FORSYTH BARR

NEW ZEALAND EQUITY RESEARCH | HEALTHCARE | CANCER DIAGNOSTICS

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Pacific Edge
On the Edge of Glory?

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OUTPERFORM

2020 has been a transformational year for Pacific Edge (PEB), ticking off key milestones leading to a substantial re-rating and a return to S&P/NZX50 inclusion. There is no short-cut on the path to commercialisation and the hard work is far from over, however, we believe PEB is well positioned to deliver a strong long-term growth profile (admittedly off a very low base). It is unlikely to be smooth sailing, however, if PEB is even partially successful this should see a strong payoff for investors. We reinstate full coverage with an OUTPERFORM rating and NZ$1.60 target price, which includes a risk adjustment to take into account PEB's life stage and high execution risk. With the range of justifiable outcomes for earnings, and valuation, wide, we expect PEB's share price to be driven by news flow in the near-term which we see as positively skewed.

NZX Code	PEB
Share price	NZ$0.98
Target price	NZ$1.60
Risk rating	High
Issued shares	725.5m
Market cap	NZ$711m
Avg daily turnover	1,164k (NZ$636k)

Financials: Mar/	20A	21E	22E	23E
NPAT* (NZ$m)	-19.1	-14.2	-6.8	7.6
EPS* (NZc)	-3.7	-2.0	-0.9	1.0
EPS growth* (%)	-1.0	47.6	52.1	n/a
DPS (NZc)	0.0	0.0	0.0	0.0
Imputation (%)	0	0	0	0
*Based on normalised profits				

Valuation (x)	20A	21E	22E	23E
PE	n/a	n/a	n/a	94.1
EV/EBIT	n/a	n/a	n/a	93.4
EV/EBITDA	n/a	n/a	n/a	88.5
Price / NTA	34.9	31.9	46.0	30.9
Cash div yld (%)	0.0	0.0	0.0	0.0
Gross div yld (%)	0.0	0.0	0.0	0.0

What's changed?

- **Reinstate full coverage:** OUTPERFORM, high risk, 12m target price NZ$1.60.

What is it worth?

There is ample scope for debate. PEB currently has minimal revenue and a track record of milestones taking much longer than communicated. However, we do not believe this is a good start point given the game has changed substantially. US biotech peers are more relevant albeit this does not narrow the plausible scenarios down, much. A valuation on PEB is, unsurprisingly, most sensitive to long-term assumptions on earnings, particularly revenue. Our base case is that PEB is successful in scaling revenue which supports a DCF or compco multiple valuation materially ahead of the current share price. However there is significant execution risk.

Sizing the prize — revisiting the TAM

PEB has a large total addressable market (TAM), whichever way you cut it, where even a small share would be lucrative. Testing for bladder cancer is a large market and the highly recurrent nature of the disease (~70%) also means regular monitoring. Our analysis points to a TAM of ~NZ$6bn (current markets only), which is primarily underpinned by the US. This is not risk adjusted and there are many factors (both positive and negative) which could see variance, however it provides an illustrative starting point.

What does the ramp path look like?

This is a key question which is difficult to definitively answer for us and PEB. Our analysis of US listed genomic peers reinforces the wide range of outcomes, and also highlights a step-change in revenue post reimbursement from key US public health insurer, CMS. Recent transformational milestones in the US (commercial agreement with Kaiser and CMS sign-off) have lowered the barriers to commercialisation for PEB (and revenue/cash), however, inertia and a conservative approach to new technology in healthcare cannot be underestimated. We have modelled three scenarios, with all three assuming Kaiser scales the fastest (relatively) given the nuances vs other customers — discussed in more detail in this report.

Pacific Edge (PEB)

Priced as at 11 Dec 2020 (NZ$)	**0.98**

12-month target price (NZ$)*	**1.60**
Expected share price return	63.3%
Net dividend yield	0.0%
Estimated 12-month return	63.3%

Spot valuations (NZ$)	
1. DCF	1.43
2. Compco approach	1.49
3. n/a	n/a

Key WACC assumptions	
Risk free rate	1.30%
Equity beta	0.85
WACC	10.1%
Terminal growth	1.5%

DCF valuation summary (NZ$m)	
Total firm value	989
(Net debt)/cash	37
Less: Capitalised operating leases	(23)
Value of equity	1,003

Profit and Loss Account (NZ$m)	**2019A**	**2020A**	**2021E**	**2022E**	**2023E**
Sales revenue	4.8	5.0	10.8	26.5	49.2
Normalised EBITDA	**(18.0)**	**(18.9)**	**(14.0)**	**(6.6)**	**7.8**
Depreciation and amortisation	(0.2)	(0.4)	(0.4)	(0.4)	(0.4)
Normalised EBIT	**(18.2)**	**(19.3)**	**(14.4)**	**(7.0)**	**7.4**
Net interest	0.3	0.2	0.2	0.2	0.2
Associate income	0	0	0	0	0
Tax	(0.0)	0	0	0	0
Minority interests	0	0	0	0	0
Normalised NPAT	**(17.9)**	**(19.1)**	**(14.2)**	**(6.8)**	**7.6**
Abnormals/other	(0.0)	0.1	0	0	0
Reported NPAT	**(17.9)**	**(19.0)**	**(14.2)**	**(6.8)**	**7.6**
Normalised EPS (cps)	(3.7)	(3.7)	(2.0)	(0.9)	1.0
DPS (cps)	0	0	0	0	0

Valuation Ratios	**2019A**	**2020A**	**2021E**	**2022E**	**2023E**
EV/EBITDA (x)	n/a	n/a	n/a	n/a	88.5
EV/EBIT (x)	n/a	n/a	n/a	n/a	93.4
PE (x)	n/a	n/a	n/a	n/a	94.1
Price/NTA (x)	34.6	34.9	31.9	46.0	30.9
Free cash flow yield (%)	-2.5	-2.2	-1.9	-1.0	0.8
Net dividend yield (%)	0.0	0.0	0.0	0.0	0.0
Gross dividend yield (%)	0.0	0.0	0.0	0.0	0.0

Growth Rates	**2019A**	**2020A**	**2021E**	**2022E**	**2023E**
Revenue (%)	3.6	3.1	>100	>100	85.8
EBITDA (%)	n/a	n/a	n/a	n/a	n/a
EBIT (%)	n/a	n/a	n/a	n/a	n/a
Normalised NPAT (%)	n/a	n/a	n/a	n/a	n/a
Normalised EPS (%)	n/a	n/a	n/a	n/a	n/a
Ordinary DPS (%)	n/a	n/a	n/a	n/a	n/a

Capital Structure	**2019A**	**2020A**	**2021E**	**2022E**	**2023E**
Interest cover EBIT (x)	56.4	>100x	75.3	35.1	n/a
Interest cover EBITDA (x)	55.8	>100x	73.2	33.0	n/a
Net debt/ND+E (%)	n/a	n/a	n/a	n/a	n/a
Net debt/EBITDA (x)	0.7	0.8	1.7	2.5	n/a

Cash Flow (NZ$m)	**2019A**	**2020A**	**2021E**	**2022E**	**2023E**
EBITDA	**(18.0)**	**(18.9)**	**(14.0)**	**(6.6)**	**7.8**
Working capital change	0	0	0.6	(0.4)	(2.2)
Interest & tax paid	0.4	0.2	0.2	0.2	0.2
Other	0.2	3.3	0.0	(0.0)	0
Operating cash flow	**(17.5)**	**(15.4)**	**(13.3)**	**(6.8)**	**5.7**
Capital expenditure	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
(Acquisitions)/divestments	0	0	0	0	0
Other	0	0	0	0	0
Funding available/(required)	**(17.7)**	**(15.6)**	**(13.4)**	**(7.0)**	**5.5**
Dividends paid	0	0	0	0	0
Equity raised/(returned)	14.6	20.1	22.2	0	0
(Increase)/decrease in net debt	**(3.1)**	**4.6**	**8.8**	**(7.0)**	**5.5**

Key Ratios	**2019A**	**2020A**	**2021E**	**2022E**	**2023E**
Return on assets (%)	n/a	n/a	n/a	n/a	n/a
Return on equity (%)	n/a	n/a	n/a	n/a	n/a
Return on funds employed (%)	n/a	n/a	n/a	n/a	n/a
EBITDA margin (%)	-375.2	-381.9	-129.7	-25.0	15.8
EBIT margin (%)	-379.3	-390.1	-133.5	-26.5	15.0
Capex to sales (%)	3.2	3.7	1.6	0.7	0.4
Capex to depreciation (%)	131	53	51	51	51
Imputation (%)	0	0	0	0	0
Pay-out ratio (%)	0	0	0	0	0

Balance Sheet (NZ$m)	**2019A**	**2020A**	**2021E**	**2022E**	**2023E**
Working capital	(0.5)	(1.8)	(2.4)	(2.0)	0.3
Fixed assets	0.8	0.7	0.7	0.7	0.7
Intangibles	0.2	0.2	0.2	0.2	0.2
Right of use asset	0	1.6	1.3	1.1	0.8
Other assets	0.6	0.7	0.7	0.7	0.7
Total funds employed	**1.1**	**1.3**	**0.5**	**0.6**	**2.7**
Net debt/(cash)	(12.8)	(14.8)	(23.5)	(16.5)	(22.1)
Lease liability	0.1	1.6	1.6	1.6	1.6
Other liabilities	0	0	0	0	0
Shareholder's funds	13.9	14.5	22.5	15.6	23.2
Minority interests	0	0	0	0	0
Total funding sources	**1.1**	**1.3**	**0.5**	**0.6**	**2.7**

Operating Performance	**2019A**	**2020A**	**2021E**	**2022E**	**2023E**
Revenue breakdown (NZ$m)					
Cxbladder sales	3.8	4.4	9.8	26.0	48.7
Other	1.0	0.6	1.0	0.5	0.5
Total revenue	**4.8**	**5.0**	**10.8**	**26.5**	**49.2**

DCF valuation scenarios	**Low**	**Base**	**High**
Test price (CMS; US$)	760	760	760
COGS per test (US$)	100	100	100
Gross margin per test % (US market)	87	87	87
Long-term penetration by customer % (FY35E)			
CMS	10	15	20
Kaiser - Monitor	35	50	65
Kaiser - Triage	20	40	60
Kaiser - Other tests	0	5	10
Other US	0	5	10
Total US	**4**	**9**	**14**
Australasia	20	20	20
SE Asia	0	0	10
Revenue NZ$m (FY35E)	265	566	958
EBITDA margin % (FY35E)	40	55	64
Spot DCF (NZ$)	**0.64**	**1.39**	**2.46**

* Forsyth Barr target prices reflect valuation rolled forward at cost of equity less the next 12-months dividend

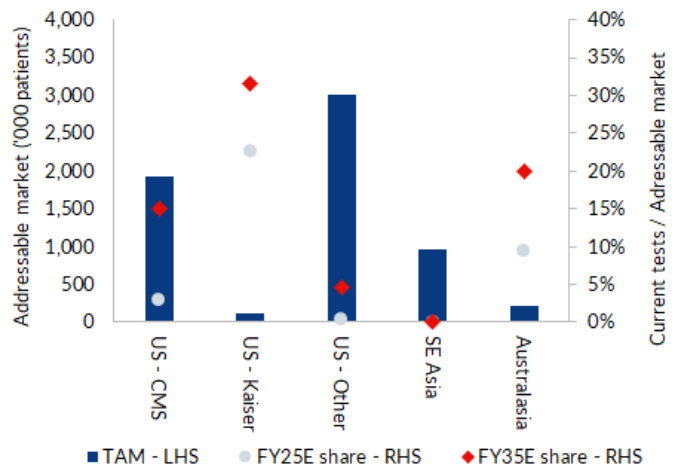
Executive summary

PEB is a molecular diagnostics company in the early stages of its commercial growth journey. It has been a long time coming however recent milestones have changed business momentum substantially, with 2020 a transformative year. We reinstate full coverage on PEB with a target price of NZ$1.60 and OUTPERFORM rating.

