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February 14, 2023

Antisense Therapeutics

Skipping ahead

- ANP has received its first clinical trial application approval for its Ph2b trial in Duchenne's Muscular Dystrophy (DMD). The Turkish approval allows ANP to commence patient recruitment and subsequently first dosing.
- Recent results from the combination study (ATL1102 + exon-skipping drug) were particularly interesting. More to come in the next month but positive results have the potential to ignite interest from major DMD players in the exon-skipping space.
- A stock with improving optics and data, coming into a period of increased newsflow and significant catalysts. Happy to keep buying around these levels.

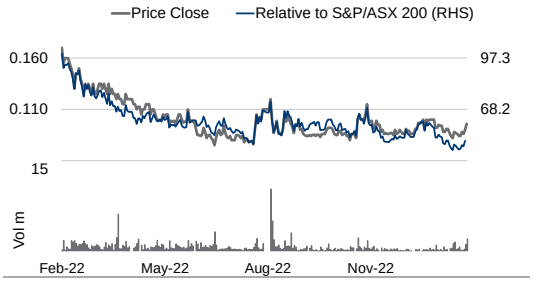
SPECULATIVE BUY (no change)

Stock code:	ANP AU
Price:	A$0.096
12-month target price:	A$0.26
Previous target price:	A$0.26
Up/downside to target price:	170.8%
Dividend yield:	0.0%
12-month TSR*:	170.8%
Market cap:	A$64m
Average daily turnover:	A$0.06m
Index inclusion:	N/A

** Total stock return – Up/downside to target price + 12-month forward dividend yield.*

Price performance

(%)	1M	3M	12M	3Y
Absolute	-4.0	-16.5	-43.5	-
Rel ASX/S&P200	-7.3	-20.4	-45.5	-



Source: Bloomberg

Financial summary

	Jun-22A	Jun-23F	Jun-24F	Jun-25F
Revenue (A$m)	1.8	1.3	1.0	1.0
EBITDA Norm (A$m)	-5.7	-14.7	-17.0	-14.0
Net Profit (A$m)	-5.8	-14.3	-16.7	-13.1
EPS Norm (A$)	-0.01	-0.02	-0.02	-0.01
EPS Growth Norm (%)	-38.3%	106.2%	-17.2%	-35.4%
P/E Norm (x)	NA	NA	NA	NA
DPS (A$)	0.00	0.00	0.00	0.00
Dividend Yield (%)	0.0%	0.0%	0.0%	0.0%
EV/EBITDA (x)	-6.2	-2.5	-0.5	-1.6
Gearing (Net Debt/EBITDA)	3.35	1.20	2.72	2.35

Source: Company data, Morgans estimates

Related research

Sector report - 18 Oct 2022

ANP (SPEC BUY - TP A$0.26) - 07 Sep 2022

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Analyst(s) own shares in the following stocks mentioned in this report:

– Antisense Therapeutics

First CTA approved for Ph2b trial in DMD – UK, Bulgaria, AUS to follow

- ANP announced it has received its first approval from the Turkish Medicines and Medical Device Agency (TMMDA) for its Ph2b trial of ATL1102 in non-ambulant boys with DMD.
- The trial will enrol 45 boys (blinded and randomised between placebo, 25mg, 50mg) across multiple sites in EU (UK / Bulgaria / Turkey) and AUS, and will consist of a six-month blinded phase and a six-month open-label treatment period. At this stage, the blinded phase of the trial is anticipated to be reported in 1HCY24.

Views on combination study (ATL1102 + exon-skipping drug)

- ANP recently released the functional results from its combination study which showed statistically significant improvement in specific maximum force and eccentric muscle force remaining in the extensor digitorum longus (EDL) muscle, a lower leg muscle (p=<0.001). Overall, the combination of drugs showed statistically significant effects compared to control treatments, and was better than using the exon-skipping drug alone.
- We think positive outcomes from the combo study (when combined with part 2: muscle dystrophin levels + cellular markers) will get the attention of the major exon-skipping players: Sarepta (SRPT-US), Pfizer (PFE-US), and Solid Biosciences (SLDB-US). While a few exon-skipping drugs have been ultimately approved, it hasn't all been smooth sailing and criticism surrounds the therapy, centered around whether this new dystrophin is being effectively taken up by the affected muscles (i.e. therapeutic effect). See page 4 for broad views.
- Outside of what we view as a strong proposition for monotherapy (ATL1102 to treat inflammation and promote quality of life), the role the drug may ultimately take is in combination therapy by reducing inflammation to allow the new dystrophin to be more readily used by the muscles for greater therapeutic effect.
- Our view is that even in these early-stage animal studies, an increase in therapeutic effect or greater dystrophin/muscle uptake would likely yield significant interest from these players.
- Obviously, more to come with part 2 of the study detail coming shortly, but the results achieved to date give us more confidence for ATL1102 being used effectively in this setting.

