investors CHRONICLE alpha

11 December 2020

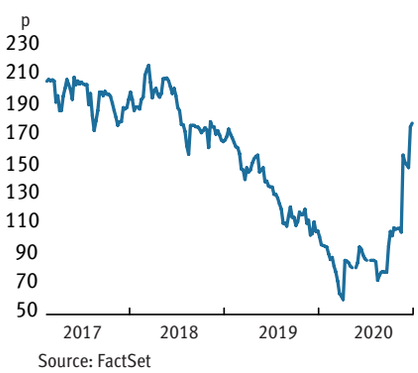
Exploit Arix Bioscience's huge margin of safety

There is significant value in Arix's diversified portfolio of early stage and pre-IPO venture capital biotech investments

Arix Bioscience (ARIX)

Ticker	ARIX
Current price	176.5p
12-month target price	235p
Market cap	£239m
52-week high	180p
52-week low	57p
Next cash £174m (adjusted for $185m cash proceeds from VelosBio disposal & £7m of estimated overheads in 2020)	
Shares in issue	135.6m
Financial year-end	31 December
Next event	Annual results March 2021
Company website	arixbioscience.com

Arix Bioscience share price history



Source: FactSet

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Simon Thompson's view:

Arix Bioscience is a classic Ben Graham recovery play. Having fallen out of favour under previous management, shareholders' fortunes have turned a corner under a new board who are mandated to realise value from the portfolio. There are some exciting investments, too, that have attracted the interest of heavyweight technology investors in recent funding rounds, adding substance to the likelihood of further profitable exits in the future. Investee companies are also attracting the interest of big pharma. This is simply not being priced in with the shares trading on an unwarranted 36 per cent discount to the read through portfolio valuation, even though cash backs up 73 per cent of Arix's market capitalisation.

Bull points

- Board restructured and operating costs being significantly reduced.
- Disposal of VelosBio highlights potential to realise huge returns from investee companies.
- Pro forma net cash position accounts for 73 per cent of market capitalisation.
- Portfolio of investee companies in the price for 67 per cent below estimated book value.
- Retained holdings in four Nasdaq IPOs highlights scope for further realisations.
- Follow on funding rounds supports fair valuations of unlisted portfolio.
- Clinical trials provide multiple 'shots at goal' and likely valuation catalysts.
- Portfolio companies well-funded following significant capital raises in 2020.
- Strong internal rate of return since IPO.
- Disconnect between share price and underlying value of portfolio companies.

Bear points

- Chequered management history.
- Woodford Investment Management shareholding impacted investor sentiment.
- Small-cap liquidity discount.
- No dividend.

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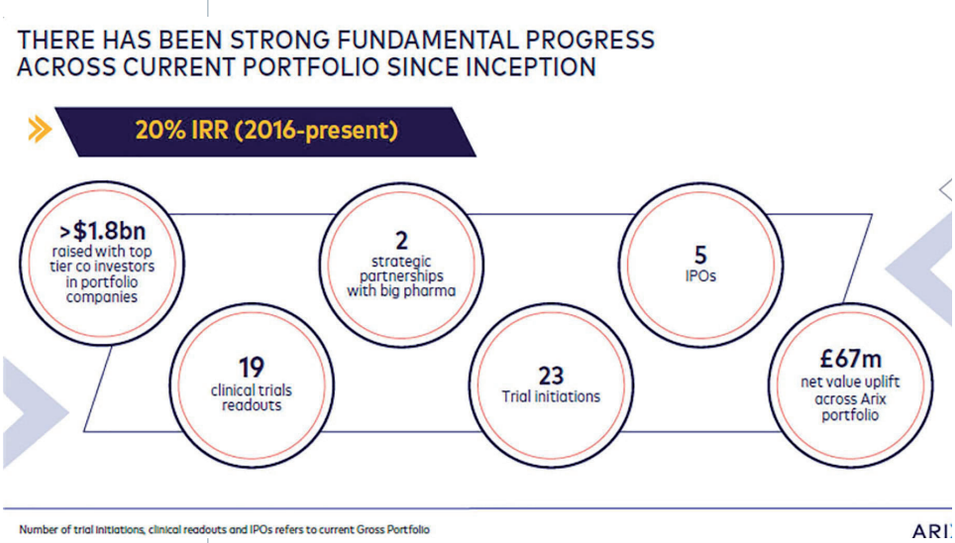
In chapter seven of *The Intelligent Investor*, the seminal 1949 work of Ben Graham, the father of value investing explains: "If we assume that it is the habit of the market to overvalue common stocks which have been showing excellent growth or are glamorous for some other reason, it is logical to expect that it will undervalue – relatively, at least – companies that are out of favour because of unsatisfactory developments of a temporary nature. This may be set down as a fundamental law of the stock market, and it suggests an investment approach that should be both conservative and promising." Mr Graham's theory was that a strong balance sheet will usually see a company through any short-term difficulties and provide a "margin of safety".

In a nut shell, that's what's on offer at **Arix Bioscience (ARIX)**, a global venture capital company that has raised £187m of equity in two fundraises (at 207p and 225p a share) since IPO in February 2017. The company's aim is to create a diversified portfolio of investments in early stage biotechnology businesses that are targeting cutting edge advances in life sciences.

Pharmaceutical companies are a key stakeholder for Arix as they seek to get closer to scientific and medical innovation outside of their own laboratories. Indeed, Arix has strategic partnerships with Takeda, UCB, Ipsen and Fosun, providing access to deep scientific knowledge, research & development capabilities, market intelligence and commercial due diligence. Fosun, a large Chinese group with a global foothold, additionally offers distribution capabilities across China.

There is no doubt Arix has enjoyed success, generating an internal rate of return (IRR) of 20 per cent on its portfolio by the 2020 half year-end, during which time it had deployed £149m of the capital raised.



However, sentiment hasn't been helped by a stock overhang created by the former Woodford Investment Management funds which held a 20 per cent stake in Arix when they were placed into run-off last year. Shareholders also had concerns over the strategy being adopted by Arix's co-founders and main board directors, and running costs that were out of kilter with the company's size. Furthermore, investors became generally more cautious after the implosion of the Woodford funds, given the illiquid and higher risk nature of biotech investments. Importantly, all these issues have been addressed.