To model PEB is fairly simple; however, the range of reasonable and justifiable outcomes, particularly for the revenue trajectory, is very wide. This, coupled with execution risk, means there is a high margin of error in a point-estimate of fundamental value and near-term forecasts. Putting that aside, the model is attractive, potential market large, and the company should see reasonable leverage to future revenue growth with barriers to new entrants high. We believe PEB has a competitive moat, which should support a strong long-term growth profile.

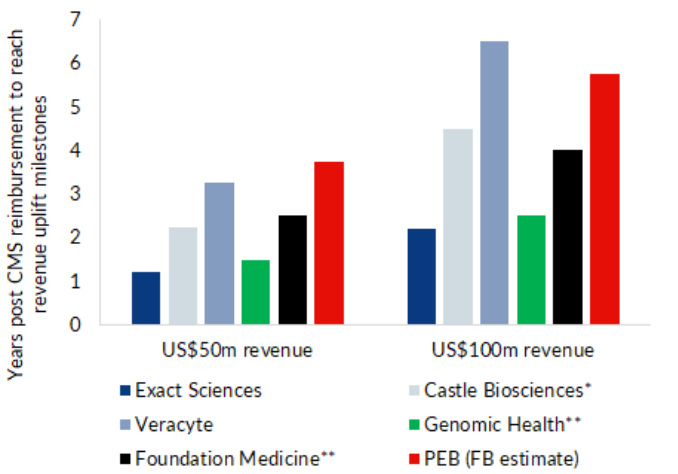
To date, the stock price has been responsive to news flow and we expect that to continue to be the case in the near-term — which is likely to be positively skewed as further commercial progress follows recent success. Potential near-term news flow includes: new commercial agreement(s), stronger mention/inclusion in clinical guidelines, back payment from US public health insurer CMS (for tests done ahead of securing reimbursement), additional clinical evidence, first signs of Kaiser take-up and increased resourcing to support growth.

Figure 1. Addressable market vs our forecasts



Source: Forsyth Barr analysis, Company reports, World Bladder Cancer Patient Coalition

Figure 2. What could the revenue ramp path look like?



Source: Forsyth Barr analysis, Company reports; *Uses consensus forecast; **Pre takeover

High risk rating

PEB is still early into commercial progress — with a large opportunity ahead. Execution is still needed to capitalise on this and deliver on what we see as a highly lucrative revenue/profit opportunity. It is a big task to change clinical practice and unlikely to be smooth sailing, with risk in earnings delivery, timeframe and market expectations. Loss-making is common in the industry, hence, there is also risk that capitalising on the opportunity is more costly than envisaged and another capital raise is required.

Other key risks include: share price volatility, any need to defend its Intellectual Property (IP) and a competitor breakthrough in technology (although the hurdle rate is high given Cxbladder's evidence portfolio).

Who is PEB?

PEB is a biotech company, with four commercially available products focussed on bladder cancer — Cxbladder Monitor, Triage, Detect and Resolve. These are non-invasive urine tests, designed to meet clinical needs of urologists at various decision nodes in the management and detection of bladder cancer, with strong efficacy and rationale for use.

For more detail please refer Appendix 1. We also include a breakdown of the key US healthcare market in Appendix 2, alongside direct feedback from our visits to the US (and various genomic companies) over the past five years.

Key investment attributes

- **Material runway for growth, albeit substantial uncertainty on trajectory:** COVID-19 clouded the initial upside, however, the market opportunity is extensive and even a small market share would be lucrative.
- **Signs of de-risking the investment case:** PEB has a growing track record of external validation in the key US market. More progress and proof of execution is still required, however the company is moving in the right direction.
- **Operating leverage expected in future:** PEB has invested in the building blocks over the past two decades, with the key focus now on monetising this investment. The model is scalable, and high gross margins (>80%) should result in operating leverage even taking into consideration a likely step-up in PEB's direct sales force.
- **Valuation and earnings profile more art than science:** A valuation (and view) on PEB is highly contingent on (1) assessed long-term revenue potential, and (2) a multiple applied to this. The US biotech sector provides a useful frame of reference, however, also demonstrates the wide range of feasible scenarios.
- **Unlikely to be a smooth path and it hasn't to date:** We have learnt a lot since first picking up coverage of PEB in 2014; most notably — the lengthening timeframes for commercialisation relative to expectations. There are numerous examples of mis-steps on the journey, and we expect to see more. Just because a company has a good product doesn't mean it will generate revenue. There are numerous examples of this for PEB (minimal success in Spain, Australia, and various US customers yet) and competitor, MDxHealth (struggling in recent years despite CMS reimbursement) also provides a reminder the path from here will unlikely be straight.
- **Visibility on key drivers and progress is low:** Monitoring execution and progress is likely to be difficult.
- **Strong proposition for use by clinicians, patients and payors**: This has only improved in recent years. The test has strong clinical utility and analytical validity, far superior to the current gold standard. Importantly, the test is non-invasive and can be done in-home. The latter is now more important than ever, particularly given bladder cancer demographics are skewed to those at high risk of COVID-19.
- **Adoption is a lengthy process; both a negative and a positive.** There are hurdles to adoption (even with reimbursement and strong rationale for use) — namely inertia/conservatism and vested interest in other alternatives. This is both a negative (it typically takes longer than you think) and positive (material barrier to entry).
- **Guidelines — more progress seems likely:** PEB's recent clinical evidence has been particularly compelling, with more evidence still expected in the near-term. This should help to support a stronger mention/inclusion in clinical guidelines in due course.
- **Potential acquisition target:** There would be natural synergies to a more established US genomic company, particularly those with molecular tests in the prostate cancer space given the efficiency for the sales force which is already connecting with urologists. There has been increasing M&A in recent years, including in start-up companies involved in early cancer detection for eye-watering valuations (for examples refer Appendix 3, Figure 28).
- **Increasing investor interest, locally and globally.**

Figure 3. Share price vs news flow

Source: Forsyth Barr analysis, Thomson Reuters

Figure 4. Share price vs news flow

Key	Date	Announcement	Share price move (following 10 days)
1	Mar-16	Canterbury DHB agreement	38%
2	Nov-16	Positive results in Kaiser user programme	12%
3	Mar-17	Two positive clinical papers	10%
4	May-17	FY17 result	-15%
5	Oct-17	NZ$21.3m equity raise	-26%
6	Aug-18	Two NZ healthcare providers adopt Cxbladder	14%
7	Oct-18	Johns Hopkins commercial evaluation and notification of CMS reimbursement rate	37%
8	Jun-20	Kaiser approves use of Cxbladder	108%
9	Jul-20	LCD notification	107%

Source: Forsyth Barr analysis, Thomson Reuters

What is it worth?

There is ample room for debate on this question given the various plausible scenarios for revenue pathway, longer-term margin and timeline — all of which can deliver materially different equity valuations. US biotech peers provide a useful place to start, however, the broad variance in performance, multiples and commercial progress leaves ample scope for interpretation.

Our 12m target price of NZ$1.60 is based on an equally weighted DCF and comparative company multiple approach, detailed below.

Things to think about

- **Momentum/news flow vs fundamentals:** The former is likely to be a more influential price driver. We view near-term news flow as positively skewed, with the key risk being revenue ramp expectations get ahead of themselves.
- **Ramp path is far from smooth, and unpredictable:** To date PEB has disappointed on both revenue and commercial test growth. While that leaves scars, we don't believe it is as relevant now key reimbursement milestones have been ticked off. Competitor progress is a better benchmark, in our view.
- **Loss-making is almost an industry-norm:** Of the seven comparable companies we have used, only two generate a profit. PEB has made its view clear that it doesn't intend to follow suit, however, there is risk execution is more costly than envisaged and another capital raise is required.
- **Future growth is capital light:** Current testing capacity offers ample headroom for growth, while only modest capex would be necessary to scale this to support substantially higher volumes.
- **Risks:** PEB is still an early stage company, with minimal current revenue. Accordingly there is significant execution risk. This can be incorporated in many ways into a valuation — we have used scenarios and a risk premium in our WACC.
- **Optionality:** We ascribe no value to optionality (new markets or tests outside of bladder) which appears very long-dated.

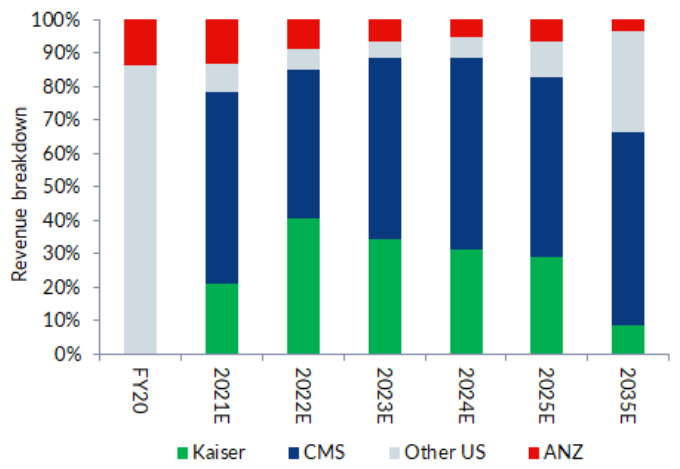
Valuation and sensitivity

Our 12m forward target price is NZ$1.60 — using a weighted average of our DCF (NZ$1.43) and comparative company multiple approach (NZ$1.49) rolled forward at the cost of equity.

