EDISON

Arix Bioscience

Initiation of coverage

Venture capital investing for public investors

Pharma & biotech

We are initiating coverage on Arix Bioscience following its February 2017 IPO that raised £113m. Arix is a new transatlantic life sciences portfolio company drawing from managerial expertise at all levels of the pharma industry to engage in opportunities ranging from seed investing to public equity. It draws on a network of deal sources established through agreements with academia, life science accelerators, other funds, and through partnerships with big pharma. The company is trading at a modest 11% premium to our initial asset valuation of £172m or 179p/share.

Year end	Revenue (£m)	PBT* (£m)	EPS* (p)	DPS (p)	P/E (x)	Yield (%)
03/16	0.0	(2.2)	(21.5)	0.0	N/A	N/A
03/17e	5.3	(4.5)	(4.7)	0.0	N/A	N/A
03/18e	2.1	(0.5)	(0.5)	0.0	N/A	N/A
03/19e	2.1	(1.7)	(1.6)	0.0	N/A	N/A

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

Partnerships on three levels of development

Arix's partnered sourcing network is comprised of three levels. First, it has signed first-look and first-investment agreements with seven universities, allowing access to invention stage projects. Second, it has agreements with the biopharma accelerators BioMotiv and the Lead Discovery Center to allow participation in seed stage companies. Third, Arix has established partnerships with UCB and Takeda to share assets and jointly fund the creation of new companies.

Management: Experience on multiple levels

Management's experience spans the breadth of healthcare investing. As the former CFO of Novartis Pharma and Amgen, Chairman Jonathan Peacock brings strategy experience from the highest level. CEO Joe Anderson is a seasoned life science venture capitalist with experience as a partner at Abingworth and director at Algeta and Amarin. Deputy Chairman Chris Evans is a serial entrepreneur involved in the founding of 11 companies, 10 of which have gone public or been acquired.

Portfolio: Diversified across methods and indications

The company's current portfolio of five direct investments includes: Autolus, CAR-Ts for multiple myeloma and T-cell cancers; Depixus, a single molecule sequencing technology; Optikira, developing the first small molecule for retinitis pigmentosa; Artios, targeting DNA damage response in BRCA mutant cancers; and Verona, developing a combined bronchodilator/anti-inflammatory treatment for COPD.

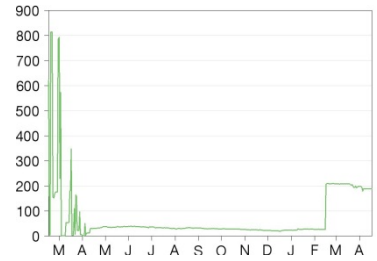
Valuation: Asset value 99% premium over price paid

Using a risk-adjusted NPV analysis, we arrive at a valuation of Arix's assets (£133.2m cash, £27.3m portfolio, £11.4m other assets) of £172m or 179p/share. The value of the portfolio is nearly 100% above the cash spent to date (£13.7m). The stock trades at an 11% premium to this value, which is modest considering the strength of the company's management and platform, as well as the quality of the deals. We expect to update our valuation with the announcement of new deals.

18 April 2017

Price	**187.5p**
Market cap	**£180m**
	US$1.23/£
Estimated net cash (£m) at 30 September 2016 + IPO	133.2
Shares in issue	96.1m
Free float	68.5%
Code	ARIX
Primary exchange	LSE
Secondary exchange	N/A

Share price performance



%	1m	3m	12m
Abs	(9.7)	N/A	N/A
Rel (local)	(10.5)	N/A	N/A
52-week high/low	209.0p	177.5p	

Business description

Arix Bioscience is a life sciences portfolio company specialising in early-stage therapeutic and diagnostic companies. The portfolio currently includes five direct investments (Depixus, Artios, OptiKira, Autolus, and Verona) and 16 indirect investments both through its stake in BioMotiv and through its subsidiary Arthurian Life Sciences, the portfolio manager for the Wales Life Sciences Investment Fund.

