

Bioasis Technologies

New developments in xB³-targeted nucleotides

Business update

Pharma & biotech

9 April 2021

Price **C\$0.40**

Market cap **C\$29m**

C\$1.25/US\$

Net cash (C\$m) at 30 November 2020 2.68

Shares in issue 71.8m

Free float 99%

Code BTI

Primary exchange TSX Venture

Secondary exchange OTCQB

Share price performance



% 1m 3m 12m

Abs 1.3 6.6 145.5

Rel (local) (2.8) 0.0 77.8

52-week high/low C\$0.60 C\$0.15

Business description

Bioasis Technologies is a biopharma company developing the xB³ platform to aid in the delivery of molecules to the brain using receptor mediated transcytosis. The company's lead program is xB³-001, which is in preclinical development for brain metastases in HER2+ metastatic breast cancer patients. Bioasis has additional preclinical programs in pain, neurodegenerative diseases, and rare diseases.

Next event

xB³-001 IND 2021

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On 31 March 2021 Bioasis announced it has entered a development collaboration with Aposense to develop novel short interfering RNA (siRNA) therapies using Bioasis's xB³ technology to deliver these therapeutics to the brain. This comes shortly after Bioasis published a paper demonstrating the successful delivery of new genetic material in the brain via this technology. We expect xB³-siRNA drugs to be an important part of the company's platform.

Year end	Revenue (C\$m)	PBT* (C\$m)	EPS* (C\$)	DPS (C\$)	P/E (x)	Yield (%)
02/19	1.4	(2.4)	(0.04)	0.00	N/A	N/A
02/20	0.6	(3.4)	(0.06)	0.00	N/A	N/A
02/21e	7.0	4.5	0.06	0.00	N/A	N/A
02/22e	3.7	(8.3)	(0.11)	0.00	N/A	N/A

Note: *PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

Aposense: Focused on siRNA delivery

Aposense is a private Israeli biotech company focused on delivering nucleotides to targeted tissues. We assume the collaboration will use technology developed at both companies to improve the efficiency of delivery of new genetic material to the brain. The collaboration will not be limited to a single indication and will examine a range of diseases, from cancer to neurodegeneration. No financial terms for the agreement have been released.

Mouse study proof of concept for of xB³-siRNA

The recent paper published in Frontiers in Molecular Biosciences used the xB³ peptide to deliver a knockdown of a gene (NOX-4) into a mouse model of ischemic stroke. The treatment significantly reduced infarct volume in these animals (p<0.05), improved neurological recovery (p<0.001) and reduced expression of NOX-4 by 20% (not significant). Although it is unlikely the company will pursue this specific application of this technology, this is a useful proof of concept for the potential utility of xB³-siRNA drugs, which may have very broad set of applications.

Valuation: Lowered to C\$55.0m on exchange rate

Our valuation of Bioasis is slightly lower at C\$55.0m or C\$0.77 per basic share from C\$60.0m or C\$0.88. This change is driven by exchange-rate effects (US\$:C\$1.25, from 1.38) and adjustments to our spending schedule. We expected more cash to be deployed on IND-enabling studies than reported to date in FY21 and these costs have been moved forward in our forecasts. These changes were offset by rolling forward our NPVs. We expect Bioasis will need C\$110m in additional capital before profitability in FY28 (C\$50m in FY22, C\$60m in FY26).

xB³-siRNA: Affecting gene expression in the brain

Both of Bioasis's recent announcements center on the application of the xB³ platform to the delivery of nucleotides to the brain. It previously discussed the potential of the xB³ peptide being utilized in this way, but the recent paper demonstrates this potential in an actual scientific setting and the recent deal illustrates the commercial interest in such programs. Nucleotide therapeutics encompass a range of related technologies involved in modulating the expression of genes using short strands of DNA, RNA or related molecules. A major limitation of these technologies is that it is difficult to target these molecules to specific tissues, with the liver the notable exception.

The [paper](#) published in *Frontiers in Molecular Biosciences* tested if xB³ could be used to target nucleotides to the brain. Scientists examined whether the xB³ peptide could be used to reduce the damage associated with ischemic stroke by reducing the expression of the NOX4 gene. NOX4 is induced after stroke and its expression is associated with negative outcomes. The researchers used a mouse model of ischemic stroke and measured how an xB³-linked knockdown of NOX4 impacted expression levels and outcomes. They found that the xB³ knockdown reduced NOX4 expression by 20% compared to control, but this value did not reach statistical significance. However, a reduction in infarct volume of about a third was seen (measured 24 hours after induction) and this was statistically significant ($p < 0.05$), which suggests a meaningful change in gene expression was achieved. Additional evidence that supports this is that mice in the drug arm showed more pronounced recovery in neurological parameters at 24 hours (as assessed via the neuroscore scale, $p < 0.001$). This paper is useful because it demonstrates the capacity for this technology to modify the gene expression characteristics of the brain. We doubt the company will study ischemic stroke, but this technology may have wide reaching potential, particularly in diseases of genetic origin.