DCF — using a three scenario approach

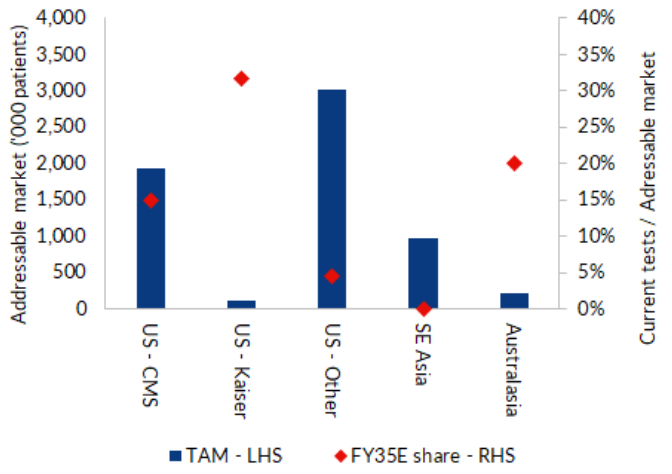
- **Three scenarios:** We have valued PEB taking a weighted average of three scenarios. Our DCF is most sensitive to longer-term assumptions on both revenue and margin. Figures 5–7 show our key assumptions by market, customer and other important inputs. Under our base case scenario (50% weighting) we assume long-term market penetration of 9% in the US and 20% in Australasia, with EBIT margins of 55%. We note it is highly plausible PEB looks to grow revenue faster than our base case, which could see a materially different mix (higher revenue, lower margin) albeit potentially result in a similar EBIT.
- **WACC:** We use a WACC of 10.1%, which includes a 'risk premium' which attempts to incorporate the substantial execution risk still involved with commercialisation and the earnings path.
- **Explicit forecast horizon:** 15 years to FY35E, given we expect it to be a long journey (still) to change clinical practice.

Figure 5. Mix of payors in our base case



Source: Forsyth Barr analysis

Figure 6. Terminal market share by market (FY35E)



Source: Forsyth Barr analysis, Company reports, World Bladder Cancer Patient Coalition

Figure 7. DCF key assumptions/scenarios

	Low	Base	High
Test price			
CMS	US$760	US$760	US$760
Australasia	NZ$368	NZ$368	NZ$368
Other US	US$850	US$850	US$850
COGS / test	US$100	US$100	US$100
Long-term penetration (FY35E) using TAM calculated in the next section			
CMS	10%	15%	20%
Kaiser — Monitor	35%	50%	65%
Kaiser — Triage	20%	40%	60%
Kaiser — Other tests	0%	5%	10%
Other US	0%	5%	10%
Total US	4%	9%	14%
Australasia	20%	20%	20%
SE Asia	0%	0%	10%
Revenue (FY35E)	265	566	958
EBIT margin (FY35E)	40%	55%	64%
Spot DCF	NZ$0.64	NZ$1.39	NZ$2.46

Source: Forsyth Barr analysis

Figure 8. What does the current share price imply?

		Long-term revenue (FY35E)				
		250	300	350	400	450
EBIT margin Yr 5–15	35%	0.54	0.60	0.67	0.73	0.79
	45%	0.67	0.76	0.84	0.92	1.00
	55%	0.81	0.91	1.01	1.11	1.21
	65%	0.94	1.06	1.18	1.30	1.42
	75%	1.07	1.21	1.35	1.49	1.63

		Long-term revenue (FY35E)				
		250	300	350	400	450
WACC	12.1%	0.63	0.71	0.79	0.86	0.94
	11.1%	0.71	0.80	0.88	0.97	1.06
	10.1%	0.80	0.90	1.01	1.11	1.21
	9.1%	0.92	1.04	1.16	1.28	1.40
	8.1%	1.08	1.22	1.36	1.51	1.65

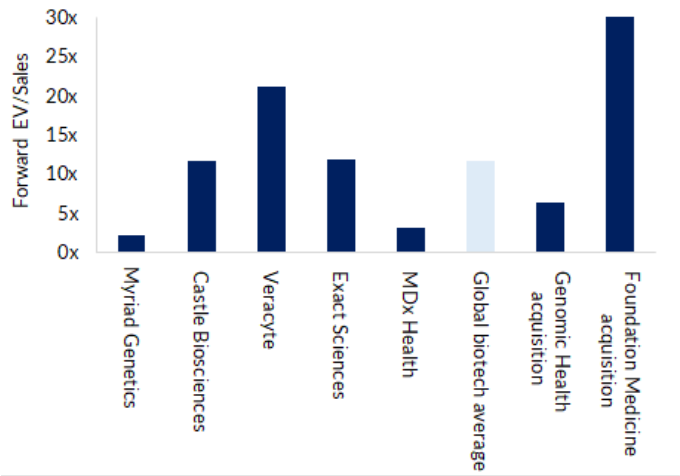
Source: Forsyth Barr analysis

Comparative companies

Given PEB is at the early stage of commercialisation, short-term multiples are of little relevance. The majority of PEB's listed comparatives are loss-making, with EV/sales the most relevant metric in the biotech sector.

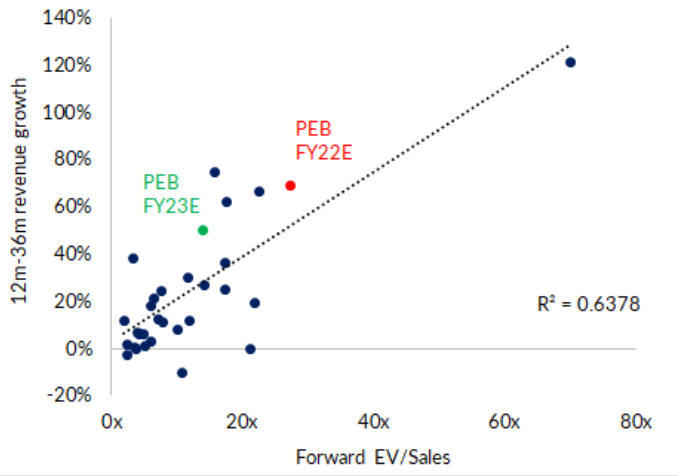
We use five year forward earnings, apply an EV/sales multiple and discount this back to derive our valuation. Our assumed revenue is NZ$167m (FY26E) and we apply a 9.9x EV/sales multiple which is a weighted average of global biotech peers including a modest discount of 15% to take into consideration life stage.

Figure 9. US biotech peers



Source: Forsyth Barr analysis, Thomson Reuters, Bloomberg

Figure 10. PEB vs listed peers

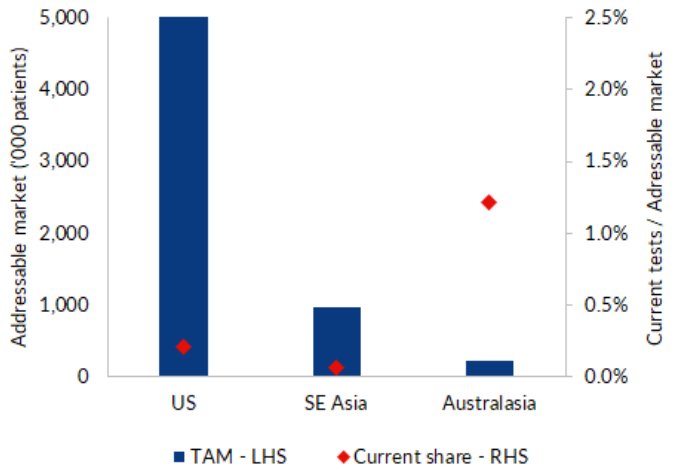


Source: Forsyth Barr analysis, Bloomberg

Sizing the prize — revisiting the TAM

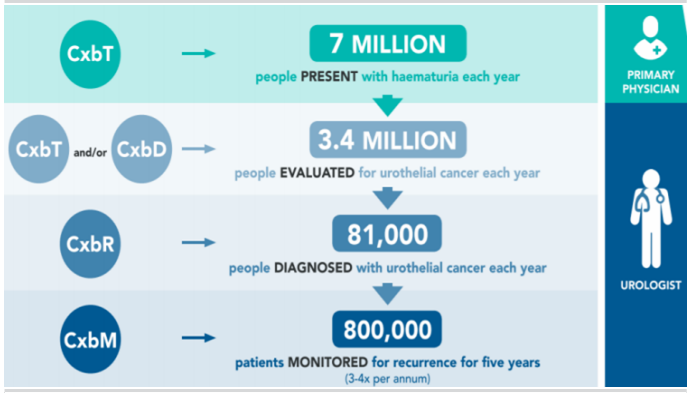
The total addressable market (TAM) for PEB, whichever way you cut it, is substantial. Testing for bladder cancer is a large market globally, particularly given the disease is highly recurrent (~70%) and thereby requires regular surveillance. Granular market sizing is difficult, and we estimate a TAM of ~6m patients (current markets only) or ~NZ$6bn. Penetration into primary care and/or other markets can lift this materially. There are a number of nuances which make our TAM more illustrative in nature than prescriptive — (1) multiple tools are often used with one patient, particularly in the US (upside risk); (2) 100% penetration (or even 70%) seems highly unlikely, with some level of invasive procedures seemingly likely longer-term (-ve).

Figure 11. PEB current penetration by market



Source: Forsyth Barr analysis, Company reports, World Bladder Cancer Patient Coalition

Figure 12. Multiple points where Cxbladder can fit in the patient flow (US market)



Source: Forsyth Barr analysis, Company reports

Bladder cancer addressable market

PEB offers a suite of products, which can be utilised across a broad range of decision nodes in the bladder cancer pathway (from triaging through to monitoring). The addressable market is accordingly substantial. We have approached the TAM/opportunity at a top-down level. Given the economics of PEB's four tests is broadly similar, and each urologist/organisation is likely to use various tools, we see little need to derive a TAM for, or model out, each test separately.

Number of patients by market

There is no doubt PEB has an extensive addressable market. Even a small share would be highly lucrative.

Figure 13. Estimated TAM by market

Number of patients ('000)	US	Singapore	SE Asia	Australia	NZ	Global
Key statistics						
Present to primary care with haematuria (A)	7,000	46	1,337	266	36	47,245
Referred to urologist for work-up (B)	3,400	22	650	129	18	22,948
Diagnosed with bladder cancer (new incidences)	81	0.5	15.6	3.1	0.4	549
Bladder cancer disease prevalence	800	5	153	30	4	5,399
Monitoring						
New incidences of cancer (4x in Year 1)	326	2	62	12	2	2,198
Recurrence of disease (70% recurrence)	1,344	9	257	51	7	9,071
Total disease monitoring (C)	1,670	11	319	64	9	11,269
TAM — base case (B+C)	5,070	33	969	193	26	34,216
TAM — upside (including primary care) (A+B+C)	12,070	79	2,306	459	63	81,461

Source: Forsyth Barr analysis, World Bladder Cancer Patient Coalition, Company reports, World Health Organisation

What could this translate to in revenue

The test price varies materially by market and payor.

- **US:** Publicly available prices per test include CMS (US$760), VA list price (US$2,246), full retail price (US$2,995). CMS is required to be the lowest price in market, with private payors typically meaningfully higher (anecdotal evidence suggests c. +30–40% higher, however, it can vary materially).
- **Singapore/SE Asia:** There is no data available, yet. However, we assume a price of c. US$500–600 would be feasible.
- **Australasia:** A low price market. Tests are available online in the NZ market for NZ$368 and we assume Australia will be broadly similar.