Next events

New deal sourcing	Ongoing
FY17 results	Spring 2017

Analysts

Nathaniel Calloway +1 646 653 7036

Maxim Jacobs +1 646 653 7027

healthcare@edisongroup.com

Edison profile page

Investment summary

Company description: A publicly traded VC with strategy

Arix Bioscience is a portfolio company founded in late 2015 focused on identifying promising early-stage assets in the biopharma, medical devices and diagnostics industry. The company has a multi-faceted approach to the sourcing of new investments and it has established relationships at all levels of the life sciences industry to find new deals. The company has exclusive first-look and first-investment rights with seven leading universities in Europe and Australia, as well as partnerships with the biopharma accelerators BioMotiv (associated with the Harrington Project), and The Lead Discovery Center (the drug development accelerator of the Max Planck Society). Coupled with this are agreements with both UCB and Takeda to co-develop companies. Arix currently has direct investments in five companies across a wide range of indications and technology, from next-generation sequencing, to CAR-T, to orphan drug development. Additionally, the company has indirect investments in 16 companies through its equity in the BioMotiv accelerator and through its subsidiary Arthurian Life Science, the manager of the Wales Life Sciences Investment Fund (£50m initial investment).

Valuation: Deals almost 100% over purchase price

We arrive at a valuation of Arix's assets (investments and cash) of £172m or 179p per share. Arix is currently trading at a very modest 11% premium to our asset valuation (28% premium to estimated book value), considering management's industry experience and high quality network of deal sources. We value Arix's portfolio of investments at £27.3m, 99% more than the total cash deployed to date (£13.7m), with additional value available in future tranches. We expect to update our valuation as more of the estimated £133m in cash is deployed with new investments.

Financials: Ample cash for new deals

The company recently completed its IPO in February 2017 raising approximately £113m gross (54.4m shares at 207p) for an estimated cash balance of £133m (IPO plus September 2016 cash, less subsequent deals). The company has £27.5m committed to future funding tranches of portfolio companies contingent on milestones and £120m in investment goals for academic partnerships. We predict a revenue stream in single-digit millions from Arthurian Life Sciences asset management fees (2.5% plus 20% of performance on £50m initial investment) in the future. Operating expenses for H117 were £4.3m in cash and £9.3m in stock-based compensation.

Sensitivities: Diversified clinical and financial risk

Arix's current portfolio companies are all high risk because of the hurdles of both bringing products to market from such early stages as well as the risks of meeting significant future financing needs. The majority of programmes in the portfolio have mechanisms of action that have never been tested clinically. All but one company (OptiKira) are developing products for markets with significant pre-existing competition. All of the portfolio companies will require significant future investment from other sources to bring products to market. Arix may participate in these future financings, but the success of these companies is reliant on their ability to attract other investors. Arix's business model is to limit these risks by sourcing a large number of high quality companies and limiting its exposure to any single programme, but it is subject to the broader biopharma market, which may prove inhospitable in the future. Arix follows a permanent capital model and is not necessarily bound to exit timelines, allowing it potentially to weather market fluctuations. However, given the limited history of the fund, management's reactions to different market conditions remain to be seen.