It appears other companies also appreciate this potential. Shortly after the above research was published, the company announced it had formed a collaboration with the biotech company Aposense. Aposense is a private Israeli company attempting to address the limitations of nucleotide targeting. It has developed nucleotide conjugates that can potentially increase the systemic delivery of these molecules. Aposense's technology accomplishes this by using electrostatic forces to drive their molecules across cell membranes. Although this can improve the systemic uptake of these drugs, it is not a targeted approach and uptake may be in all bioavailable tissues. We imagine the two companies may combine their two technologies to provide improved delivery of siRNAs in a tissue specific manner to the brain. Bioasis did not disclose any particulars of the agreement such as financial responsibilities or timelines, but we expect any drugs to come from the collaboration to be the subject of a future licensing agreement.

Valuation

Our valuation of Bioasis is down slightly at C\$55.0m or C\$0.77 per basic share from C\$60.0m or C\$0.88 per basic share. This is driven by an adjustment to our exchange rate: USDCAD=1.25 from 1.38. Additionally, we are readjusting our spending schedules (see below). This includes delaying some of the IND enabling activities for xB³-001. We are still modelling initiation of Phase I for xB³-001 in 2022 (fiscal 2023), but any further delays to the preclinical development of this program may delay this start date. These factors are offset by rolling forward our NPVs. We are not adding any value associated with the Aposense collaboration to our models at this time, but we may add it in the future if the company announces specific programs to be developed from the collaboration.

Exhibit 1: Bioasis valuation

Development Program	Indication	Clinical stage	Geography	Prob. of success	Launch year	Launch pricing (\$/month)	Peak sales (US\$m)	Patent/ exclusivity protection	Royalty/ margin	rNPV (C\$m)
xB ³ -001	Treatment of mBC BMs	IND	US	10%	2027	11,500	125	2039	52%	\$16.27
			Europe	10%	2027	7,500	115	2039	52%	\$15.10
			R&D	10%						(\$11.31)
	First line, prevention of BC BMs	Planned	US	5%	2032	12,700	397	2039	57%	\$13.10
			Europe	5%	2032	8,200	437	2039	57%	\$14.72
			R&D	5%	2032					(\$3.49)
Prothema milestones	Undisclosed	Discovery		2.5%	2028					\$1.67
Chiesi	4 lysosomal storage disorders	Discovery		2.5%	2029		*400	2041	7–11%	\$6.05
Total										52.1
Net cash and equivalents (Q321 + subsequent transactions) (C\$m)										\$2.9
Total firm value (C\$m)										55.0
Total basic shares (m)										71.8
Value per basic share (C\$)										0.77
Dilutive warrants and options (m)										27.3
Total diluted shares (m)										99.1
Value per diluted share (C\$)										0.66

Source: Bioasis Reports, Edison Investment Research

Financials

The company's spending for FY21 that has been reported to date is well below our expectations, especially R&D spending: C\$0.85m in R&D spending in the first three quarters of FY21 (the nine months ending 30 November), compared to our previous estimate of C\$5.5m in R&D spending for the full year. We have adjusted for this by reducing the spending on unallocated programs in our model and pushing forward some costs from xB³-001 into later years. Likewise, SG&A expenses were also under expectations and we have reduced the expected SG&A spending in FY21 to C\$2.69m from C\$4.08m. We have changed the accounting for the US\$1.2m Xoma option payment (for Chiesi royalties) to match the company's accounting (this payment is now included in other income), which has been removed from our revenue line in FY21. The company ended Q3 FY21 with C\$2.7m in net cash and subsequently had a small offering (400,000 shares at C\$0.50 per share) and issued a small number of shares (300,000) to settle a dispute. We expect Bioasis to need C\$110m in additional capital before profitability in FY28 (\$50m in FY22, C\$60m in FY26).