Firstly, US hedge fund **Acacia Research Corporation (Nasdaq: ACTG)** agreed to purchase stakes in 19 public and private life sciences companies from LF Equity Income Fund (the fund that is winding down the former Woodford portfolio) in a £224m deal. The purchase included 25.8m shares in Arix. The 19.05 per cent stake was transferred to Acacia earlier this month. Although Acacia's intention for its Arix shareholding is unknown, the resolution of the 'stock overhang' issue is another reason to expect a narrowing of Arix's deep 36 per cent share price discount to spot net asset value (NAV).

Arix Bioscience (ARIX)

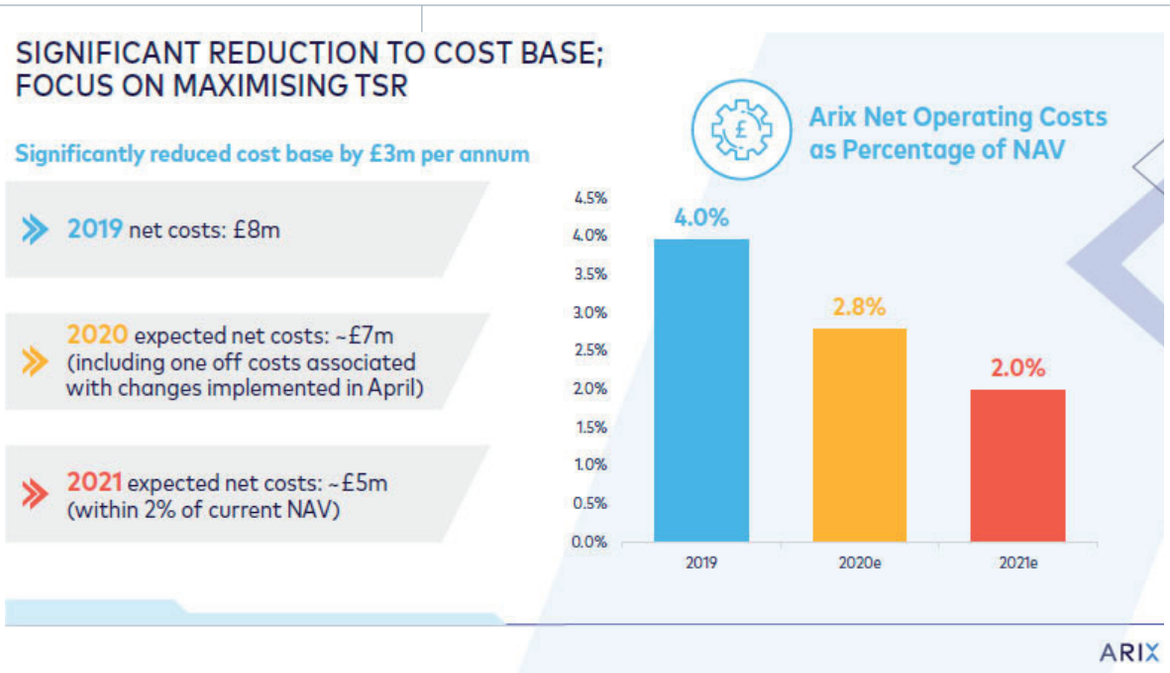
Ord Price: 176.5p
Market Value: £239m
Touch: 173p-180p
12-Month High: 180p **Low:** 57p
Discount To NAV: 36%
Dividend Yield: nil
Net Asset Value: 274p*
Net Cash: £174m**

Year to 31 Dec	Net asset value (£m)	Net asset value per share (p)	Pre-tax profit (£m)	Earnings per share (p)	Dividend per share (p)
2017	146	152	-7.7	-11.0	nil
2018	270	200	42.8	32.1	nil
2019	202	149	-75.6	-53.8	nil
2020*	372	274	130.7	88.9	nil
% change	84%	84%	–	–	–

*Hardman & Co forecasts (November 2020)
**Pro forma net cash includes US$185m proceeds from sale of stake in Velosbio by end of 2020 and factors in £7m estimated operating costs in 2020 (company guidance).
Source: Arix Bioscience annual report, London Stock Exchange

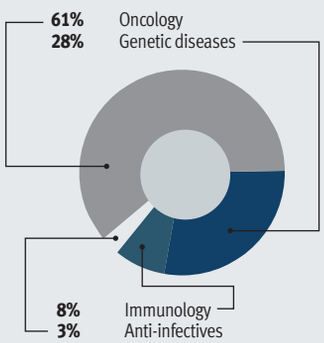
New broom makes an immediate mark

In April this year, a new management team was put in place following a boardroom clear out which saw the departure of three directors: Jonathan Peacock, co-founder and chairman; Joe Anderson, co-founder and chief executive officer; and Art Pappas, non-executive director. Former finance officer James Rawlingson departed in October 2019. The boardroom clear out should result in significant savings on the £1.5m the former directors received in 2019.



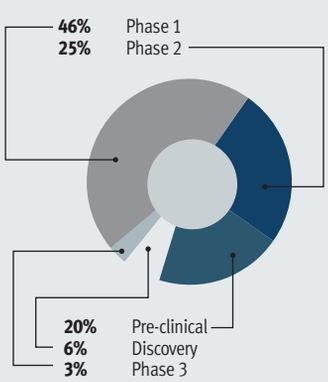
Furthermore, the new experienced board of directors (see management team box on page 16) have since streamlined the portfolio to focus on 11 core investments (out of 16 in the portfolio), all of which are well-funded and offer multiple valuation catalysts in the coming year. They have also slashed operating costs by over 35 per cent to an annual run rate of £5m in 2021, down from £8m in 2019, which represents a more reasonable 1.3 per cent of analysts' spot NAV estimates.

Arix Bioscience's portfolio by disease area



Source: Arix Bioscience presentation (September 2020)

Arix Bioscience's portfolio by stage of development



Source: Arix Bioscience presentation (September 2020)

Arix Bioscience's well-diversified portfolio

Disease area	Percentage
Oncology	61%
Genetic diseases	28%
Immunology	8%
Anti-infectives	3%

Source: Arix Bioscience presentation (September 2020)

Arix Bioscience's portfolio by stage of development

Stage of development	Percentage
Discovery	6%
Pre-clinical	20%
Phase 1	46%
Phase 2	25%
Phase 3	3%

Source: Arix Bioscience presentation (September 2020)

Importantly, they are placing a far greater emphasis on realisations, a move that should help narrow the share price discount to book value. For instance, Arix sold down a further 15 per cent of its holding in Nasdaq quoted **Harpoon Therapeutics (HARP)** in the first half of 2020, achieving a blended price of over $21 a share, near the stock's all-time highs, which generated cash proceeds of US$8.1m. The company has now realised £10.9m from its investment in Harpoon, at an internal rate of return (IRR) of 49 per cent, and still retains an 8.8 per cent stake in the business, which has a current market value of £21.6m.