Company description: More than a vehicle, a method

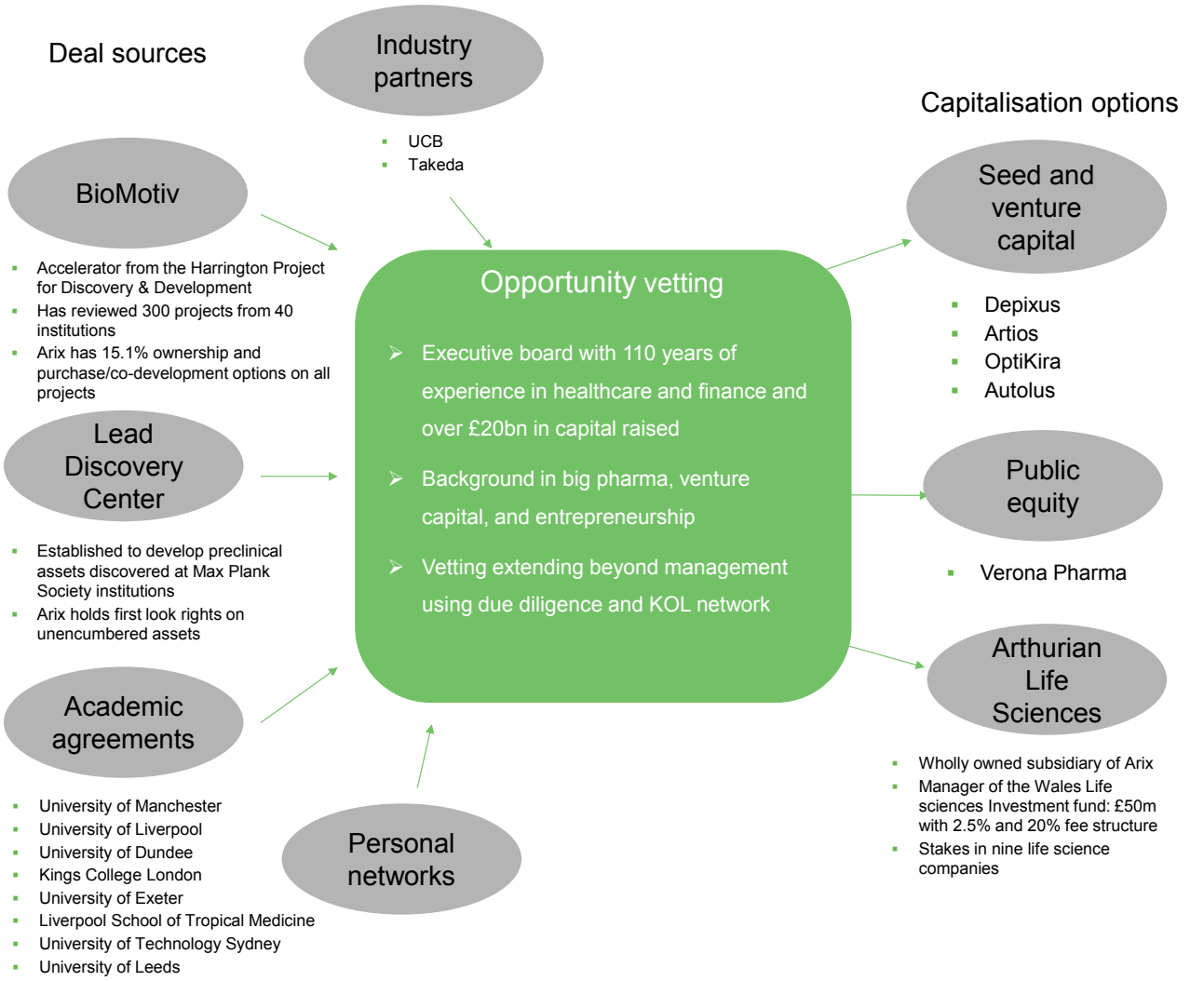
The goal of Arix Bioscience as stated by its founders is to provide investors access to the early stage investment opportunities in pharma and biotech that are typically reserved for private investors such as venture capital funds. In a short time, Arix has established itself as a significant player in the space and since its first investment in March 2016 it has taken positions in five pharmaceutical and diagnostic developers as well as indirect investments in 16 additional companies (Exhibit 1). However beyond this basket of companies, Arix is an opportunity to invest in the highly integrated strategy it has presented to source and capitalise new investments and the managerial expertise used in vetting and developing these companies. Arix has cultured a broad network of deal sources from which it has contractual access to new opportunities. These sources are combined with management's extensive personal network developed over 110 combined years of experience in healthcare and finance. Management intends to be actively involved with the portfolio and obtain board seats to leverage their expertise in the development of these companies. As of March 2017, the company had examined 578 opportunities. The vetting process is highly selective as the fund follows a permanent capital model and therefore must be comfortable with long holding periods. The company recently listed on the London Stock Exchange, raising £113m (54.4m shares at 207p), bringing the total capital raised by the company to approximately £165m. The company has announced that it intends to deploy this capital over the next 18 months in new investments, which management has communicated to us should constitute 10-15 investments.