Taking a conservative price estimate for each market would thereby yield an addressable market of ~NZ$5.5bn in the US, ~NZ$695m in SE Asia and ~NZ$81m in Australasia — totalling c. NZ$6.3bn.

Figure 14. Estimated TAM — revenue

	US	ANZ	SE Asia	Total
Base case TAM ('000 patients)	5,070	219	969	6,257
Assumed test price	US$760	NZ$368	US$500	
Derived TAM by revenue (NZ$m)	**5,504**	**81**	**692**	**6,277**

Source: Forsyth Barr analysis, World Bladder Cancer Patient Coalition, Company reports

Optionality/upside — on a very long-dated time horizon

We have not quantified the optionality outside of the current bladder cancer market as we do not believe this is something investors should pay for now, particularly in light of the likely, very long, time horizons. Nonetheless, key areas include (1) the use of Cxbladder as a screening tool — Triage appears well suited, albeit for a lower price; (2) other cancers — within the urology space or making use of the various IP/patents PEB has in other cancers.

Screening for bladder cancer — Triage looks well suited, albeit price a likely constraint

Screening is common in a number of cancers including melanoma, colon and cervical. Various case studies show this has materially reduced incidence and the disease burden. This would be possible with Cxbladder Triage, although the current price point would likely be prohibitive. By comparison, US government sites suggest a cost of US$304 for a non-invasive colon cancer screening test. This is not necessarily insurmountable given PEB's current cost per test (~US$100) which will also likely lower through time given it includes inefficiency (wastage, low volume).

Other cancers — some IP, however, very long-dated (if Cxbladder is anything to go by)

PEB has immediate and perpetual access to any cancer intellectual property emerging from the University of Otago's Cancer Genetics Laboratory (in place since 2001). The company also has an array of patents for other cancers/disease including colorectal cancer, stomach cancer, gastric cancer, melanoma and thrombocytopenia.

Natural extensions in the urology space could also include prostate cancer (3rd most common cancer, with ~192k new cases per annum in the US) and kidney cancer (8th most common cancer, with ~74k new cases per annum in the US).

However, the time horizon is likely to be very long to bring anything new to commercialisation, particularly given the high evidence threshold in healthcare.

What does the ramp path look like?

This is one of the key questions, which is near impossible to definitively answer, both for us and PEB itself. It is reliant on changing clinical practice. While the barriers are lower now, inertia and a conservative attitude to new technology in healthcare cannot be underestimated. We have undertaken a thorough analysis of US listed genomic peers to help understand what the ramp path could look like — which demonstrates a wide range of outcomes. Our modelling assumes PEB achieves US$50m by Year 4 post CMS reimbursement (FY24E) and US$100m by Year 6 (FY26E) — on the conservative side versus peers.

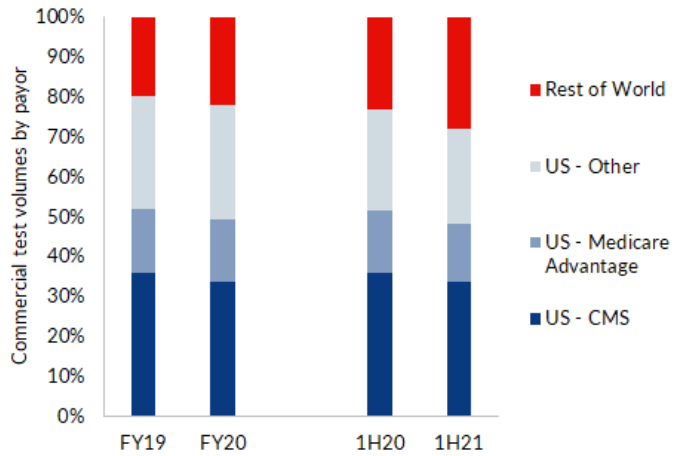
Revenue path

This will vary substantially by customer and market, with key drivers of adoption, decision makers and payors different. In the key US market there are also various other drivers ranging from fear of malpractice lawsuits, inertia/conservatism to change, co-payment rates, urologist revenue and/or capital investment historical decisions.

Where are we now?

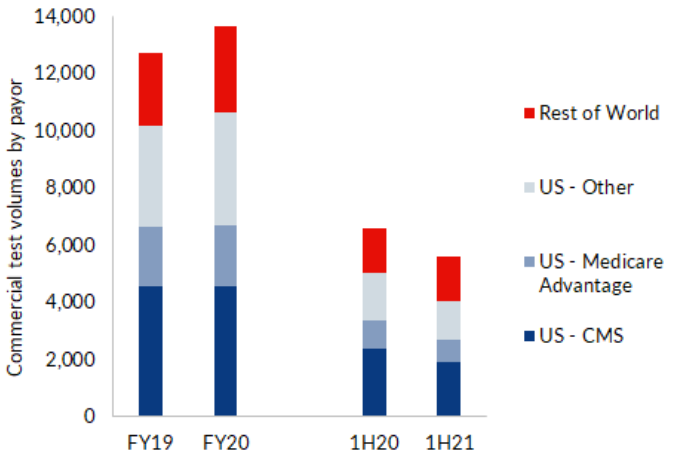
Commercial revenue is low with a mix of payors, skewed to CMS in the most recent period (1H21) — refer Figures 15 and 16. This will continue to evolve as PEB scales. In the short to medium-term we expect revenue to be underpinned by Kaiser (from November 2020) and CMS. We have modelled three scenarios in our DCF, with all assuming Kaiser scales the fastest (relatively) given the nuances vs other customers — discussed in more detail below.

Figure 15. Commercial test breakdown



Source: Forsyth Barr analysis, Company reports

Figure 16. Commercial test breakdown



Source: Forsyth Barr analysis, Company reports

Cash collection should improve through time as PEB becomes 'in network' with other US payors

PEB's financial accounts often create confusion, given test numbers x test price doesn't align to revenue. This reflects the impact of not being 'in-network' with various US payors which sees a long time to cash collection and/or leakage (where cash is never collected). PEB is still cash accounting a significant share of the US market. Tests for Kaiser and CMS customers will see cash realisation on standard payment terms (30-45 days), however the drag from other US customers has the effect of lowering the average realised price in any given year. This should improve through time as PEB makes further in-roads with other US payors.

Understanding key customers

(1) Kaiser — should be a lucrative relationship in a (relatively) fast timeframe

On 17 June 2020, PEB announced an agreement with Kaiser for the commercial use of its Cxbladder tests. It has been a long process, with Kaiser starting a User Programme in 2015, however, is worth the wait.

- **Who is Kaiser:** One of the largest integrated, not-for-profit, healthcare providers in the US, with ~12.4m members. Both the clinician and the payor are within the same organisation, with the group operating in a similar fashion to a corporate. Urologists are salary-based, with decisions on process/diagnostic tools typically made at the corporate level.
- **Test price:** No specifics are available, due to commercial sensitivity, but we expect it to be above that of CMS (US$760/test). We assume a 15% premium, i.e.US$874/test.

- **Tests covered:** We understand the agreement is for all of PEB's Cxbladder tests, however, it will initially start with Monitor. Kaiser will utilise PEB's in-home sampling for its patients, with the process managed by PEB (we expect for some kind of fee).
- **Back-payment:** No. The original User Programme tests were funded by PEB.
- **Ramp path for revenue:** This is near impossible to answer, particularly as Kaiser is in control (and PEB has no knowledge). However, given the set-up of Kaiser (similar to a corporate), our understanding of this agreement (limited by commercial sensitivities in the contract) and similarities to Canterbury DHB, we expect the ramp up period will be faster than other customers. Initial commercial tests commenced in November 2020.
- **Revenue opportunity:** Substantial. The quantum is highly dependent on where (and how often) Cxbladder is used in the clinical pathway for patients with bladder cancer, being monitored for recurrence or being assessed for cancer. We estimate the revenue opportunity could be up to ~NZ$63m for its test portfolio. This assumes (1) an annual patient opportunity of 101m, 2% of our assumed US expectations, (2) a price of US$874/test, and (3) that 50% of patients receive a Cxbladder test.

(2) CMS — reimbursement does not translate straight to usage, however, it removes a material barrier

On 3 July 2020, PEB received notification of a positive coverage decision (LCD coverage) from key US public health insurer, CMS.

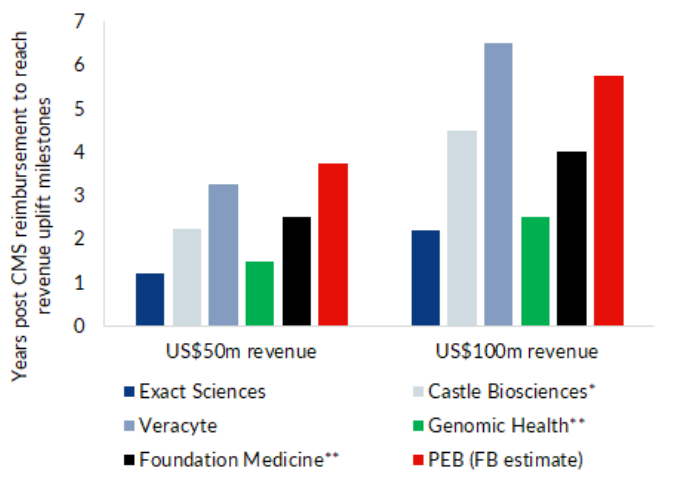
- **Who is CMS:** Centers for Medicare & Medicaid Services (CMS) provides healthcare coverage for all US citizens over 65 years, as well as assistance for healthcare coverage to people with low incomes. The CMS population totals ~109m people (~62m across Hospital & Medical coverage and ~47m across Prescription Drugs).
- **Test price:** US$760/test.
- **Tests covered:** LCD coverage facilitates reimbursement for CMS patients using Cxbladder Detect and Cxbladder Monitor for tests performed on or after July 1, 2020. There are no conditions of use. Tests for CMS patients currently make up ~47% of PEB's US commercial tests, or ~67% including Medicare Advantage (where a Medicare beneficiary also pays a premium to a private insurer for extra services).
- **Back-payment:** PEB has completed 22,634 tests for CMS patients without payment prior to the coverage decision. The company will be seeking to negotiate reimbursement for tests done to date. There is limited precedent, with the quantum highly contingent on individual negotiations. We do expect some level of cash for those tests already completed, but it is highly unlikely (in our view) PEB will get paid for the full amount (~US$17m at US$760/test). We do not include any payment in our PEB valuation.
- **Ramp path for revenue:** PEB is now reporting revenue and receiving cash from CMS, from 1 July 2020, with standard payment terms (30 days). While tests provided to CMS patients are now being reimbursed, the ultimate ramp path for revenue will be dictated by the number of tests ordered by urologists (a separate decision maker to the payor, CMS). However, having reimbursement does remove a significant barrier to the test being ordered.

Competitor revenue ramp path case study

We have undertaken a thorough analysis of US listed genomic peers to help understand what the ramp path could look like. This is summarised in Figures 17–19 below, with more detail in Appendix 3. It is clear there is no 'norm', with a wide range of outcomes.

