0	0	0	18,309,246	47,882,175	70,657,436	86,656,036	102,277,986
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**	**$111,725,075**	**$164,867,350**	**$202,197,417**	**$238,648,635**
EPS (basic, fully-taxed)	($0.07)	($0.22)	($0.22)	($0.18)	$1.10	$2.88	$4.25	$5.22	$6.16
Adjusted EPS (fd, fully-taxed)	**($0.06)**	**($0.19)**	**($0.18)**	**($0.15)**	**$0.92**	**$2.41**	**$3.55**	**$4.36**	**$5.14**
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

Despite the widespread use of naproxen, there remains safety profile concerns. Chief among which GI side effects constitute the most common side effect reported. Side effects span a wide clinical spectrum, ranging from dyspepsia, heartburn, and abdominal discomfort to more serious including peptic ulcer, bleeding and perforation.

Antibe's ATB-346 appears to have overcome historical drug development challenges on modifying naproxen to mitigate GI safety. An alternative approach by drug developers have been to modify naproxen in ways that preserve its core pain-mitigating pharmacologic activity (primarily through inhibition of cyclooxygenase enzymes COX-1/COX-2) while mitigating its impact on gastric epithelium that give rise to the GI ulcers in some patients.

One such drug development strategy involves administrating naproxen alongside a proton pump inhibitor (AAI), as we list the companies below:

- **Horizon Pharma (HZNP-Q, NR): Vimovo.** A branded formulation consisting of naproxen and a PPI known as esomeprazole delayed-release formulation (AstraZeneca (AZN-L, NR) sells this PPI under the brand name Nexium). The drug aims to mitigate upper GI ulcer symptoms arising from chronic NSAID use. Interestingly, another drug developer in Antibe's local

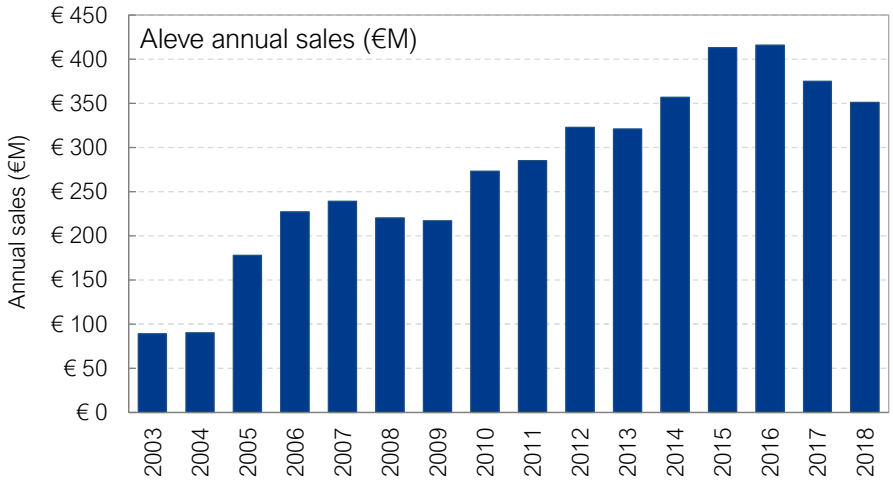
geography, Nuvo Pharmaceuticals (NRI-T, NR), receives royalties on Vimovo sales, though with sequential decline in those royalties on the horizon with generic Vimovo now available from international generics giant Dr. Reddy Laboratories.

- **Takeda (4502-JP, NR): Prevacid Naprapac.** A formulation combining naproxen with a PPI known as lansoprazole. However, this combination approach with proton pump inhibitor (PPI) drugs presents its own limitations, particularly with increasing awareness within the medical community on adverse events that are independently associated with PPI use.

Hugely positive efficacy data clearly reveals that ATB-346 can be an effective and gastroprotective analgesic at or near Phase II test doses. On details of the trial, ATB-346 was subjected to testing in a four-arm placebo-controlled Phase IIb trial for which three distinct dosage strengths (150-mg, 200-mg, and 250-mg once-daily) were tested along with placebo over a 14-day dosing duration in knee osteoarthritis patients. The main efficacy measure was the well-characterized WOMAC pain intensity score. By that measure, ATB-346 was effective at all test doses, including the 150-mg once-daily dose for which clear efficacy trends were observed even though the study was now powered to reveal statistically significant data at this strength.

Shifting to the higher two doses, both achieved impact on WOMAC-quantified pain intensity that was statistically superior to placebo at day fourteen, at significance levels that are not often seen even with approved pain drugs of $p<0.01$ in both cases. Indeed, both the 200-mg and 250-mg dosage strengths engendered strong clinical benefit on at least two WOMAC subcomponent scores, including the joint stiffness subscale and the difficulty-performing-daily-activities subscale, so it was clearly positive in our view that no subcomponent analysis of efficacy data was required to reveal ATB-346's analgesic power. Antibe has yet to provide WOMAC data, and so we look forward to reviewing raw data once published in peer-reviewed format or once presented in abstract form at a future scientific conference.