Exhibit 1: Arix healthcare investments

Company	Stake	Stage	Product description
Direct Investments			
Artios Pharma	6.5%	Lead generation	Oncology drugs targeting the DNA damage response
Autolus	12.3%	In vitro	Multi-targeted CAR-T technology for hematologic cancer
Depixus	13.5%	Proof of concept	Single molecule sequencing technology that includes epigenetic data
OptiKira*	31.9%	Preclinical	Drugs targeting IRE1α and the unfolded protein response for multiple indications
Verona Pharma**	10.6%	Phase II	Developing PDE-3/4 inhibitor for the treatment of COPD
Indirect Investments			
BioMotiv* **	**15.1%**		
Allinaire Therapeutics		Lead generation	Antibody based therapeutics for COPD and other respiratory diseases
Dual Therapeutics		Lead generation	Small molecule inhibitors of PP2A for cancer
Kodosil Bio		In vitro	IL-22 antibody for inflammatory diseases
Nynex Therapeutics		Early testing	Cancer treatment targeting deubiquitinase USP9X
Orca Pharmaceuticals		Lead generation	Oral inhibitors of RORγ for inflammatory disease
Sapvax		Lead generation	Peptide based cancer vaccines targeting NY-ESO-1
Sujana Bio		Lead generation	Antibody and small molecule inhibitors of Mac-1 for inflammatory disease
Z53 Therapeutics		Lead generation	Zinc metallochaperones as treatments for mutant p53 cancers
Arthurian Life Science* **	**100%**		
Apitope International		Phase II	Peptide therapeutics for multiple sclerosis and Graves' disease
CeQur		CE marked	Continuous insulin delivery system
Interrad Medical		Marketed	Catheter securement device without the need for adhesive or sutures
MedaPhor		Marketed	Ultrasound training simulators
Simbec Orion		In operation	Full service CRO
Proton Partners International		In operation	Only provider of proton beam therapy for cancer in the UK and UAE
ReNeuron		Phase II	Stem cell therapies for stroke and other disorders
Sphere Medical		Marketed	Proxima arterial blood gas analyser

Source: Arix Bioscience. Notes: *OptiKira also held indirectly as part of the BioMotiv portfolio. **Includes 4.1% of Verona held through Arthurian. ***Precise portfolio allocations for BioMotiv and Arthurian Life Science are undisclosed; stakes represent Arix's share of the subsidiary.
IRE1α=inositol-requiring enzyme 1α, PDE=phosphodiesterase, COPD=chronic obstructive pulmonary disease, PP2A=protein phosphatase 2A, USP9X=ubiquitin specific protease 9X, RORγ= RAR-related orphan receptor γ, NY-ESO-1=cancer testis antigen 1B, Mac-1=macrophage-1 antigen, CRO=contract research organisation.

Exhibit 2: Arix operational scheme



Source: Arix Bioscience

Deal sourcing: Casting a wide net

Unlike many investment funds, Arix has made a unique effort to characterise to investors the channels through which it sources new opportunities. The personal networks of management have been fruitful in identifying deals, given management's extensive professional experience in the industry. These networks include both relationships within the pharmaceutical industry as well as with other investment funds aiming to capitalise the next round of development. However, beyond this, the company has put significant effort into establishing a broad array of contractual relationships in the healthcare development space to ensure early access to opportunities. These agreements can be roughly divided into three categories, spanning the development arc: academic development options, relationships with research accelerators, and industry partnerships.

Academic options

The company has entered into agreements with seven academic institutions, predominantly in the UK, which will grant it the rights to review all unencumbered licensing opportunities before others ("first look" rights). Additionally in a majority of these agreements, the company also has rights to

make the first offer ("first investment" rights). Multiple public companies have previously been sourced from technology at these universities including the several start-ups founded by Deputy Chairman Chris Evans: Chiroscience (University of Exeter), ReNeuron (King's College London), and Cyclacel (University of Dundee). Although these agreements were entered into between late 2015 and 2016, they were contingent on the company raising in excess of £100m, and we can now assume following the recent offering that they are in full effect and we expect to see the fruit of these arrangements in due time. Some of these agreements stipulate large quantities of capital expected to be used for future licences: £25m for University of Dundee, £50m for University of Manchester, and £15m for University of Exeter. It should be noted however, that these amounts are discretionary and Arix is under no commitment, although the status of these agreements may be jeopardised if it looks unlikely that these goals will be met.