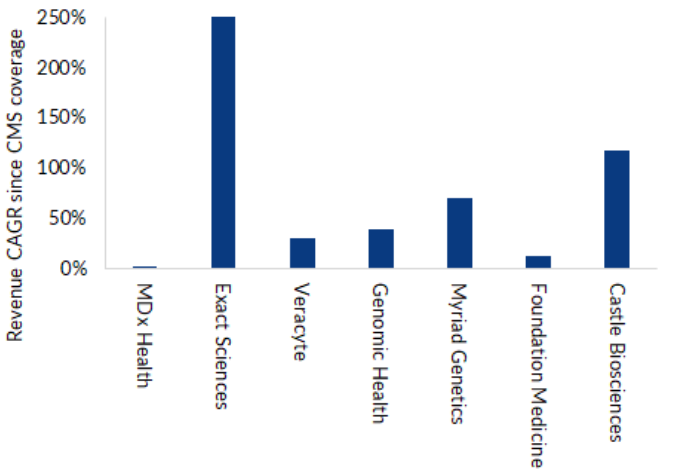
Our model assumes PEB achieves US$50m in Year 4 post CMS reimbursement (by FY24E) and US$100m in Year 6 (by FY26E) — on the conservative side versus peers.

Figure 17. Years post CMS reimbursement to reach various revenue milestones



Source: Forsyth Barr analysis, Company reports; *Uses consensus forecast; **Pre takeover

Figure 18. Revenue uplift post CMS reimbursement



Source: Forsyth Barr analysis, Company reports; NB: Genomic Health & Foundation Medicine are pre takeover

Figure 19. Snapshot by company of key tests and relevant data points

Company	Cancer	Test	Invasive	CMS price (US$)	Date of CMS reimbursement	Test volumes
Pacific Edge	Bladder	Monitor	N	760	3/07/2020	16,861
	Bladder	Detect	N	760	3/07/2020	
	Bladder	Triage	N	n/a	n/a	
	Bladder	Resolve	N	n/a	n/a	
Exact Sciences	Colorectal	Cologuard	N	502	9/10/2014	1,700,000
Castle Biosciences	Melanoma	Decision Dx-Melanoma	N	n/a	3/12/2018	4,574
	Uveal Melanoma	Decision Dx-UM	N	7,193	10/07/2017	361
Veracyte	n/a	Envisia Genomic Classifier	N	5,500	4/03/2019	39,612
	Lung	Percepta Genomic Classifier	Y	3,200	7/02/2017	
	Thyroid	Afirma Genomic Classifier	Y	3,600	2006	
MDx Health	Prostate	Confirm MDx	N	3,300	17/11/2014	18,195
	Prostate	Select MDx	N	n/a	n/a	21,669
Myriad Genetics	Melanoma	MyPath Melanoma	Y	1,950	14/03/2019	
	Prostate	Prolaris	Y	3,800	13/08/2015	
Genomic Health	Prostate	Oncotype Dx Genomic Prostate Score	Y	n/a	24/08/2017	136,380
	Prostate	Oncotype Dx AR-V7	N	n/a	29/10/2018	
	Prostate	Oncotype Dx Prostate Test	Y	5,000	17/08/2015	
	Colon	Oncotype Dx Colon	Y	n/a	30/09/2011	
	Breast	Oncotype Dx Breast	Y	3,416	2006	
Foundation Medicine	Broad	Foundationone CDX	Y	5,800	1/05/2015	67,375
	Broad	Foundationone Liquid CDX	Y	5,800	n/a	
	Broad	Foundationone Heme	N	7,200	n/a	

Source: Forsyth Barr analysis, Company reports

Costs — highly scalable

PEB's model is easily scalable, with the majority of costs variable and lab/testing capacity unlikely to be a meaningful hurdle. It is a highly repeatable and reproducible clinical product. A lot of costs (which have been large drags to other organisations) are outsourced, including billing & reimbursement, component manufacturing. However, there is risk that capitalising on the opportunity is more costly than envisaged or PEB wishes to chase revenue harder/faster, hence, scales up resources faster.

- Opex:
  - COGS: PEB references US$100/test. We understand this is fully costed; including lab supplies, lab use, courier/freight, distributor margin, working capital, and obsolescence. We view this as a cap and expect to see efficiencies as the business scales. This offers upside risk to our forecasts; we use US$100 through our explicit forecast horizon.
  - SG&A: More resource is needed as the business scales — 2020 is a clear change from "cash conserve" to focus on growth, now the progress is more monetisable. We assume a material step-up in all cost structures.
- Capex: Current annual lab capacity is 260,000 in the US and 35,000 in New Zealand vs current test volumes of c. 14,000. However, additional capex to materially lift this is not a major barrier. This is primarily equipment, with an extra set-up to double US capacity c. $2–3m.

Margin profile and our assumptions

Despite our assumptions for materially higher costs, attractive gross margins and growing revenue should deliver strong operating leverage through time. The extent of this is somewhat dependent on PEB's prioritisation and how quickly it brings on resource to chase growth.

Our base case assumes PEB is profitable from FY23E, reaching EBIT margins of ~50% in FY27E. The key cost assumptions we make are: (1) gross margins of ~85%, (2) a step-up in sales reps to 60 (by FY27E) from ~20 currently, (3) a step-up in R&D investment, settling at ~12% of revenue, as we assume PEB looks to grow out its optionality and stay ahead of the curve.

Appendix 1. Quick recap on PEB

PEB in a snapshot

PEB is a leading cancer diagnostic company with a focus on developing tools for early detection, diagnosis and characterisation of cancer. Formed in 2001 and first listed in 2003, the company currently has four commercially available products focussed on bladder cancer under the banner Cxbladder. Its tests are designed to meet clinical needs of urologists at various decision nodes in the management and detection of bladder cancer, through non-invasive urine-based tests. The key objective is to build out a 'tool-kit' for urologists, with more tests likely.

Commercialisation of a new technology in healthcare is a long journey, including development, clinical evidence and building utilisation in-market. PEB first launched Cxbladder in NZ in 2012 and the US in 2013. To date the company has undertaken eight equity raises, totalling almost NZ$200m, primarily to fund clinical research and for testing capacity (labs in the US and Dunedin).

Intellectual Property (IP) — not solely dependent on patents

PEB's intellectual property (IP) is protected through a combination of patents and trade secrets (including the recipe for the buffer used to prevent RNA degradation and the mathematical equation that defines the relationship between the genes and the disease). The latter is particularly important to eliminate the risk when patents expire.

Three key components:

1. **The buffer in the tube:** To protect the RNA in the urine sample and prevent degradation. The recipe is trade secreted.
2. **Mathematical algorithm linking the five mRNA biomarkers together:** The algorithm is held in PEB Analytical Services, a wholly owned subsidiary of PEB, which provides the service to other subsidiaries to enable the use of the algorithm. This creates a layer of protection for PEB in case of a lawsuit.
3. **Patents:** PEB has patented the relationship between the five mRNA biomarkers and the disease. The company has a suite of patents globally in bladder cancer, including in the key US market (filed July 2005; published October 2010), and in the US and Australasia to cover its SIFTware software platform technology.

Bladder cancer

Globally, bladder cancer has the 9th highest incidence of cancers and the 4th highest incidence for men. Risk increases with age (Figure 20). One of the early symptoms of bladder cancer is the presence of blood in the urine, haematuria. Bladder cancer also has a very high recurrence rate of ~70% over a five year period, with up to 30% of these recurring as later stage tumours. Bladder cancer is highly treatable, especially if detected in the early stages. This makes timely and regular surveillance and monitoring of this cancer a key element of the clinical process and of the individual's annual healthcare plan.

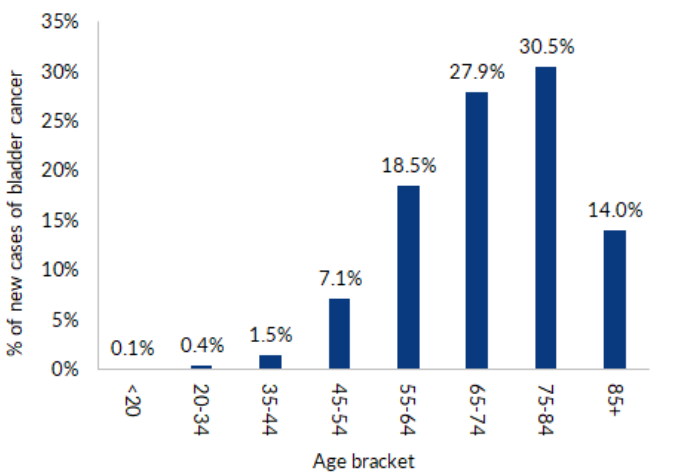
Bladder cancer has the highest total medical costs of any cancer per patient, with the total medical cost in the US, from detection until death, estimated at ~US$200,000 per patient.

Figure 20. PEB Cxbladder product portfolio

Detect (US launch FY14)	•Diagnostic test •Detects & quantifies probably of having bladder cancer
Triage (US launch FY16)	•Diagnostic test •Rules out patients w/out bladder cancer
Monitor (US launch FY17)	•Diagnostic test •Surveillance; recurrence of bladder cancer
Resolve (US launch target FY22)	•Prognostic test •Identifies high grade / late stage bladder cancer

Source: Forsyth Barr analysis, Company reports

Figure 21. Risk increases with age



Source: Forsyth Barr analysis, SEER Cancer

Competitive landscape

Cxbladder is a product suite of non-invasive urine-based tests for bladder cancer. The technology boasts a number of advantages for both the patient and clinician, particularly versus the incumbents.

Current testing options

The gold standard is currently cystoscopy where the doctor uses a cystoscope (a thin, lighted tube) to view the inner wall of the bladder. However, it is expensive (c. US$400–11,000 depending on the need for anesthesia), invasive and does miss tumours (sensitivity 73%; specificity 67–81%). Therefore, the urologist will often bolt together a range of tools, including:

- **Physical exam and medical history:** To look for risk factors and symptoms.
- **Urine cytology:** The doctor looks for cancer cells by examining urine under a microscope. The technique performs well with high-grade and high-stage tumours, but the sensitivity for cytology in the detection of early-stage tumours is low (ranging from 20% to 40%). The cost is c. US$100–200/test, however, three repeat tests are required to be run separately.
- **CT scan:** Imaging of the area. In bladder cancer this is usually a double contrast CT scan. The cost is estimated at c. US$500–1,000.
- **Intravenous urogram:** A general X-ray examination to look at the urinary system.
- **Urine molecular marker tests:** There are various non-invasive molecular tests available, however, most lack sufficient sensitivity and/or specificity, especially for early stage/low grade tumours and recurrent diagnoses — which has limited adoption. Results for Cxbladder are strong and head-to-head studies show outperformance vs the most common (NMP22 and UroVysion).