Forecast and valuation update

- No changes to forecasts at this stage and with our target price remaining significantly higher than the prevailing market valuation, we see significant upside potential although reiterate the view that an investment in ANP is for higher risk tolerant investors with a long-term view.
- Valuation and target price of A$0.26 remains. Speculative Buy retained.

Investment view

- We continue to see ANP as significantly undervalued and happy to keep on the front-foot with this one ahead of what we expect to be its strongest period of news flow to date (next 12-18 months).

Price catalysts

- Part 2 of its combination study (biomarker analysis / mechanism of action).
- CTA approvals / recruitment announcements.

Risks

- Prolonged delays in trial recruitment and commencement / Failure of DMD in Ph2b program / Funding requirements.

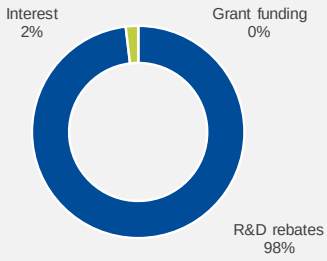
Antisense Therapeutics

SPECULATIVE BUY — **as at February 14, 2023**

Price (A$):	0.096	12-month target price (A$):	0.26
Market cap (A$m):	64	Up/downside to target price (%):	170.8
Free float (%):	100.0	Dividend yield (%):	0.0
Index inclusion:	N/A	12-month TSR (%):	170.8

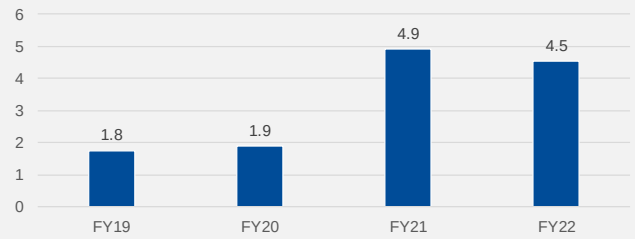
Antisense Therapeutics Limited, a biopharmaceutical company, engages in the research and development of novel antisense pharmaceuticals in Australia. Its product pipeline comprises ATL1102, an antisense inhibitor of CD49d that has completed Phase IIa for the treatment of multiple sclerosis, Duchennes Muscular Dystrophy, acromegaly, asthma, and other inflammatory indications. The company's product pipeline also includes ATL1103, a second generation antisense drug designed to block growth hormone receptor expression thereby reducing levels of the hormone insulin-like growth factor-I in the blood, as well as to treat diseases associated with excessive growth hormone action that has completed Phase II clinical trial.

Income by segment (A$m) - FY22



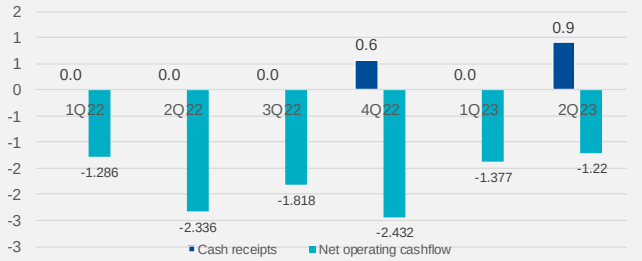
Source: Company reports

R&D expenditure



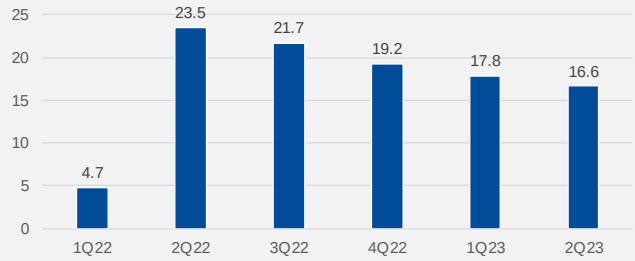
Source: Company reports

Quarterly cash receipts and outflow (A$m)



Source: Company reports

Quarterly cash balance ($m)



Source: Company reports

Bull points

Major milestones approach

Part 2 combo study (March 2023)

Ph2b – first patient dose (2Q'CY23)

Finalise recruitment (3QCY23)

Ph2b topline readout (1HCY24)

Certainty on funding arrangements (TBA).