Exhibit 3: Academic rights

Institution	First look	First investment
University of Manchester	Yes	Yes
University of Liverpool	Yes	Yes
University of Dundee	Yes	Yes
King's College London*	Yes	No
University of Exeter	Yes	No
Liverpool School of Tropical Medicine	Yes	Yes
University of Technology Sydney	Yes	Yes

Source: Arix Bioscience. Notes: *Term expired; being renegotiated.

Research accelerators: BioMotiv and Lead Discovery Center

Research accelerators provide a useful platform to invest in companies which, although in the early stages of development, have made some development progress and are actively seeking financing from multiple sources. Moreover, the accelerator acts as an additional layer in the vetting and screening process, allowing Arix to effectively source a much wider array of technology than can be accomplished internally. The company has agreements in place with two accelerators: BioMotiv and the Lead Discovery Center.

BioMotiv is a for-profit accelerator associated with the Harrington Project for Discovery and Development, a nationwide US translational medicine development programme managed by the University Hospitals system of Cleveland, Ohio. The Harrington Project has screened over 1,700 programmes at leading academic institutions across the United States and currently funds approximately 50 drug researchers across the disease spectrum. BioMotiv then selects from the successful programmes with commercial potential and is currently financing eight companies through lead identification and early preclinical stages. Arix acquired a 15.1% stake in BioMotiv at the end of 2015 for a commitment of $25m (of which $3.75m has been paid). Arix currently has two seats on the BioMotiv advisory board and David U'Prichard, the chairman of the BioMotiv scientific advisory board was given a positon as an Independent Director on the Arix board. As part of the partnership between the two companies, Arix has the option to enter into co-investment agreements with any existing BioMotiv portfolio company and then to present offers on these companies when BioMotiv divests. Arix has already exercised the co-investment option with BioMotiv company, OptiKira; Arix maintains a 31.9% direct stake in OptiKira in addition to the portion associated with equity in BioMotiv.

Arix also has a relationship with the Lead Discovery Center (LDC), a life science accelerator founded to commercialise medical technology from the institutions of the Max Planck Society. The Max Planck Society (aka Max-Planck-Gesellschaft zur Förderung der Wissenschaften e. V., abbreviated MPG) is the leading German research organisation and one of the most prestigious academic societies in the world, financing research across 83 institutions and over 5,000 scientists. The goal of the LDC is to progress programmes from these institutions and others with potential commercial viability through the lead selection process and to provide guidance towards the

licensing or spin-out of these programmes for further development. LDC is currently financing 22 drug development programmes and has completed six, of which two have been licensed. Other industry partners of LDC include Boehringer Ingelheim, Bayer Pharma, AstraZeneca, Roche, Daiichi Sankyo, Johnson & Johnson, Qurient, and Infinity Pharmaceuticals. Arix has secured a "first look" agreement with the organisation, in which Arix will be presented with any licensing or partnering deals and is entitled to subscribe for 25-50% of any equity financing. As part of the agreement Arix earmarked €30m for future investment in LDC companies and it is expected to finance at least six projects (at between €3m and €5m) during the five-year term of the partnership (starting May 2016). Additionally, the agreement may be terminated if at least €2m is not funded in the first year or €6m in the first two. The first deal signed through LDC was announced in March 2017 and set up a collaboration between Arix, LDC, Max Plank, and the University of Leeds to develop new drugs for metabolic diseases. The exact details of the deal, such as the amount of cash committed by Arix, have not been disclosed.

Industry partnerships: UCB and Takeda

The company has entered into two strategic partnerships with major pharmaceutical companies. In November 2016, Arix signed an agreement with UCB to collaborate on the sourcing, screening, and vetting of opportunities within the fields on immunology, neurology, and bone. The companies agreed to jointly build companies in these areas of interest. UCB has a current stake of 4% and has been an Arix shareholder since before the recent IPO.

The company also signed a similar agreement with the venture capital arm of Takeda Pharmaceuticals (Takeda Ventures) in March 2017. The companies agreed to jointly build new ventures in the areas of oncology and gastroenterology. Takeda Ventures currently has a portfolio of 13 companies and has exited 12 companies, including names such as Xenon Pharmaceuticals, Adamas Pharmaceuticals, Naurex, and Fate Therapeutics. Takeda announced concurrently with the partnership that it participated in the Arix IPO and holds 5% of the company.