These returns are impressive enough, but are small fry compared with the recently announced disposal of Arix's 6.8 per cent stake in private portfolio company, VelosBio, a clinical-stage biopharmaceutical company. VelosBio is developing first-in-class cancer therapies targeting tyrosine kinase-like orphan receptor 1 (ROR1), a novel oncology target. VelosBio's lead investigational candidate is an antibody-drug conjugate that is being evaluated in Phase 1 and Phase 2 clinical trials for the treatment of patients with hematologic malignancies and solid tumours.

It's ground breaking science that has attracted the interest of pharmaceutical giant **Merck (NYSE:MRK)**. Merck is acquiring VelosBio for US$2.75bn in a cash deal that realises US$185m (£139m at current exchange rates) for Arix's stake to generate an eye-watering £121m (89p a share) increase on the £21m (15.5p a share) carrying value of its investment. It also highlights the substantial gains that the company is now making from its portfolio.

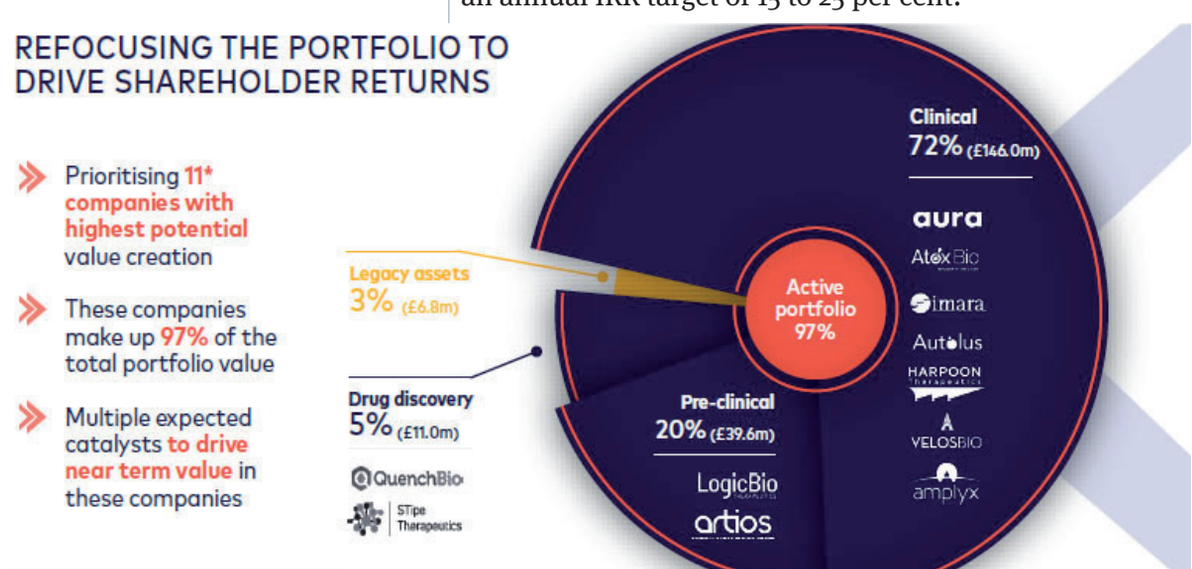
To put this into perspective, Arix originally invested £5.1m in VelosBio when it led the first tranche of a Series A funding round in October 2018. It invested a further £3.5m in the second tranche funding round at the start of this year, and an additional £3.2m in a Series B funding

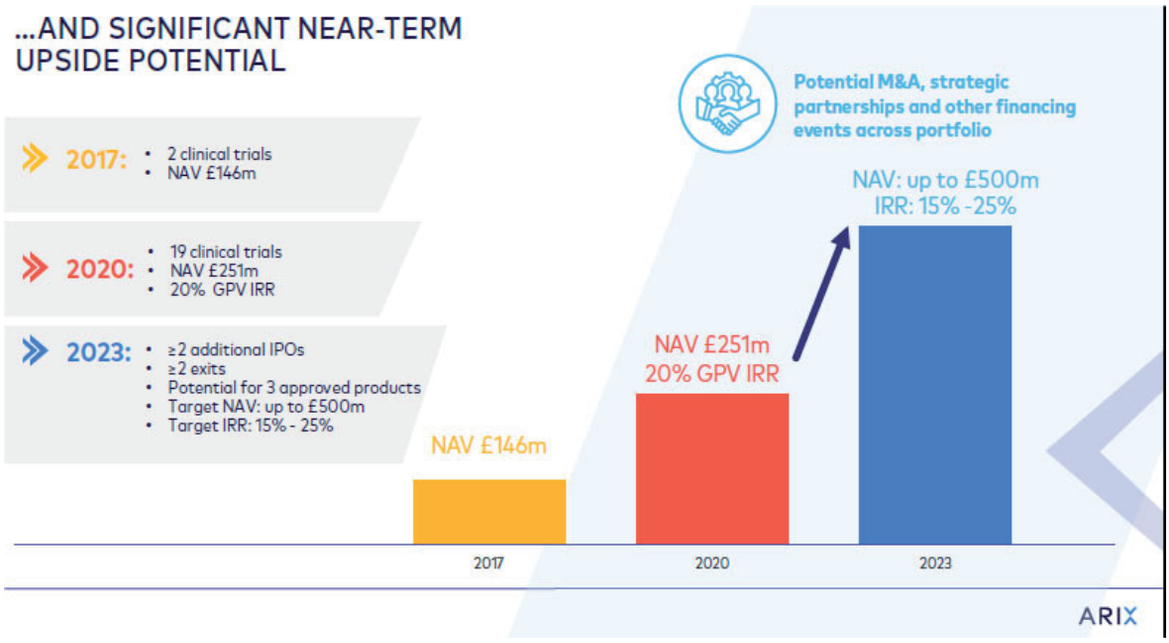
round in July. This means that Arix has made an eye-catching 12 times return on its total capital invested in little over two years. That's more than double the industry average return of five times for Phase I/II venture capital backed biotech companies.