Bear points

Unlikely to be fully funded

ANP are unlikely to have sufficient funds to complete its Ph2b trials to full completion. Adds timeline risk and potentially lowers negotiating power if licensing transaction eventuates.

CEO search continues

Long-term CEO announced retirement in November 2022. Responsibilities to continue until the Company finds a suitable replacement. So far, no CEO has been appointed.

Environmental, Social and Governance

ESG Exposure Management

Environmental

The Company is involved in pharmaceutical R&D, much of which is contracted out to third parties. The Company believes these activities do not create any signicant/material environmental impact.

Social

ANP's investigational assets aim to address areas of serious unmet medical need. Significant downstream social advantages of treatment if successful.

Governance

Small but solid board with strong governance. There is fair representation of females on the board (~33%), and equal representation within senior executive positions.

Source: Morgans

Figure 1: Financial summary

Income statement	2021A	2022A	2023F	2024F	2025F
Milestone payments	0.0	0.0	0.0	0.0	0.0
Royalty	0.0	0.0	0.0	0.0	0.0
R&D rebate	0.6	1.8	1.3	1.0	1.0
Total revenue	**0.6**	**1.8**	**1.3**	**1.0**	**1.0**
EBITDA	**-8.0**	**-5.7**	**-14.7**	**-17.0**	**-14.0**
Associate income	0.0	0.0	0.0	0.0	0.0
Depreciation	0.1	0.1	0.0	0.0	0.0
EBITA	-8.1	-5.8	-14.7	-17.0	-14.0
Amortisation/impairment	0.0	0.0	0.0	0.0	0.0
EBIT	**-8.1**	**-5.8**	**-14.7**	**-17.0**	**-14.0**
EBIT(incl associate profit)	-8.1	-5.8	-14.7	-17.0	-14.0
Net interest expense/FX	0.0	0.0	0.0	0.4	0.4
Pre-tax profit	**-8.1**	**-5.8**	**-14.3**	**-16.7**	**-13.1**
Income tax expense	0.0	0.0	0.0	0.0	0.0
After-tax profit	-8.1	-5.8	-14.3	-16.7	-13.1
Minority interests	0.0	0.0	0.0	0.0	0.0
NPAT	**-8.1**	**-5.8**	**-14.3**	**-16.7**	**-13.1**
Significant items	0.0	0.0	0.0	0.0	0.0
NPAT post abnormals	-8.1	-5.8	-14.3	-16.7	-13.1

Cash flow statement	2021A	2022A	2023F	2024F	2025F
EBITDA	-8.0	-5.7	-14.7	-17.0	-14.0
Other cash items	0.0	0.0	0.0	0.0	0.0
Net interest (pd)/rec	0.0	0.0	0.4	0.4	0.9
Taxes paid	0.0	0.0	0.0	0.0	0.0
Change in working capital	2.1	-2.1	2.8	0.3	-0.3
Cash flow from ops (1)	**-5.8**	**-7.8**	**-11.5**	**-16.4**	**-13.4**
Capex (2)	-0.1	0.0	-0.1	0.0	0.0
Disposals/(acquisitions)	0.0	0.0	0.0	0.0	0.0
Other investing cash flow	0.0	0.0	0.0	0.0	0.0
Cash flow from invest (3)	**-0.1**	**0.0**	**-0.1**	**0.0**	**0.0**
Incr/(decr) in equity	7.9	22.6	10.0	45.0	0.0
Incr/(decr) in debt	0.0	0.0	0.0	0.0	0.0
Ordinary dividend paid	0.0	0.0	0.0	0.0	0.0
Preferred dividends (4)	0.0	0.0	0.0	0.0	0.0
Other financing cash flow	0.0	0.0	0.0	0.0	0.0
Cash flow from fin (5)	**7.9**	**22.6**	**10.0**	**45.0**	**0.0**
Forex and disc ops (6)	0.0	0.0	0.0	0.0	0.0
Inc/(decr) cash (1+3+5+6)	1.9	14.8	-1.6	28.6	-13.4
Equity FCF (1+2+4)	-5.9	-7.8	-11.6	-16.4	-13.4