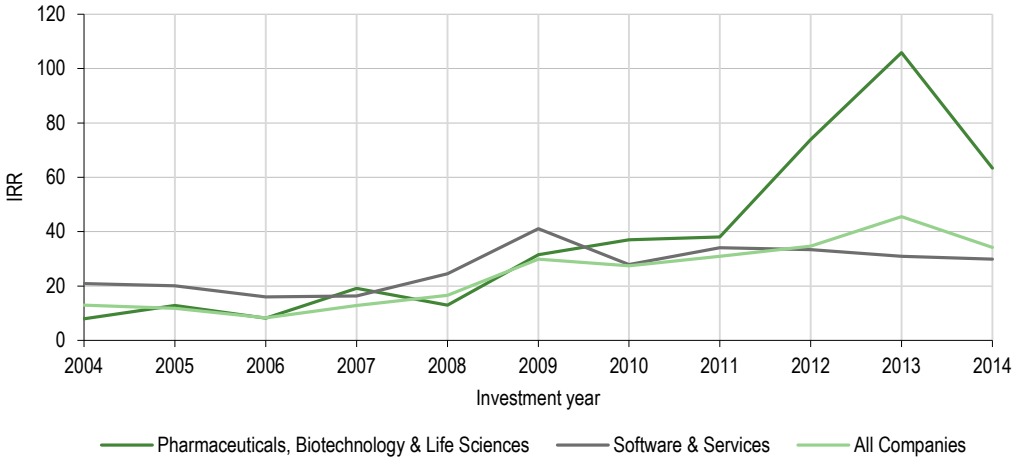
These industry relationships provide a high degree of latitude because the partners may serve as both a potential provider of investment opportunities as well as acquirers for completed programmes.

Market conditions

The biopharma sector continues to be an attractive area for venture investment, and returns for the sector do not seem to have been stymied by the pullback in public biopharma space. Investment firm Cambridge Associates operates a venture capital (VC) index that tracks the returns of over 1,900 VC managers over the course of over 6,700 funds. The index is based on returns in NAV as reported in the financial statements of the individual funds. A caveat is that these metrics do not measure realised returns and do not account for exit risk, but can be useful on a comparative basis. From around 2012, new biopharma investments in the funds on the index have far outpaced the market as a whole with returns of 60% or higher (Exhibit 4). The average internal rate of return (on an NAV reported basis) for biopharma funds founded between 2004 and 2014 was 37%, dramatically outperforming the software segment (at 27%), which has historically been the most highly active area of venture investing. One explanation for this discrepancy is that there are approximately 10 times as many VC backed deals in the tech industry compared to biopharma, driving down yields.[1]

[1] Life Sci VC.

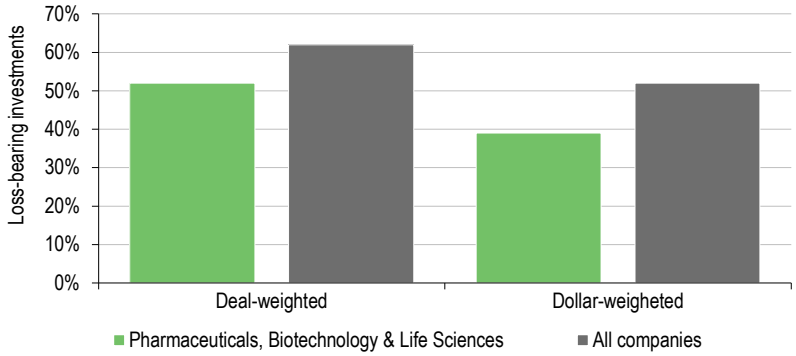
Exhibit 4: Venture capital returns by fund year



Source: Cambridge Associates. Note: Returns calculated as of September 2016.