Figure 22. Selection of available molecular tools

	Type of biomarker	Performance (broad average)
Cxbladder Triage	Messenger RNA	Sensitivity 95%; NPV 98.5%
Cxbladder Monitor	Messenger RNA	Sensitivity 93%; NPV 97%
Cxbladder Detect	Messenger RNA	Sensitivity 82%; Specificity 85%
UroVysion FISH	DNA (Aneuploidies)	Sensitivity 72%; Specificity 83%
NMP22	Peptides	Sensitivity 40%; Specificity 99%
CellSearch	Proteins	Sensitivity 35%; Specificity 97%
uCyt+	Antigens/Metabolites	Sensitivity 73%; Specificity 66%
BTA stat/BTA Track	Proteins	Sensitivity 70%; Specificity 75%
Epicheck	DNA (methylation)	Sensitivity 68%; Specificity 88%
Xpert Detection	Messenger RNA	Sensitivity 76%; Specificity 85%

Source: Forsyth Barr, Biomarkers for Bladder Cancer Diagnosis and Surveillance (Jan 2020)

Figure 23. Comparative study for Cxbladder vs other key tests

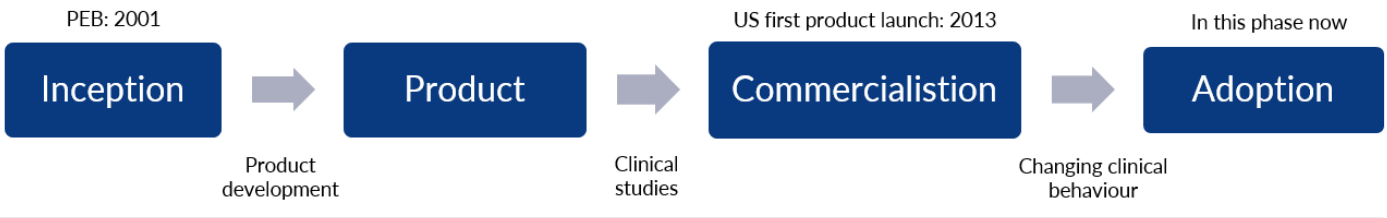
	Sensitivity % (95% Confidence Interval)	Specificity % (95% Confidence Interval)
Cytology	46.0 (36.3–55.8)	95.3 (93.7–96.6)
NMP22	45.9 (35.9–56.3)	88.0 (85.5–90.2)
UroVysion FISH	47.7 (31.5–63.3)	87.7 (84.7–90.3)
Cxbladder Detect	**73.6 (65.1–81.7)**	**81.7 (78.7–84.4)**

Source: Forsyth Barr analysis, www.ncbi.nlm.nih.gov/pmc/articles/PMC4494166

Advantages of Cxbladder

- **Non-invasive:** The test only requires a urine sample.
- **Greater accuracy:** In detecting, triaging or ruling out bladder cancer vs established procedures. The test works at a molecular level, enabling Cxbladder to help to detect cancers not always visible by cystoscopy.
- **Quantitative assessment:** Helps ensure consistent results. Each test is given a score between 0.00 and 1.00 based on the measured quantity of five biomarkers. Results are also prompt.
- **In-home testing:** This is particularly important given the COVID-19 backdrop, with patient demographics skewed to those also at high risk of COVID-19. The test sample collection system can be directly sent to the patient at home or to their GP clinic to collect a urine sample. The test is quick and simple to administer, with no need for special patient preparation.
- **Can avoid a significant number of unnecessary procedures:** Cxbladder provides a way to evaluate patients before they get to the clinic, which has the potential to free up resources through better triaging.
- **Robust to sample contamination from blood and infection.**

Figure 24. No shortcut to the lengthy process of changing clinical practice



Source: Forsyth Barr analysis

Appendix 2. The US healthcare system and our direct feedback

The US healthcare and reimbursement landscape is highly complex, to say the least.

Why is it so hard to get paid?

If a Cxbladder test is ordered by a US clinician, PEB is required to provide and run the test, then it comes down to fighting for reimbursement. The urologist is making the decision to use the test, while payment is primarily through insurance companies; hence, in terms of cash generation the insurer is the key customer.

The payor landscape is highly fragmented, with various levels of co-pay (patient) and insurance providers. In some cases PEB will be looking to secure reimbursement from a patient, as well as both public and private insurance. Being 'in-network' (i.e. having a contract) helps to expedite the process materially. It is a lengthy, multiple year, process to be 'in contract' with all the providers, with each having their own evidence and useage threshold.

In a lot of cases the cost of chasing payment can outweigh the payment itself, hence, trade-offs may be made.

Evidence from our US company visits reinforce the challenges

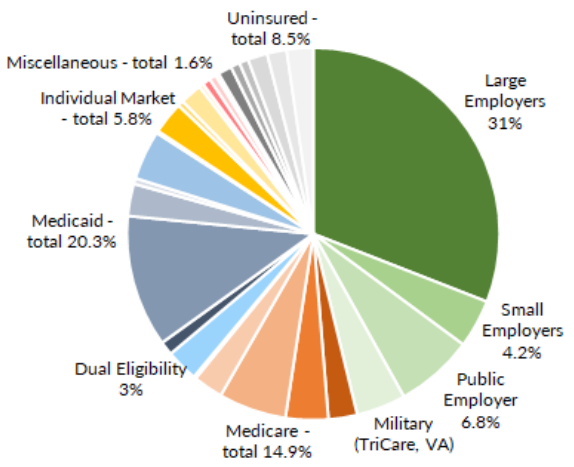
Various genomic companies we have visited in the US over the past five years reinforce the challenges, including:

- "We fund the US healthcare system"
- Very large (50–100pax) billing & reimbursement in-house teams to attempt to secure payment for tests already provided
- "Receiving cash in 2018 for tests than were provided to the customer in 2014"
- Despite having CMS coverage and other insurers on board "we recognise ~51% of revenue that we have billed given the long payment cycle and risk of not being paid"
- "As we grow, costs will increase like billing & reimbursement"
- "VA is a broken system... more difficult to get traction than hoped...deploying a 'fair amount' of resource" (despite a good product and CMS coverage)

US insurance landscape

Around 85% of Americans have some form of health insurance, however, the landscape is highly fragmented by providers (Figure 25). Insurances are not mutually exclusive and Americans can be covered by more than one insurance scheme during a year. Reimbursement differs substantially between the insurance programmes.

Figure 25. US insurance landscape is highly fragmented



Source: Forsyth Barr analysis, US Census

Figure 26. Key players to note

Provider	Detail
Medicaid	A health insurance program jointly funded by the federal and state governments to provide healthcare for qualifying low-income individuals.
Medicare	A federally funded health insurance program that covers the health care of most individuals 65 years of age and over, and disabled persons.
Medicare Advantage	A Medicare beneficiary also pays a premium to a private insurance company for extra services. Hence, covered by both public and private insurers.
Integrated healthcare providers (e.g. Kaiser)	Self-contained system managing the entire patient experience including care and insurance.
VA/Tricare	For US veterans, service members (including retirees) and their families.
Dual eligibility	Eligible for both Medicare and Medicaid.

Source: Forsyth Barr analysis, Various websites

Appendix 3. US listed biotech comparable companies

Company details

- **Genomic Health:** Acquired by Exact Sciences in late 2019 for ~6.3x EV/Sales. Genomic Health was a pioneer in molecular diagnostics, with Oncotype Dx (for breast cancer) reimbursed by CMS in 2006. Its test was a large success, reaching ~80% market share in the US for invasive breast cancer in 2014 (10 years after launch). The company has tests for breast, prostate and colon cancer. When we visited the company in 2016, it had ~100 sales reps in breast cancer and ~40 in prostate cancer. The latter was expected to grow to 50–70 reps. Genomic Health also internalised reimbursement, with >100 staff chasing payment.
- **MDxHealth:** Launched in 2012, it has been far from smooth sailing for MDx. We are unsure exactly what has happened in recent years, however, the company is clearly struggling (and appears to be an outlier) despite CMS reimbursement. The company has a tissue-based test (Confirm MDx, launched 2012, market share ~6%), and a more recent urine-based test (Select MDx, launched 2016, awaiting CMS approval). When we last met the company in 2018, MDx had 45 sales reps targeting urologists to sell its prostate cancer tests, with an expectation this would lift to 70–75 reps in time for nationwide coverage in the US. MDx was developing a bladder cancer test, however, this has been side-lined with new management and other priorities.
- **Castle Biosciences:** Has only recently listed in the US (July 2019) and secured CMS reimbursement (late 2018) for its melanoma test.
- **Veracyte:** The company has tests in thyroid, lung and breast cancer along with idiopathic pulmonary fibrosis. CMS coverage for its thyroid test was provided in 2012 with the lung and pulmonary fibrosis coverage following in 2017 and 2019 respectively.
- **Exact Sciences:** The largest comparable company in our peer group, Exact specialise in colorectal cancer through its successful Cologuard test which was provided CMS coverage in 2014. Exact continue to diversify, with a number of recent acquisitions including Genomic Health (US$2.8bn in 2019) and liquid biopsy company, Thrive (for up to US$2.15bn in October 2020).
- **Foundation Medicine:** Acquired in 2018 by Roche at ~30x EV/Sales. Foundation Medicine offers three genomic profiling tests for all solid tumour cancers.
- **Myriad Genetics:** A well-diversified offering with a suite of products across six medical specialties (women's health, oncology, urology, dermatology, neuroscience and auto immune).

Figure 27. Snapshot of key metrics (last actual data)

	Pacific Edge	Exact Sciences	Castle Biosciences	Veracyte	MDx Health	Myriad Genetics	Genomic Health (pre-takeover)	Foundation Medicine (pre-takeover)
Revenue (US$m)	3.5	876.3	51.9	120.4	11.8	638.6	394.1	152.9
Normalised EBIT (US$m)	(13.5)	(233.8)	7.3	(15.1)	(38.8)	(132.0)	26.9	(160.9)
Gross margin	87%	75%	86%	70%	46%	71%	84%	44%
Net debt/(cash) (US$m)	(25.8)	772.3	(160.6)	(344.3)	(12.4)	106.3	(72.0)	(60.3)
Market cap (US$m)	508	20,726	1,156	3,176	116	1,403	2,707	5,078
EV/Sales (12m Fwd)	n/r	11.9	11.7	21.1	3.2	2.3	6.3*	30*

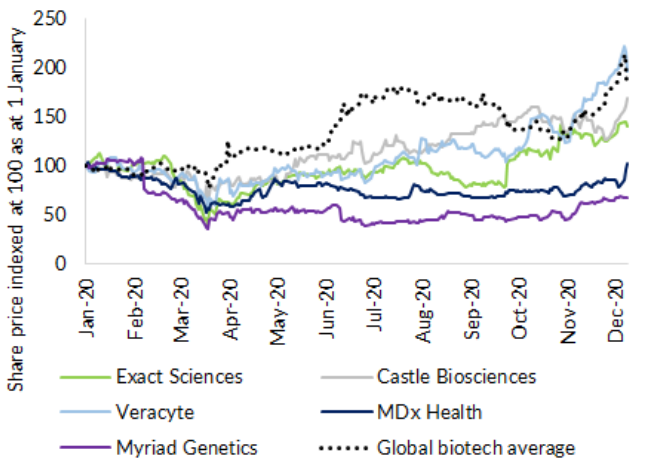
Source: Forsyth Barr analysis, Bloomberg, Thomson Reuters; *Estimated transaction multiple