Balance sheet	2021A	2022A	2023F	2024F	2025F
Cash & deposits	6.0	19.2	17.7	46.3	32.9
Trade debtors	0.6	1.8	0.2	0.2	0.2
Inventory	0.0	0.0	0.0	0.0	0.0
Investments	0.0	0.0	0.0	0.0	0.0
Goodwill	0.0	0.0	0.0	0.0	0.0
Other intangible assets	0.0	0.0	0.0	0.0	0.0
Fixed assets	0.3	0.2	0.3	0.3	0.3
Other assets	0.0	0.0	0.0	0.0	0.0
Total assets	**7.0**	**22.4**	**19.3**	**47.9**	**34.5**
Short-term borrowings	0.0	0.0	0.0	0.0	0.0
Trade payables	0.5	0.5	1.8	2.0	1.6
Long-term borrowings	0.0	0.0	0.0	0.0	0.0
Provisions	0.5	0.6	0.6	0.6	0.6
Other liabilities	0.0	0.1	0.1	0.1	0.1
Total liabilities	**1.0**	**1.3**	**2.5**	**2.7**	**2.4**
Share capital	77.0	98.1	108.1	153.1	153.1
Other reserves	4.0	3.9	3.9	3.9	3.9
Retained earnings	-75.1	-80.9	-95.2	-111.9	-125.0
Other equity	0.0	0.0	0.0	0.0	0.0
Total equity	**6.0**	**21.1**	**16.8**	**45.1**	**32.1**
Minority interest	0.0	0.0	0.0	0.0	0.0
Total shareholders' equity	6.0	21.1	16.8	45.1	32.1
Total liabilities & SE	7.0	22.4	19.3	47.9	34.5

Closing price (A$)	0.096	Price target (A$)	0.26
Valuation metrics			
Methodology -DCF-PER Comp		Target Price	$0.26
DCF valuation inputs			
Rf	3.50%		
Rm-Rf	7.00%		
Beta	1.53		
CAPM (Rf+Beta(Rm-Rf))	14.2%		
E/EV*Ke+D/EV*Kd(1-t)		NPV cash flow (A$m)	328.1
Equity (E/EV)	100.0%	Minority interest (A$m)	0.0
Debt (D/EV)	0.0%	Net debt (A$m)	-6.0
Interest rate	5.00%	Investments (A$m)	0.0
Tax rate (t)	30.0%	Equity market value (A$m)	334.1
WACC	14.2%	Diluted no. of shares (m)	1268.1
		DCF valuation	$0.26

Multiples	2021A	2022A	2023F	2024F	2025F
Enterprise value (A$m)	115.7	102.5	104.1	75.5	88.9
EV/Sales (x)	n.a.	n.a.	n.a.	n.a.	n.a.
EV/EBITDA (x)	-14.5	-17.8	-7.1	-4.4	-6.3
EV/EBIT (x)	-14.4	-17.6	-7.1	-4.4	-6.3
PE (pre-goodwill) (x)	-6.8	-11.0	-5.5	-7.3	-9.3
PEG (pre-goodwill) (x)	0.0	0.3	-0.2	0.0	0.6

At target price	2021A	2022A	2023F	2024F	2025F
EV/EBITDA (x)	-14.4	-17.6	-7.1	-4.4	-6.3
PE (pre-goodwill) (x)	-18.5	-29.9	-14.8	-19.8	-25.2

Per share data	2021A	2022A	2023F	2024F	2025F
No. shares	574.0	668.1	818.1	1268.1	1268.1
EPS (cps)	-1.4	-0.9	-1.8	-1.3	-1.0
EPS (normalised) (c)	-1.4	-0.9	-1.8	-1.3	-1.0
Dividend per share (c)	0.0	0.0	0.0	0.0	0.0
Dividend payout ratio (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Dividend yield (%)	0.0%	0.0%	0.0%	0.0%	0.0%

Growth ratios	2021A	2022A	2023F	2024F	2025F
Sales growth	n.a.	n.a.	n.a.	n.a.	n.a.
Operating cost growth	37.4%	-27.8%	156.0%	15.6%	-17.6%
EBITDA growth	-36.7%	27.6%	-152.3%	-15.6%	17.6%
EBITA growth	n.a.	n.a.	n.a.	n.a.	n.a.
EBIT growth	n.a.	n.a.	n.a.	n.a.	n.a.
NPAT growth	n.a.	n.a.	n.a.	n.a.	n.a.
Pre-goodwill NPAT growth	n.a.	n.a.	n.a.	n.a.	n.a.
Pre-goodwill EPS growth	n.a.	n.a.	n.a.	n.a.	n.a.
Normalised EPS growth	n.a.	n.a.	n.a.	n.a.	n.a.