It's a landmark deal, representing the first portfolio acquisition for Arix since being founded four years ago. It could prove to be a game changer for investor sentiment as it leaves the company heavily cashed up – when the deal completes later this month Arix's net cash pile should be around £174m (128p a share), a sum equating to 73 per cent of the company's market capitalisation of £239m. The £120m profit booked on the disposal means that Arix is set to report a thumping pre-tax profit of around £131m for the 2020 financial year, so the forthcoming annual results should make for a good read. Moreover, the crystallisation of the VelosBio stake brings into focus the 'huge margin of safety' on offer in the rest of the portfolio.

The combined value of Arix's investments in four listed Nasdaq biotech companies, six private biotech companies and some other small investments are effectively in the price for only £65m after stripping out Arix's pro forma cash pile from its market capitalisation. That represents a 67 per cent discount to the estimated £197m carrying values of these holdings, a bargain basement valuation that completely ignores the possibility that Arix could hit the jackpot again. Entering the fourth quarter this year, Arix's portfolio companies were running 19 clinical trials and conducting over 20 pre-clinical trials.

Arix's new management team have set themselves an ambitious target of doubling NAV to £500m by 2023, up from £251m at 30 June 2020, and in the process generate an annual IRR target of 15 to 25 per cent.





Arix Bioscience investment portfolio (forecast estimates for 31 December 2020)

Investee company	Valuation	Value per share	Equity Interest
Amplyx	£5.2m	3.8p	3.0%
Artios	£19.1m	14.1p	12.4%
Atox Bio	£6.6m	4.9p	6.4%
Aura	£9.0m	6.6p	7.7%
Autolus (NASDAQ:AUTL)	£29.9m	22.0p	6.5%
Harpoon Therapeutics (NASDAQ:HARP)	£21.6m	15.9p	8.8%
Imara (Nasdaq:IMRA)	£30.0m	22.1p	9.0%
LogicBio Therapeutics (NASDAQ: LOGC)	£17.2m	12.7p	9.4%
Quench Bio	£8.9m	6.6p	24.6%
STipe Therapeutics	£2.1m	1.5p	14.8%
Legacy Assets	£6.8m	5.0p	na
Other Investments	£2.7m	2.0p	na
Portfolio Value	**£159.1m**	117.2p	-
Estimated unrealised gains on unlisted portfolio (second half of 2020)	**£38m**	28.0p	
Portfolio Value (31 December 2020 estimates)	**£197.2m**	145.3p	–
Cash at 30 June 2020	£44m	–	–
VelosBio cash proceeds (December 2020 at exchange rate of £1:US$1.33)	£139m	–	–
Estimated administration costs second half 2020	-£3.2m	–	–
Follow on investments (Arix and VelosBio in July 2020)	-£5.8m	–	–
Pro forma net cash estimate at 31 December 2020	**£174m**	128.2p	–
Total Investments	**£371m**	273.6p	–

Source: Arix Bioscience annual report, 2020 half-year accounts, London Stock Exchange and Nasdaq filings. Investor Chronicle estimates using latest open market prices of listed holdings and historic book values (30 June 2020) of unquoted private investments. Hardman and Co NAV estimate of 274p (7 December 2020).

A portfolio with promise

The new management team are well on their way to hitting their £500m NAV target. The thumping gain on the disposal of the VelosBio stake to Merck aside, another investee company, Artios Pharma, a leading DNA Damage Response (DDR) company that is developing a pipeline of precision medicines for the treatment of cancer, has just announced a major deal with Merck. Specifically, Artios has entered a three-year strategic research collaboration with the drug giant to discover and develop multiple precision oncology drugs.

As part of the agreement, Artios will receive a payment of US$30m in upfront and near-term payments, and Merck has the right to opt into exclusive development of compounds on up to eight targets. If Merck chooses to exercise the option, subject to double-digit option fees, Artios will be eligible to receive up to US$860m per target, in addition to up to double-digit royalty payments on net sales of each product commercialised by Merck. Artios also has opt-in rights for joint development and commercialisation with Merck for programmes aimed at identifying targets for precision oncology drug candidates. The collaboration agreement does not include Artios' lead programmes, Polø and ATR inhibitors, for which Artios will retain all rights.

It's easy to see why Merck is interested in Artios. Not only does the biotech company have a strong management team who played key roles in AstraZeneca's discovery of Lynparza, a treatment for advanced ovarian cancer, but Merck already has significant expertise and resources in the field of DDR. The collaboration strengthens its position in the field of cancer treatment as it develops a unique discovery platform of novel DNA repair nuclease inhibitors and targets, which will bring real impact to cancer patients.

It's good news for Arix's shareholders, too. That's because Arix has backed every one of Artios' funding rounds since the company was formed in December 2015. Arix is the largest shareholder in Artios, holding a 12.7 per cent fully diluted equity stake (14.6 per cent undiluted), having invested a total of £13.8m of the £90m Artios has raised to date. The stake was last valued in Arix's accounts at £19.1m (30 June 2020 half year-end). That's after it was raised in value by £3.9m following progress on Artios' lead programmes, Polø and ATR inhibitors, both of which are due to commence clinical developments in 2021.

The Merck/Artios collaboration will undoubtedly lead to another material uplift in the company's shareholding. Although Arix's board has not given any indication of the likely valuation uplift. **IP Group (IP.)**, an intellectual

property commercialisation company that also holds a stake in Artios, certainly has. IP Group has guided the market to expect a 45 to 136 per cent increase in its 11.7 per cent holding. The revaluation of Arix's stake in Artios will contribute to £38m of net unrealised gains analysts expect Arix to make on its unlisted portfolio in the second half of 2020, excluding the already disclosed £121m windfall gain on the VelosBio stake. It also helps explain why Arix's NAV per share is forecast to soar from 149p to 274p in the 12 months to 31 December 2020.

The other point worth noting is that, if only one of the eight targets in the Merck-Artios collaboration is successful, then it's highly likely that Merck will opt to buy Artios' shareholders out completely rather than making US$860m of milestone payments to the company. The fact that Arix made 12 times return on its capital invested in VelosBio highlights the bumper payday that could be on offer here. Indeed, the headline value of the potential milestones on all eight targets is US$7bn. There are several other clinical companies in Arix's portfolio that offer scope for material gains, too.