Exhibit 7. Bayer's Legacy Annual Sales for Naproxen Formulation Aleve Provides a Reasonable Baseline from which to Project Plausible ATB-346 Annual Sales



Source: Company Filings, Leede Jones Gable

Some cautionary data shared on post-dosing liver toxicity, but relevance to ATB-346 itself is ambiguous and for which impact was notably most pronounced once ATB-346 dosing concluded. The incidence of acute liver toxicity during the two-week period when patients (other than placebo patients) underwent ATB-346 treatment were exceedingly low. Only one patient on drug (the relevant dose was not indicated, but probably was 250-mg once-daily) experienced any evidence of clinically significant, though temporary, evidence of liver toxicity. Even in this case, the observed elevation was temporary and was self-resolved. During the post-treatment analysis that transpired ten days later, the number of patients with clinically-significant liver enzyme elevation was higher at all test doses. But there was a tight association with prior acetaminophen use (a known hepatotoxic analgesic), or with simultaneous statin use (long known to engender reversible hepatocellular damage or cholestatic injury).
When adjusting for these two Rx-based confounding variables, prevalence of transient liver toxicity was in our view reduced by a clinically-meaningful degree and to a level that can comfortably be tolerated for a chronic pain therapy, even before considering the comparative GI benefits that ATB-346 confers vis a vis naproxen itself. That said, we will be laser-focused on hepatic side effect profile in future Phase III studies, at least to the extent that side effect profile compares to naproxen itself at its therapeutic dose. On this theme, Antibe specifically indicated that patients were allowed to use other pain medications once

their two-week ATB-346 dosing regimen was concluded and it seems reasonable to assume that post-study therapies could have themselves contributed to secondary liver toxicity issues.

Exhibit 8. Competitive Landscape: Nitric Oxide and Large-Cap Knee OA Drug Developers

Company	Curr	Sym	Shares out (M)	Share price 9-Jan	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	€ 4.42	€ 164	$254	€ 129	$200	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	$1.09	$154	$196	$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	¥3,127	¥1,652,124	$20,156	¥1,154,290	$14,082	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	$37.13	$206,441	$261,830	$248,176	$314,762	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	$498.73	$53,218	$67,496	$38,906	$49,345	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	$22,204	¥1,243,405	$15,170	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	$237.00	$61,629	$78,164	$53,467	$67,812	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						**$64,328**		**$65,923**	
Antibe Therapeutics Inc	**CAD**	**ATE**	**38.678**	**40.6**	**$157**	**$157**	**$135**	**$135**	**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

One of the drugs that patients could have self-administered once their two-week ATB-346 dosing concluded is the well-known orally-active medication acetaminophen, for which liver toxicity profile is well-known. The drug itself is not toxic per se, but one of its unstable metabolites, N-acetyl-p-benzoquinone imine certainly is, at least until it is conjugated to glutathione and then cleared in the kidneys thereafter. Upon reflecting back on Phase II study design, we see that patients were required to be titrated off any alternative anti-inflammatory drugs, including acetaminophen, for at least five days prior to enrollment. However, legacy use of most alternative pain drugs, again including acetaminophen, was actually required for the trailing two years prior to enrollment, mostly as an indicator of pain severity at enrollment.

Lower Phase III test doses should eventually mitigate perceptions of adverse side effect (liver toxicity) profile that higher-dose Phase I/II testing infused into ATB-346's clinical profile. Antibe expects to commence a US-based Phase I ADMET trial in parallel with supplemental preclinical animal toxicology testing that will generate necessary data for ATB-346's future NDA filing. Antibe

separately expects the FDA to request longer-term six-month GI safety testing, probably comparing ATB-346 at its analgesic dose (probably near or below 150-mg once-daily, at which its risk of elevated GI ulceration rate is virtually nil, since it was low at a higher 250-mg once-daily dose in earlier testing) to naproxen at its indicated dose (550-mg twice-daily). The trial could start during FH222, pending timelines to completing the ADMET/animal toxicology studies just described, and on commencing formal Phase III knee osteoarthritis testing. We expect ATB-346 to perform as well or better in six-month GI safety testing than it did at two-week follow-up in the 244-patient Phase I/II GI ulceration rate trial completed in Mar/18 and as published earlier in FQ420 in the *British Journal of Pharmacology*.

Exhibit 9. Competitive Landscape Continued: OA Drug Developers

Company	Curr	Sym	Shares out (M)	Share price 9-Jan	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	1.4	$261	$331	$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	42.9	$609	$773	$557	$706	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	0.5	$58	$73	$410	$520	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	77.7	$2,902	$3,681	$3,617	$4,588	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	€ 2.80	€ 46	$71	€ 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 182	SEK 9,892	$1,517	SEK 4,032	$618	CAM2038 is a long-acting subcutaneous buprenorphine for the treatment of chronic pain
Collegium Pharmaceutical Inc	USD	COLL	34.6	21.7	$750	$951	$535	$678	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	203.2	2.1	$425	$539	$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	$52	$67	$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	7.1	$1,626	$2,062	$8,040	$10,197	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	12.3	$608	$771	$851	$1,079	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	79.5	$17,555	$22,265	$7,083	$8,983	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	0.2	$21	$26	$4,874	$6,182	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	19.2	$3,446	$4,371	$2,734	$3,467	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	16.0	$987	$1,252	$864	$1,096	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 47	SEK 1,645	$252	SEK 1,756	$269	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	70.1	$3,047	$3,865	$1,913	$2,426	DepoFoam liposome platform; lead drug is FDA-approved local anesthetic Exparel (injectible bupivacaine)
Taiwan Liposome Co Ltd	TWD	4152	84.2	TW$61.6	TW$5,184	$235	TW$5,569	$252	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	0.2	$54	$54	$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	21.8	$1,215	$1,541	$2,109	$2,675	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						**$2,235**		**$2,249**	
Antibe Therapeutics Inc	**CAD**	**ATE**	**38.7**	**$4.06**	**$157**	**$157**	**$135**	**$135**	**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

Disclosures 2,5

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Speculative Buy	7	50.0%
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Sell	-	-
Tender	-	-
Under Review	-	-