Figure 28. Selection of recent takeovers in the biotech sector

Acquirer	Target	Date	Price (US$bn)	EV/sales
Roche	Foundation Medicine (remaining 43%)	Jun-18	2.4	30x
Exact Sciences	Genomic Health	Nov-19	2.8	6.3x
Invitae	ArcherDX	Jun-20	1.4	27x
Illumina	GRAIL	Sep-20	8.0	Pre-revenue
Exact Sciences	Thrive	Oct-20	2.15	Pre revenue
Exact Sciences	Base Genomics	Oct-20	0.4	Pre revenue

Source: Forsyth Barr analysis, Various sources, Bloomberg

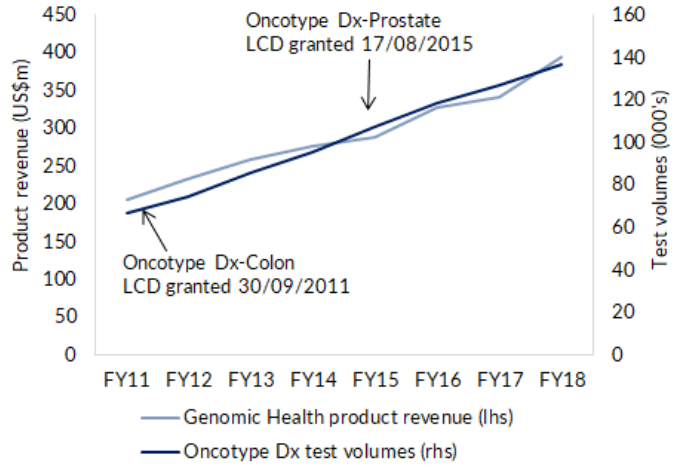
Figure 29. Price performance through 2020



Source: Forsyth Barr analysis, Thomson Reuters

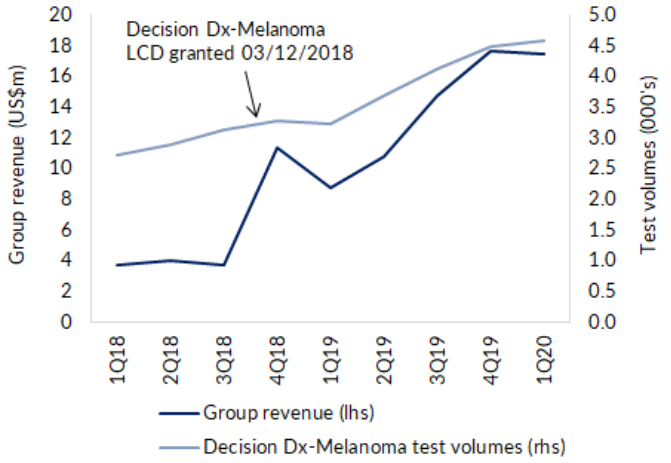
Snapshot of the ramp path for US biotech companies post CMS reimbursement decision

Figure 30. Genomic Health



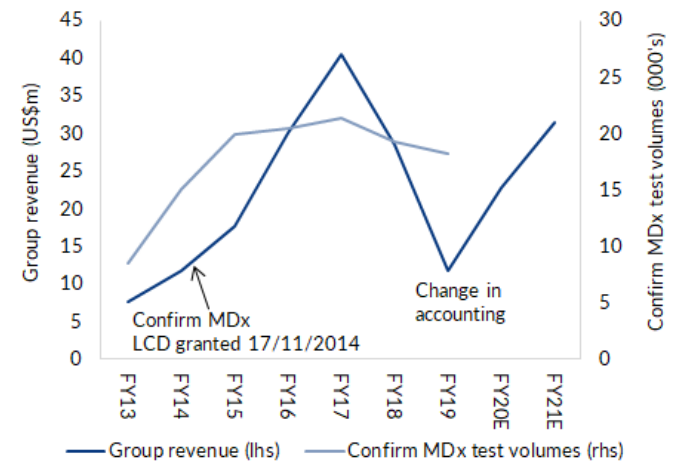
Source: Forsyth Barr analysis, Company reports

Figure 31. Castle Biosciences



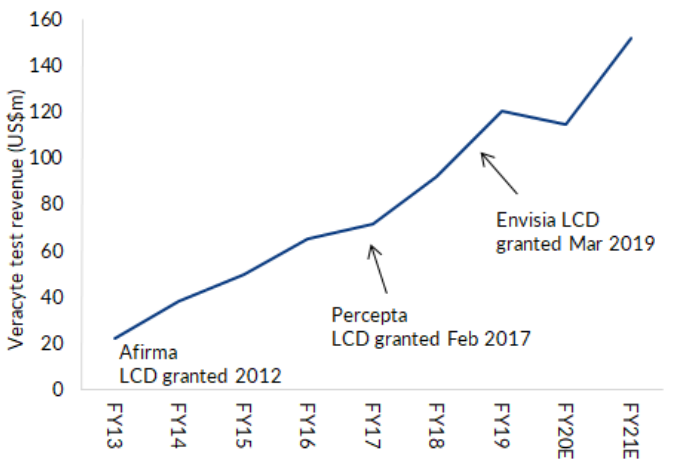
Source: Forsyth Barr analysis, Company reports

Figure 32. MDxHealth



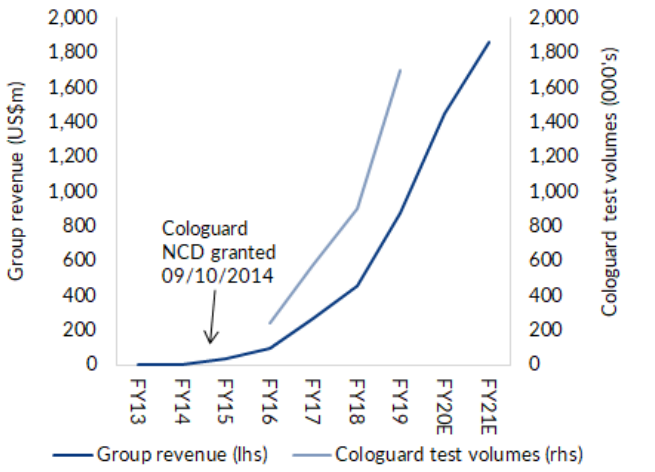
Source: Forsyth Barr analysis, Company reports

Figure 33. Veracyte



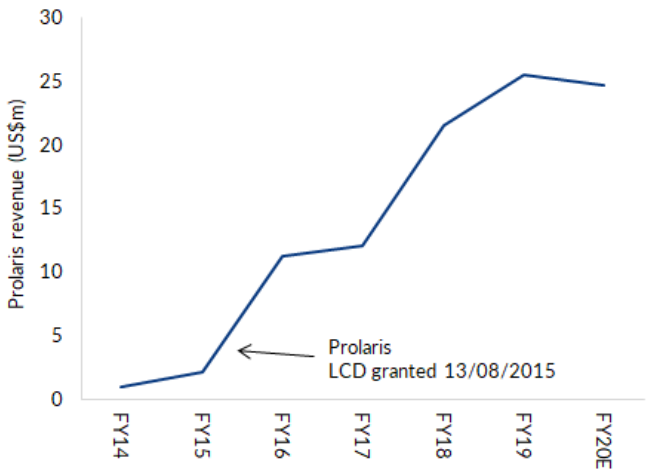
Source: Forsyth Barr analysis, Company reports

Figure 34. Exact Sciences



Source: Forsyth Barr analysis, Company reports

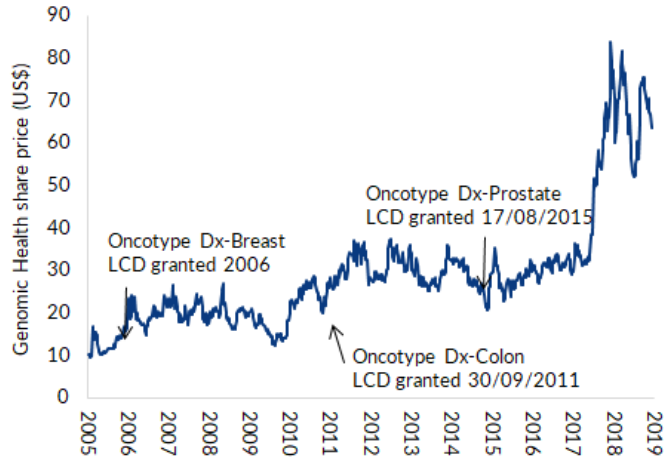
Figure 35. Myriad Genetics



Source: Forsyth Barr analysis, Company reports

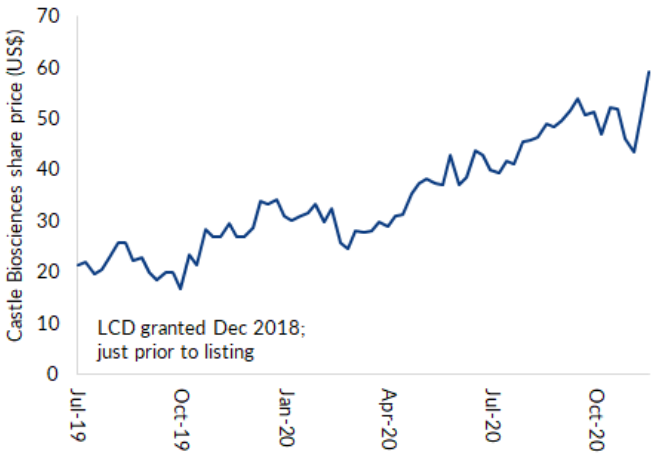
Share price performance of US biotech companies