SIGNIFICANT CLINICAL AND OPERATIONAL PROGRESS MADE IN H1 2020

Company	Stage	Progress
imara	clinical	> Completed NASDAQ IPO, raising $86.5m > Reported positive initial Ph2a data in sickle cell disease and initiated Ph2b trials in SCD and beta-thalassemia
Autolus	clinical	> Reported positive Phase 1 data in adult ALL (AUTO1) and DLBCL (AUTO3) > Initiated pivotal trial in adult ALL (AUTO1)
HARPOON	clinical	> Reported positive Phase 1 data in prostate cancer (HPN424) > Initiated multiple myeloma study triggering $50m payment from AbbVie
VELOSBIO	clinical	> Completed oversubscribed Series B financing raising $137m at a 95% uplift to Series A > Continued to progress VLS-101 through a Ph1 clinical trial
amplyx	clinical	> Reported positive Phase 2 data in invasive candidiasis (APX001) > Initiated a Ph2 trial for the treatment of BK viremia in kidney transplant recipients (MAU868)
Atox Bio	clinical	> Completed pivotal Phase 3 NSTI trial and preparing to submit NDA in Q3 2020, following meeting with FDA
aura	clinical	> Updated positive Ph1b/2 data for AU-011 in choroidal melanoma; showing high tumour control and vision preservation even in high risk patients
QuenchBio	discovery	> Completed Series A financing and launched from stealth mode

ARIX

WITH NOTABLE CLINICAL MILESTONES EXPECTED IN H2 2020

Company	Value	Catalyst
Autolus	£43.5m	> Further Phase 1 data in DLBCL (AUTO3) and long term follow up Ph1 data in adult ALL (AUTO1)
imara	£34.8m	> Phase 2a sickle cell disease data (IMR-687)
HARPOON	£29.5m	> Phase 1 data in ovarian and pancreatic cancer (HPN536) > Phase 1 trial initiation in Small cell lung cancer (HPN328)
AVELOSBIO	£17.4m	> Phase 1 data in haematological cancers (VLS-101)
Atox Bio	£6.6m	> NDA submission in Q3; potential for reltecimod to be the first approved product for NSTI
amplyx	£5.2m	> Initial Phase 2 data in invasive aspergillosis and Candida auris (APX001)

ARIX

Clinical companies

Imara (£30m of NAV)

Imara is developing IMR-687 for the chronic treatment of sickle cell disease and beta-thalassemia. The company made strong operational and clinical progress in the first half of this year, completing a successful Nasdaq IPO (raising $86.5m). Arix invested a further $3m (£2.3m) in the IPO, retaining a total stake of 9 per cent that is currently worth £30m, making it Arix's largest holding (prior to the revaluation of the Artios stake).

Imara has already reported positive Phase 2a interim safety and efficacy data for IMR-687, demonstrating it is well tolerated as a monotherapy and in combination with hydroxurea, the current standard of care. Following these results, Imara has initiated Phase 2b clinical trials in both sickle cell disease and beta-thalassemia. In addition, the US Food & Drug Administration (FDA) has granted IMR-687 Orphan, Fast Track and Rare Paediatric Disease designations in patients with beta-thalassemia. The European Commission has granted it Orphan Drug designation for patients with sickle cell disease.

Imara expects to report top-line data from its ongoing Phase 2a clinical trial in sickle cell disease imminently and does not anticipate any delays due to the Covid-19 pandemic.

BROAD AND RICH CLINICAL PIPELINE PROVIDES MULTIPLE 'SHOTS ON GOAL'

Key
= stage completed
= stage in progress

Company	Programme	Indication	Discovery	Pre-clinical	Phase 1	Phase 2	Pivotal
AtaxBio	Reltecimod	NSTI					
Autolus	AUTO1	adult ALL					
amplyx	APX001	Invasive candidiasis					
Imara	IMR-687	Sickle cell disease					
Imara	IMR-687	TDT β-thalassemia					
Imara	IMR-687	NTDT β-thalassemia					
aura	AU-011	Choroidal melanoma					
amplyx	APX001	Candida auris					
amplyx	APX001	Invasive aspergillosis					
amplyx	MAU868	BKV-associated nephropathy					
amplyx	MAU868	BKV-associated haemorrhagic cystitis					
Harpoon	HPN424	Prostate cancer					
Harpoon	HP536	Ovarian and pancreatic cancer					
Harpoon	HPN217	Multiple myeloma					
Autolus	AUTO1	Paediatric ALL					
Autolus	AUTO3	DLBCL					
Autolus	AUTO4	Peripheral TCL					
Autolus	AUTO6	Neuroblastoma					
VELOSBIO	VLS-101	Haematological cancers					

Multiple undisclosed additional pre-clinical programmes

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WITH MULTIPLE VALUE CATALYSTS AHEAD...

Key
Oncology
Immunology
Genetic diseases
Anti-infectives

Company	Programme/Indication	H2 2020	2021	2022-3
Autolus	AUTO1 - adult ALL	Ph1 long-term follow up data	Pivotal data	Clinical data from multiple studies
	AUTO1NG - paediatric ALL	Ph 1 trial start		
	AUTO3 – diffuse large B-cell lymphoma	Ph1 data update		
	AUTO4 TRBC1+ peripheral TCL		Ph 1 interim data	
	AUTO6NG solid tumours*		Ph1 trial start	
	AUTO7 - prostate cancer		Ph 1 trial start	
	AUTO8 - multiple myeloma	Ph1 trial start		
Imara	IMR-687 - sickle cell disease	Ph2a data	Ph2b interim data	
	IMR-687 - NTDT beta-thalassemia		Ph2b interim data	
	IMR-687 - TDT beta-thalassemia		Ph2b interim data	
Harpoon	HPN536 - ovarian and pancreatic cancer	Ph1 interim data		New trial initiations
	HPN424 - prostate cancer	Initiate expansion cohort		
	HPN328 - small cell lung cancer	Initiate Ph1 trial		
VelosBio	VLS-101- haematological cancer	Ph1 data		
Atax Bio	Reltecimod - necrotising soft tissue infection (NSTI)	NDA submission		Progress discovery and preclinical programmes
Aura	AU-011- choroidal melanoma (SC)	Initiate Ph2 trial		
	AU-011- choroidal melanoma (IVT)		Updated Ph2 data	
Amplyx	APX001 – invasive aspergillosis	Ph2 interim data		
	APX001 - candida auris	Ph2 interim data		
	APX001 – invasive candidiasis	✔ Ph2 data	Ph3 initiation	
	MAU868 – BKV-associated nephropathy	✔ Ph2 initiation	Ph2 early data (cohort 1)	
LogicBio	LB-001 MMA		Initiate Ph1 trial	
Artios	ATR inhibitor (ART0380)	IND submission	Initiate Ph1 trial	