Exhibit 2: Financial summary

	C\$000s	2019	2020	2021e	2022e
Year end 28 February		IFRS	IFRS	IFRS	IFRS
INCOME STATEMENT					
Revenue		1,422.0	606.4	7,038.0	3,726.0
Cost of Sales		(10.4)	0.0	0.0	0.0
Gross Profit		1,411.6	606.4	7,038.0	3,726.0
R&D		(1,954.3)	(2,033.6)	(1,135.8)	(9,023.0)
SG&A		(4,314.5)	(3,174.4)	(2,691.9)	(3,634.1)
EBITDA		(3,805.0)	(3,965.4)	3,838.9	(8,303.3)
Normalised operating profit		(3,815.8)	(3,977.4)	3,834.7	(8,306.7)
Amortisation of acquired intangibles		(61.1)	(58.8)	(58.8)	(58.8)
Exceptionals		0.0	0.0	0.0	0.0
Share-based payments		(980.2)	(565.6)	(565.6)	(565.6)
Reported operating profit		(4,857.2)	(4,601.7)	3,210.3	(8,931.1)
Net Interest		1.8	(46.9)	0.0	0.0
Other income		986.9	592.2	617.8	0.0
Exceptionals		395.1	0.0	0.0	0.0
Profit Before Tax (norm)		(2,432.1)	(3,432.1)	4,452.5	(8,306.7)
Profit Before Tax (reported)		(3,473.4)	(4,056.4)	3,828.2	(8,931.1)
Reported tax		0.0	0.0	0.0	0.0
Profit After Tax (norm)		(2,432.1)	(3,432.1)	4,452.5	(8,306.7)
Profit After Tax (reported)		(3,473.4)	(4,056.4)	3,828.2	(8,931.1)
Minority interests		0.0	0.0	0.0	0.0
Discontinued operations		0.0	0.0	0.0	0.0
Net income (normalised)		(2,432.1)	(3,427.1)	4,458.5	(8,299.7)
Net income (reported)		(3,473.4)	(4,056.4)	3,828.2	(8,931.1)
Basic average number of shares outstanding (m)		56,675	62,271	69,886	73,380
EPS - basic normalised (C\$)		(0.04)	(0.06)	0.06	(0.11)
EPS - diluted normalised (C\$)		(0.04)	(0.06)	0.06	(0.11)
EPS - basic reported (C\$)		(0.06)	(0.07)	0.05	(0.12)
Dividend (C\$)		0.00	0.00	0.00	0.00
BALANCE SHEET					
Fixed Assets		360.9	290.2	227.1	165.0
Intangible Assets		327.8	269.0	210.2	151.4
Tangible Assets		33.1	21.1	16.9	13.5
Investments & other		0.0	0.0	0.0	0.0
Current Assets		1,382.3	651.6	4,690.9	49,719.7
Stocks		0.0	0.0	0.0	0.0
Debtors		9.7	13.4	0.0	0.0
Cash & cash equivalents		1,360.0	576.4	4,629.0	49,657.8
Other		12.6	61.9	61.9	61.9
Current Liabilities		(1,262.9)	(2,476.7)	(1,207.2)	(4,539.4)
Creditors		(998.5)	(1,991.1)	(1,207.2)	(4,539.4)
Tax and social security		0.0	0.0	0.0	0.0
Short term borrowings		0.0	(485.6)	0.0	0.0
Other		(264.4)	0.0	0.0	0.0
Long Term Liabilities		(1,027.0)	(951.3)	(951.3)	(50,951.3)
Long term borrowings		0.0	(517.9)	(517.9)	(50,517.9)
Other long term liabilities		(1,027.0)	(433.4)	(433.4)	(433.4)
Net Assets		(546.7)	(2,486.3)	2,759.4	(5,606.1)
Minority interests		0.0	0.0	0.0	0.0
Shareholders' equity		(546.7)	(2,486.3)	2,759.4	(5,606.1)
CASH FLOW					
Op Cash Flow before WC and tax		(3,805.0)	(3,965.4)	3,838.9	(8,303.3)
Working capital		568.4	691.5	(770.5)	3,332.2
Exceptional & other		6.9	(24.8)	617.8	0.0
Tax		0.0	0.0	0.0	0.0
Net operating cash flow		(3,229.7)	(3,298.7)	3,686.2	(4,971.2)
Capex		(2.1)	0.0	0.0	0.0
Acquisitions/disposals		395.1	0.0	0.0	0.0
Net interest		0.0	0.0	0.0	0.0
Equity financing		3,526.7	1,205.0	852.0	0.0
Dividends		0.0	0.0	0.0	0.0
Other		0.0	0.0	(485.6)	0.0
Net Cash Flow		690.0	(2,093.6)	4,052.6	(4,971.2)
Opening net debt/(cash)		(678.0)	(1,360.0)	427.4	(4,111.2)
FX		(7.9)	22.2	0.0	0.0
Other non-cash movements		0.0	284.0	486.0	0.0
Closing net debt/(cash)		(1,360.0)	427.4	(4,111.2)	860.0

Source: Bioasis reports, Edison Investment Research

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