Figure 36. Genomic Health share price performance



Source: Forsyth Barr analysis, Thomson Reuters, Company reports

Figure 37. Castle Biosciences share price performance

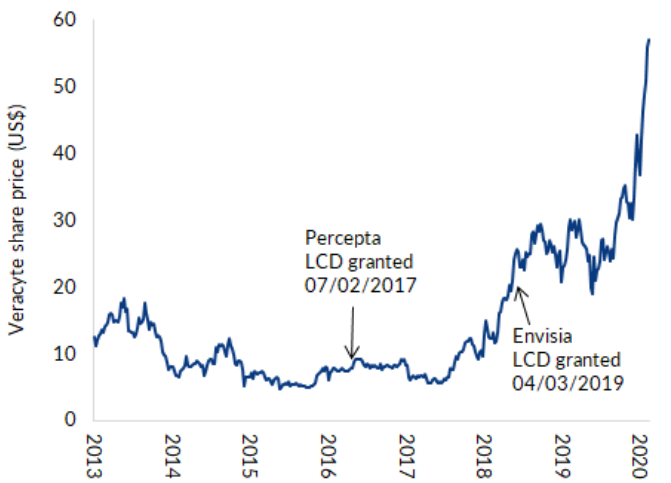


Source: Forsyth Barr analysis, Thomson Reuters, Company reports

Figure 38. MDx Health share price performance

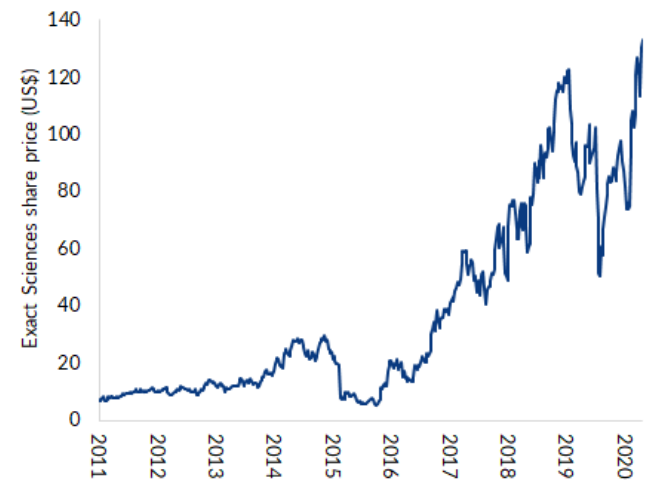
Source: Forsyth Barr analysis, Thomson Reuters, Company reports

Figure 39. Veracyte share price performance



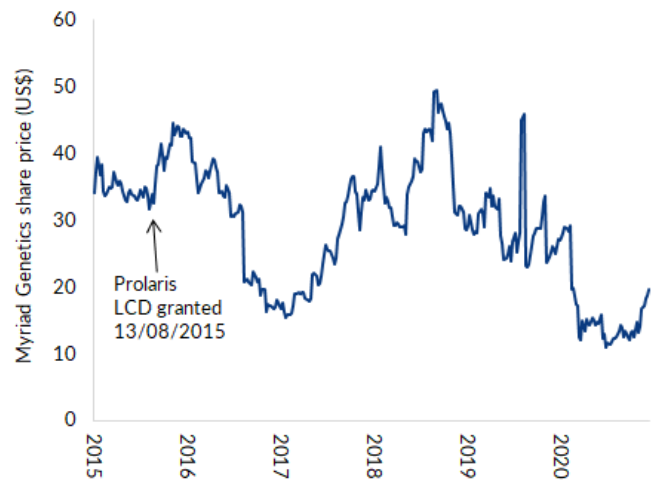
Source: Forsyth Barr analysis, Thomson Reuters, Company reports

Figure 40. Exact Sciences share price performance



Source: Forsyth Barr analysis, Thomson Reuters, Company reports

Figure 41. Myriad Genetics share price performance



Source: Forsyth Barr analysis, Thomson Reuters, Company reports

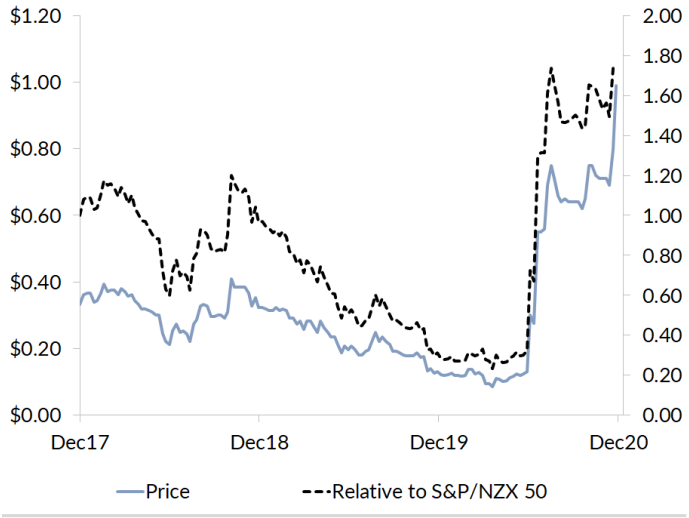
Glossary of key terms

Figure 42. Glossary of key terms

Term	Definition
Biomarker	A measureable indicator of the severity or presence of some disease state. More specifically, a biomarker indicates a change in expression or state of a protein that correlates with the risk or progression of a disease, or with the susceptibility of the disease to a given treatment.
Centre for Medicaid and Medicare Services (CMS)	Agency within the US Department of Health & Human Services responsible for the administration of several key federal health care programmes, including Medicare. Key US public health insurer.
Co-pay	A payment defined in the insurance policy and paid by the insured person each time a medical service is accessed. Though the co-pay is often a small portion of the actual cost of the medical service, it is meant to prevent people from seeking medical care that may not be necessary.
Cystocopy	A procedure to see inside a patient's urinary bladder and urethra (the tube that carries urine from your bladder to the outside of your body). During a cystoscopy procedure, the doctor uses a hollow tube (cystoscope) equipped with a lens to examine the lining of the bladder and urethra. This is a primary tool used to detect bladder cancer.
Cytology	A urine test where the sample is examined under a microscope to look for abnormal cells. This is the current preferred adjunct to cystoscopy to test for bladder cancer.
Efficacy	Clinical efficacy is a measure of how well a treatment or test succeeds in achieving its aim.
Genomics	A field of biology focussing on the structure, function, evolution, mapping, and editing of genomes. A genome is an organism's complete set of DNA, including all of its genes.
Haematuria	The presence of blood in the urine, which can be a sign of bladder cancer. Microscopic haematuria (micro haematuria) is where the urine contains small amounts of blood, however, the blood quantity is too low to change the colour of the urine. If the colour of the urine does change it is known as macroscopic haematuria (macro haematuria or gross haematuria).
Incidence	The number of new cases per year in a specific disease.
Intellectual Property (IP)	Intellectual property is a category of property that includes intangible creations of the human intellect (something made or created). The most well-known types are copyrights, patents, trademarks, and trade secrets.
Kaiser Permanente	One of the largest integrated healthcare providers in the US. It has >12.4m members and operates 39 hospitals. Kaiser controls the full spectrum of its members care, including payment. Its doctors are paid via a salary.
Local coverage determination (LCD)	Decision made by a Medicare Administrative Contractor whether to reimburse a particular service or item.
Medicaid	Health insurance program jointly funded by the federal and state governments to provide healthcare for qualifying low-income individuals
Medicare	Federally funded health insurance program that covers the healthcare of most individuals 65 years of age and over, and disabled persons.
Medicare Advantage	A Medicare beneficiary also pays a premium to a private insurance company for extra services. Hence, covered by both public and private insurers.
Molecular diagnostics	A technique used to analyse biological markers in the genome and proteome (the individual's genetic code and how their cells express their genes as proteins) — by applying molecular biology to medical testing. The technique is used to diagnose and monitor disease, detect risk, and decide which therapies will work best for individual patients.
Monitoring	The tracing of potential recurrence or assessment of progression of a disease.
Negative Predictive Value (NPV)	The number of true negatives as a percentage of the total number of negative calls.
RNA	Ribonucleic acid (RNA) is a polymeric molecule essential in various biological roles in coding, decoding, regulation and expression of genes. RNA and DNA are nucleic acids.
Sensitivity (true positives)	A measure of the test's ability to accurately detect the presence of a disease. For example, a sensitivity of 80% indicates that out of 100 patients which actually have the disease, on average 80 are correctly diagnosed.
Specificity (true negatives)	A measure of a test's ability to accurately indicate a patient does not have the disease when it is truly not present. For example, a specificity of 80% indicates that out of 100 patients without the disease 80 people are correctly identified as not having the disease and 20 are falsely identified as having the disease.
Urologist	Physicians who specialise in the genitourinary tract—the kidneys, urinary bladder, adrenal glands, urethra and male reproductive organs—and male fertility. Urologists are also trained in the surgical and medical treatment of diseases that affect these organs.
User Programme	Formal evaluation programme that enables a clinician, institution or healthcare system to evaluate the performance of a new product or technology. User Programmes are typically funded by PEB.
Veterans Administration (VA)	Agency of the federal government which provides a variety of services for US veterans and their families.

Source: Forsyth Barr analysis, Various sites

Figure 43. Price performance



Source: Forsyth Barr analysis

Figure 44. Substantial shareholders

Shareholder	Latest Holding
Harbour Asset Management & Jarden Securities Limited	14.5%
Salt Funds Management	12.0%
ANZ NZ Investments	5.1%

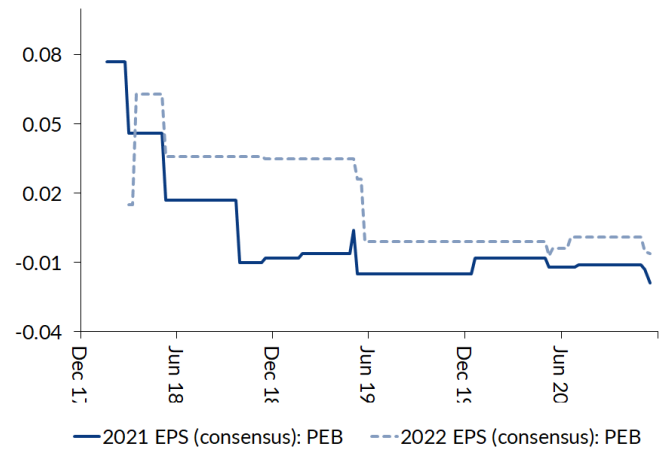
Source: NZX, Forsyth Barr analysis, NOTE: based on SPH notices only

Figure 45. International valuation comparisons

Company	Code	Price	Mkt Cap	PE		EV/EBITDA		EV/EBIT		Cash Yld
(metrics re-weighted to reflect PEB's balance date - March)			(m)	2021E	2022E	2021E	2022E	2021E	2022E	2022E
Pacific Edge	**PEB NZ**	**NZ$0.98**	**NZ$711**	**<0x**	**<0x**	**<0x**	**<0x**	**<0x**	**<0x**	**0.0%**
EXACT SCIENCES CORP	EXAS US	US$129.50	US$20,594	<0x	<0x	>75x	>75x	<0x	>75x	0.0%
CASTLE BIOSCIENCES INC	CSTL US	US$59.74	US$1,189	<0x	<0x	<0x	<0x	<0x	>75x	n/a
MDXHEALTH	MDXH BB	€0.96	€87	<0x	<0x	<0x	<0x	<0x	<0x	n/a
MYRIAD GENETICS INC	MYGN US	US$19.72	US$1,483	<0x	20.7x	<0x	<0x	>75x	>75x	n/a
			Compco Average:	**n/a**	**20.7x**	**n/a**	**n/a**	**n/a**	**n/a**	**0.0%**
EV = Current Market Cap + Actual Net Debt			**PEB Relative:**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**

Source: *Forsyth Barr analysis, Bloomberg Consensus, Compco metrics re-weighted to reflect headline (PEB) companies fiscal year end

Figure 46. Consensus EPS momentum (NZ$)



Source: Forsyth Barr analysis

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