*neuroblastoma; Melanoma;Osteosarcoma; SCLC

ARIX

Autolus Therapeutics (£29.9m of NAV)
Nasdaq-quoted Autolus is developing next generation programmed T cell therapies for the treatment of cancer. The company has reported encouraging Phase 1 data in its AUTO1 programme for the treatment of adults with acute lymphoblastic leukaemia, showing a favourable safety profile, and high level of clinical activity. These positive results have enabled Autolus to progress AUTO1 to a pivotal Phase 1b/2 trial. The aim is to have full data by the end of 2021, with potential Biologics License Application filing targeted for 2022.

Autolus has also reported positive data from its second later stage programme, AUTO3, in diffuse large B-cell lymphoma which showed encouraging signs of durable complete responses and a strong safety profile, supporting potential for outpatient use. As an outpatient therapy, AUTO3 should be able to reach the total addressable relapsed refractory diffuse large B-cell lymphoma patient population, giving it a strong competitive advantage.

Autolus is also initiating new Phase 1 clinical trials in paediatric acute lymphoblastic leukaemia and multiple myeloma, thus creating potential for further positive news flow. The company had US$212m of cash at its half-year-end, having completed a US$80m fundraise with institutional investors, thus supporting a cash runway until early 2022.

Harpoon Therapeutics (£21.6m of NAV)
Nasdaq-quoted Harpoon is a clinical-stage immunotherapy company developing a novel class of T cell engagers that harness the power of the body's immune system to treat patients suffering from cancer and other diseases.

The company has presented encouraging interim Phase 1 data for its lead programme, HPN424, in patients with metastatic castration-resistant prostate cancer. Initial safety data showed that HPN424 is generally well tolerated, and early signals of clinical activity were suggested by multiple patients remaining on study for more than 24 weeks. Harpoon has also provided a positive update on its second programme, HPN536, for the treatment of mesothelin-expressing tumours.

In addition, the company announced the dosing of the first patient with HPN217 in a Phase 1/2 clinical trial focused on relapsed/refractory multiple myeloma. HPN217 targets B-cell maturation antigen (BCMA), a well-validated target expressed on multiple myeloma cells, and is Harpoon's third product candidate to enter the clinic. The clinical trial is covered by a global development and

option agreement with **AbbVie (ABBV:NSQ)**, the US$189bn market capitalisation research-based biopharmaceutical company. Dosing of the first patient triggered a US$50m milestone payment, lifting Harpoon's cash pile to US$171m, a sum that should see it through to 2022.

Other products in development include, HPN328, for the treatment of delta-like ligand-expressing tumours including small cell lung cancer.

Aura Biosciences (£9m of NAV)

Aura Biosciences is a clinical-stage biopharmaceutical company that is developing a new class of oncology therapies based on the combination of a viral like particle with high affinity to tumour cells coupled to a laser-activatable dye. Aura's drug binds to malignant tumour cells with high specificity and once the dye is activated by a short laser treatment there is an acute tumour cell necrosis.

Aura has presented updated clinical data from its ongoing Phase 1b/2 clinical trial evaluating the safety and efficacy of light-activated AU-011, Aura's lead product candidate for the first line treatment of primary choroidal melanoma, a rare and aggressive type of eye cancer. This open-label, multicentre trial is designed to investigate single and multiple ascending doses of light-activated AU-011 in adults with clinically diagnosed primary choroidal melanoma.

The clinical data showed that AU-011 has a favourable preliminary safety profile, controls tumour growth rate, and preserves vision in the vast majority of patients, including those at high risk for vision loss with tumours close to the fovea and optic nerve. In the Phase 2 part of this study the company has enrolled patients with documented tumour growth prior to treatment, constituting the patient population targeted in a potential Phase 3 study.

Aura is also planning to initiate a Phase 2 clinical trial evaluating suprachoroidal delivery of AU-011 in patients with choroidal melanoma. Aura believes that delivering AU-011 this way has the potential to allow for the treatment of a wider range of tumour sizes (small- to medium-sized tumours), and a larger number of patients.

Arix holds a 7.7 per cent stake in Aura that was valued at £9m (1.2 times invested capital) based on a US$40m Series D funding round last year.

"Arix holds a 7.7 per cent stake in Aura that was valued at £9m"

Atox Bio (£6.6m of NAV)
Atox Bio, a late stage clinical company that is developing immunotherapies for critically ill patients, has announced results from its Phase 3 clinical trial for patients with Necrotizing Soft Tissue Infection (NSTI), a condition also known as Flesh Eating Disease. This is a potentially life-threatening condition with significant morbidity and long-term mortality that has no FDA-approved treatment.

As this was the first pivotal study ever performed in NSTI, a necrotizing infection clinical composite endpoint (NICCE) was designed to assess both the local and systemic components of NSTI and included the measurement of resolution of organ dysfunction/failure. Atox has reviewed the top line results of this trial with the FDA and, based on these discussions, plans to submit a New Drug Application under the Accelerated Approval Pathway. This is a major milestone and takes Atox one step closer to a potential treatment option for patients with this debilitating disease.

Arix's 6.4 per cent fully diluted stake is valued at £6.4m (0.9 times invested capital) following the last funding round in 2017.

Amplyx (£5.2m of NAV)
Amplyx is a clinical stage biopharmaceutical company developing innovative therapies for debilitating and life-threatening diseases in patients with compromised immune systems. It has announced positive top-line data following the completion of its Phase II clinical trial of fosmanogepix as a first-line treatment for patients with invasive fungal infections caused by Candida. The trial met its primary efficacy endpoint, demonstrating a treatment success rate of 80 per cent. Importantly, patients were able to easily transition from intravenous to oral formulations during their treatment.