Operating performance	2021A	2022A	2023F	2024F	2025F
Asset turnover (%)	0.0	0.0	0.0	0.0	0.0
EBITDA margin (%)	n.a.	n.a.	n.a.	n.a.	n.a.
EBIT margin (%)	n.a.	n.a.	n.a.	n.a.	n.a.
Net profit margin (%)	n.a.	n.a.	n.a.	n.a.	n.a.
Return on net assets (%)	-135.3	-27.6	-87.6	-37.7	-43.7
Net debt (A$m)	-6.0	-19.2	-17.7	-46.3	-32.9
Net debt/equity (%)	-101.1	-91.0	-105.1	-102.5	-102.5
Net interest/EBIT cover (x)	n.a.	n.a.	661.0	44.2	39.7

Internal liquidity	2021A	2022A	2023F	2024F	2025F
Current ratio (x)	5.8	14.8	7.0	17.0	13.7
Receivables turnover (x)	0.0	0.0	0.0	0.0	0.0
Payables turnover (x)	19.8	10.9	12.8	9.1	7.7

Source: Morgans estimates, company data

How exon-skipping works[1]

Exon-skipping therapy for Duchenne muscular dystrophy (DMD) works by skipping over specific exons in the dystrophin gene that contains the mutations causing the disease. The goal of exon skipping is to produce a shorter but functional form of the dystrophin protein.

The therapy involves administering small pieces of RNA, called antisense oligonucleotides (AONs), to the patient that are designed to bind to the specific exon and to "skip" it during the process of RNA splicing, leading to the exclusion of the mutated exon from the final mRNA. This modified mRNA is then translated into a truncated but functional form of the dystrophin protein, which can improve the muscle function and slow disease progression.

Major criticisms on exon-skipping drug therapy for DMD[2]

- **Delivery and uptake:** One of the main issues with exon-skipping drugs is the delivery and uptake of the drugs in the affected muscles. Currently, the drugs are delivered intravenously, which limits their ability to reach all the affected muscles and achieve sufficient therapeutic levels.
- **Inflammation**: Inflammation can interfere with the efficacy of exon-skipping drugs by reducing the uptake of the drugs in the affected muscles. Inflammation can also impair the muscle's ability to regenerate and repair itself, further reducing the therapeutic effect of the drugs.
    - It is often a by-product in response to the delivery of treatment (exon-skipping drugs). This is thought to be due to immune responses to the viral vectors used to deliver the drugs, or to the new dystrophin protein produced as a result of exon skipping.
- **The size of the new dystrophin protein**: Some exon-skipping drugs result in the production of a truncated form of the dystrophin protein, which may not be functional. Additionally, the new dystrophin protein may not be able to reach the muscle fibres in sufficient quantities to provide therapeutic benefits.
- **Duration of the therapeutic effect**: The exon-skipping drugs currently in development have a limited duration of action, and frequent dosing is required to maintain the therapeutic effect.

Our view

Our view is that any increase in therapeutic effect or greater dystrophin/muscle uptake would likely yield a significant competitive advantage – and valuable for those players.

Part 1 of the study (functional measures) showed statistically significant improvements in combination with higher average force / lower force loss but also importantly a tighter variance range between patients. More to come shortly with the muscle analysis / cellular markers, but initial results adds another element to the data package and potential of the asset.

One to keep on the radar.

[1] Campbell, K. P., & Blake, D. J. (2015). Exon skipping as a therapy for Duchenne muscular dystrophy. The Lancet Neurology, 14(2), 205-214.

Kim, H. J., & Mendell, J. R. (2018). Antisense oligonucleotide therapy for the treatment of muscular dystrophies. Nature Reviews Neurology, 14(6), 325-334.

[2] McGovern VL, Deconinck N, Goyenvalle A, et al. Therapeutic strategies for Duchenne muscular dystrophy. Expert Opin Biol Ther. 2013 Dec;13(12):1615-26. doi: 10.1517/14712598.2013.819200.

Wilson CL, Morris GE. The promise and challenges of exon skipping in the treatment of Duchenne muscular dystrophy. J Med Genet. 2016 Mar;53(3):179-83. doi: 10.1136/jmedgenet-2015-103199.

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