Amplyx has also announced that the first patient has been dosed in its Phase II clinical trial evaluating the efficacy and safety of MAU868 for the treatment of BK viremia in kidney transplant recipients. MAU868 is a novel, human monoclonal antibody that potently neutralises all four major genotypes of BK virus, for which there are currently no treatment options. Dosing the first patient represents a key milestone in Amplyx's development programme, taking the business one step closer to bringing a first-in-class treatment to the vulnerable patients at risk for this devastating transplant complication.

The Covid-19 pandemic has highlighted how devastating infectious diseases can be and reinforces the need for new and novel anti-infective agents capable of combating

"Dosing the first patient represents a key milestone in Amplyx's development programme"

emerging threats. Amplyx closed a US$53m funding round earlier this year backed by Pfizer (NYSE:PFE).

Pre-clinical companies

LogicBio Therapeutics (£17.2m of NAV)
Nasdaq-quoted LogicBio is a Massachusetts-based genome editing company, dedicated to extending the reach of genetic medicine with pioneering targeted delivery platforms. The FDA has cleared its Investigational New Drug (IND) application for LB-001 for the treatment of methylmalonic acidemia in paediatric patients. This is an important step forward for LogicBio, enabling the company to move LB-001 towards clinical development. LogicBio expects to initiate the Phase 1/2 clinical trial next year, enrolling the first patient in early 2021. LogicBio is also developing a Next Generation Capsid platform for use in gene editing and gene therapies.

Arix invested US$3m in LogicBio's IPO in October and retains a stake of 9.4 per cent, worth £17.2m, in the company.

Quench Bio (£8.9m of NAV)
Quench Bio is a biotechnology company leveraging new insights into gasdermin biology and innate immunity to develop medicines for severe inflammatory diseases. Quench's lead compounds target and inhibit the pore-forming protein Gasdermin D, a central player in both pyroptosis and NETosis pathways that mediates the release of inflammatory cytokines, alarmins, DNA and NETs. This is an unproven therapeutic area and there is no data for pre-clinical assets.

Quench Bio launched in January 2020 with US$50m Series A funding from life science investors including Atlas Venture, Arix, RA Capital and AbbVie Ventures. Arix retains a 24.6 per cent stake valued at £8.9m (1.4 times invested capital) based on the funding round, highlighting a trend for the company to take larger stakes in portfolio companies.

It also highlights how Arix's academic partnerships with Max Planck in Germany and Fred Hutch in Seattle are beginning to bear fruit. Quench Bio was incubated from Max Planck.

"Arix's academic partnerships with Max Planck in Germany and Fred Hutch in Seattle are beginning to bear fruit"

Meet the management

■ Arix's board is led by **Naseem Amin** who joined the company in December 2019 and became chairman in April this year when the board was restructured. He has broad life sciences experience in both the US and Europe, having held senior positions in major healthcare businesses in research & development (R&D), business development, and in venture capital. Mr Amin has been a Venture Partner at Advent Life Sciences, Chief Scientific Officer of Smith & Nephew (SN.) and led Business Development at Biogen and at Genzyme Therapeutics, where he initiated and executed a number of acquisitions and partnerships. He started his career at Baxter Healthcare where he held executive roles in marketing, product development and clinical research.

■ Finance director **Marcus Karia** joined Arix soon after its inception in 2016 and sits on the board of Arix Capital Management, the company's regulated investment management subsidiary. After qualifying as a Chartered Accountant with Pricewaterhouse-Coopers, he held positions at LDC, the private equity arm of Lloyds Bank, and Bridges Fund Management, a leading impact investor. He holds a first class degree in Economics and is a member of the Institute of Chartered Accountants in England and Wales.

■ **John Cassidy** is a Principal in Arix's investment team based at the company's London office. He joined the company in 2018 and has held board observer roles for investee companies Imara, Quench Bio, STipe Therapeutics and Depixus. He previously worked at L.E.K. Consulting LLP, as a Consultant in the Life Sciences practice, responsible for strategy and transaction support for pharma, biotech and private equity clients. He has a first-class degree in Biochemistry from Imperial College London and a PhD in Neuroscience from University College.

■ Managing director **Jonathan Tobin** specialises in biotechnology investments. He currently sits on the boards of several Arix portfolio companies: Artios Pharma, Atox Bio, STipe Therapeutics, Quench Bio, VelosBio and Depixus. He is also responsible for managing the other members of the investment team. Prior to joining Arix, he spent five years at Touchstone Innovations (formerly Imperial Innovations).

■ Chief operating officer and General Counsel **Robert Lyne** has over 10 years' experience working with high growth technology companies. He began his career as a lawyer at international law firm Bird & Bird LLP in London and has advised on over 60 venture capital financings in Europe and North America as well as multiple trade exits and IPOs. Mr Lyne Joined Arix in 2017 from Touchstone Innovations where he worked with a number of venture-backed biotechnology companies, both private and public.

■ Managing director **Christian Schetter** has over 20 years' experience in the life science industry. He is executive chairman of STipe Therapeutics and non-executive director of Aura Biosciences, both Arix portfolio companies. Prior to joining Arix he was chief executive of Rigontec GmbH, a German Biotech start-up company in the immune oncology space, and President and chief executive of Neovii Biotech, previously Fresenius Biotech. He was instrumental in selling Fresenius Biotech to the Neopharm Group, Israel, to form Neovii Biotech and positioning it as a successful standalone business. Before entering the life science industry, Mr Schetter was successfully performing academic research at the Max Planck Institute in Martinsried, Germany, one of Arix's academic partners.

Shareholders

Arix's top nine shareholders hold 61 per cent of the 135.7m shares in issue. Importantly, industry partners Fosun, Takeda, Ipsen and UCB control 22.8 per cent of the shares, aligning their strategic partnerships with the financial prosperity of Arix.

Although the official bid-offer spread may seem wide, it's possible to deal well within the spread and in decent bargain sizes. Trades as large as 80,000 shares passed through the market after Artios announced its collaboration agreement with Merck earlier this month.

Admittedly, the new board of directors have minimal shareholdings as one would expect given the former board only departed in April. However, they are clearly making their mark for the benefit of all shareholders, announcing two major deals with Merck in as many months.

Arix Bioscience significant shareholders

Shareholder	Ordinary shares (m)	Percentage (%)
Acacia Investment Research	25.8	19.1
Fosun International	11.1	8.2
Ruffer	8.2	6.0
Takeda Ventures	7.5	5.5
Christopher Chipperton (including restricted shares)	6.9	5.2
Ipsen	6.7	4.9
Christopher Evans (including restricted shares)	6.4	4.7
UCB	5.6	4.2
Wicklow Family Office	4.6	3.4
Total		**61.2**

Source: Arix Bioscience annual report, London Stock Exchange regulatory filings

Peer group comparison

There are a limited number of listed vehicles specialising in early stage life science companies, but perhaps the closest comparable to Arix is Syncona (SYNC), a company that is at a more mature stage of its development, having recently exited Blue Earth Diagnostics for US$476m, realising a 10-fold return on its original investment. Cash now accounts for half of Syncona's NAV and the shares trade at a 27 per cent premium to book value as investors bank on further lucrative realisations being made. Interestingly, Syncona holds a 27 per cent stake in Autolus Therapeutics, one of Arix's investee companies, an investment that accounts for 10 per cent of Syncona's NAV.

By comparison Arix is trading on a 36 per cent discount to analysts' 274p spot estimate of NAV even though net cash post the VelosBio disposal will account for 73 per cent of its market capitalisation. Arix's shares are also trading on a share price discount to NAV that is 21 percentage points cheaper than larger rival IP Group (IPO) even though that company also holds a valuable stake in

Artios. IP Group's net cash pile accounts for 15 per cent of its NAV, whereas Arix's pro forma net funds represent 47 per cent of NAV, thus highlighting an even greater undervaluation of Arix's portfolio companies. There is certainly a case to be made that Arix should be trading far closer to NAV given that it is now driving significant gains for shareholders. It certainly shouldn't be trading below the 14 per cent average share price discount of its peer group.

Arix Bioscience peer group

Company	Market capitalisation	Share price (p)	Latest NAV (p)	Discount or premium to NAV	Net cash
Allied Minds	£93m	38.5p	65p	-41%	US$29m
Arix Bioscience	£239m	177p	274p	-36%	£174m
Draper Esprit	£884m	636p	600p	6%	£62m
IP Group	£983m	92.7p	109p	-15%	£170m
Mercia Asset Management	£114m	26.0p	34p	-24%	£25m
Syncona	£1,711m	257.5p	203p	27%	£645m

Source: London Stock Exchange RNS. Individual company annual accounts and latest half-year accounts. Arix Bioscience NAV based on fair valuations of unlisted portfolio companies, open market valuations and proforma net cash estimates.

Target price

Having taken all the risk factors below into consideration, the fact that Arix's cash pile significantly de-risks the investment case, and the company has multiple shots at goal to uncover the next VelosBio in its portfolio, it's reasonable to expect the share price to start to play catch up with the growth in NAV the company is set to report.

Indeed, although analysts are predicting NAV per share will rise from 149p to 274p in 2020, the share price discount has widened from 26 per cent at the start of the year to 36 per cent now. This is anomalous. Furthermore, even if the share price discount to NAV narrows to the peer group average of 14 per cent, in line with my initial target price of 235p, Arix's portfolio (ex-cash) would still be valued on a 27 per cent discount to its underlying value. **Strong buy.**

Risk assessment
Of course, there are risks to consider before making any investment including:

■ **Venture growth capital for later stage companies.** Arix's core portfolio comprises of investments in companies that are raising additional capital to accelerate their growth – typically Series B funding rounds and upwards. The majority are clinical stage companies, which have begun testing their treatments in patients. These companies will typically have at least one live clinical trial, in either Phase 1, Phase 2 or Phase 3, and have raised significant capital, supported by a strong syndicate of leading venture investors.

Although VelosBio highlights the gains that can be made, there is no guarantee that Arix will be successful in the future. Negative clinical trial read outs may reduce the value of a portfolio company and impact Arix's ability to generate positive cash flows from realisations.

To mitigate these risks, Arix has an experienced team responsible for identifying and developing portfolio companies, resulting in a high standard of due diligence before the commitment of any capital. Post-investment, Arix typically has representatives on the investee company's board of directors, ensuring it is fully aware of business developments, and allowing for mitigation of possible issues as they arise. Arix also funds a range of portfolio companies and continues to develop its portfolio across a range of therapeutic areas. Its diverse portfolio means that Arix's financial performance is not overly reliant on any one business.

■ **Venture capital for early stage companies.** Some of Arix's investments are in the early stages of funding – typically seed or Series A funding. Companies within its discovery portfolio are start-ups in the initial stages of research and development. They may have made promising life science discoveries and secured initial funding to test and validate the science, but these companies are in the "prove" phase and are therefore higher risk.

■ **Legacy portfolio.** Arix still holds £6.8m of legacy investments which are being wound down. There is potential for write-downs in the value of these holdings if they fail to realise their carry value. However, they now only account for 2 per cent of Arix's pro forma NAV, thus mitigating risk.

■ Adverse market conditions may impact Arix's operational

model. An economic downturn may reduce opportunities for Arix to realise capital from portfolio companies, impacting cash flow and financial performance if portfolio valuations are reduced. The availability of capital for any external fundraising by Arix or its portfolio companies may also be affected.

To mitigate this risk, Arix's strategy is to deploy capital into innovative businesses which have unique, high impact outcomes. Such businesses are less susceptible to macroeconomic cycles. In addition, Arix has funded portfolio companies across a range of geographies, including the UK, USA, Europe, Israel and Australia. As such, it is not overly exposed to a downturn or market shock in a single geography.

■ Arix's success is predicated on the quality of its investment decisions. Arix's investment team have strong scientific backgrounds and are experienced life sciences investors. The company has a market-appropriate remuneration scheme for its senior employees, and has three management members (making up the Executive Committee) performing active day-to-day roles who are able to provide emergency cover for each other over a short period.

■ Brexit. Potential Brexit risks include a depressed UK capital market that does not support the raising of capital or a reduction in government-funded research in biotech, leading to fewer investment opportunities. Neither are issues for Arix. That's because the company retains a substantial capital buffer of free cash, and its portfolio has a broad geographic spread and has limited exposure to the UK capital market and government policy. As such, its financial performance is not overly reliant on the UK market.

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