Despite the perception of life science investing being high risk, the number of loss bearing investments in the space is smaller than the broader VC market, according to data aggregated by VC fund Correlation Ventures (Exhibit 5). Although only a fraction of drugs that enter the clinic achieve FDA approval (approximately 15% of new drugs), 67% of these dugs reach Phase II, which is the typical period for fundraising to scale the study protocol.[2] Although it is premature to speculate about Arix's exit strategy, the company has stated its intension to diversify its holdings across development stages, which should hedge a degree of the risk from market fluctuations.

Exhibit 5: Biopharma VC loss ratio



Source: Correlation Ventures, care of Life Sci VC

Investment portfolio

Arix is invested in the healthcare sector through several different strategies. It is currently the direct owner of private equity in four early-stage pharmaceutical and diagnostic companies (Autolus, Depixus, Artios, OptiKira). Additionally it has directly invested during financing rounds for Verona Pharma, a clinical stage pharmaceutical company traded on the London Stock Exchange (LON: VRP). Arix also has two portfolios of indirect investments. The first is through its 15.1% stake in BioMotiv as described above. Arix has also fully acquired the investment management company Arthurian Life Sciences, which acts as a direct investor in at least 10 late clinical and commercial stage companies at last report.

[2] Hay M, et al. (2014) Clinical development success rates for investigational drugs. *Nature Biotech.* 32, 40-51.

Arthurian Life Sciences

Arix acquired Arthurian Life Sciences in July 2016 for £891,431. The company is the manager for the Wales Life Sciences Investment Fund (WLSIF). WLSIF was formed in 2012 by the Welsh government to promote the development of a life sciences sector in the region. The fund was started with £50m from the Welsh government and has attracted £380m in outside investment since its inception and produced a 26% internal rate of return (three-year rate last reported on March 2016). Arthurian has a fee structure of 2.5% maintenance and 20% performance fees, and is currently chaired by Sir Christopher Evans, Arix deputy chairman. There are several leverage points for Arthurian. First, Arix intends to create similar regional funds based on the same model, and the success of Arthurian can potentially be translated into future management contracts. A second form of leverage from the fund is that although the assets managed by Arthurian do not contribute to the Arix balance sheet, they do have voting power, which can be combined with Arix's direct holdings. For instance, Arthurian originally held a 28% stake in Verona, which due to the recent follow-on financing in November 2016, was diluted to below 10%. Arix participated in this financing round keeping 10.6% control jointly held by both Arix and Arthurian.

Autolus

The company's first direct investment was with Autolus, a developer of chimeric antigen receptor T-cell (CAR-T) and T-cell receptor technology (TCR). The company participated in Autolus's March 2016 £40m Series B financing and acquired rights of up to 15% of interest in the company (currently at 12.3%) for a total of £10m. Arix CEO Joe Anderson has been placed as a non-executive director on the Autolus board. The general scheme of the company's technology is similar to other CAR-T companies such as Kite Pharma and Juno Therapeutics: T-cells isolated from a patient are transgenically modified with receptors to target the cells toward antigens on cancerous tissue. However, the majority of CAR-T research has been into a single antigenic target: CD19 for B-cell lymphomas and other B-cell malignancies. Autolus has published data on CAR-T technology for two novel targets:

- A proliferation-inducing ligand (APRIL) based CAR, which recognises both Transmembrane activator and CAML interactor (TACI) and B cell maturation antigen (BCMA), for the treatment of multiple myeloma (MM).
- A CAR targeting T-cell receptor β (TCRβ) for the treatment of T-cell malignancies.

APRIL is a naturally occurring ligand in the tumour necrosis factor (TNF) family that promotes the survival and proliferation of plasma cells by interacting with BCMA and TACI. The company has co-opted this binding capacity by making a CAR using the protein (instead of the typical immunoglobulin domains), to target T-cells towards the rapidly proliferating plasma cells present in MM. Other companies (eg Bluebird Bio, Kite Pharma) have CAR-T programmes targeting BCMA for MM using more traditional immunoglobulin domains. The potential benefit binding both BCMA and TACI is that by targeting two proteins the number of potential recognition sites for the T-cells is significantly increased, improving targeting and cytolysis. Moreover, the therapy retains activity if one of the antigens is lost from the cancer (antigen escape). The most recent scientific reports of the APRIL programme show in vitro activity of the engineered T-cells against multiple myeloma plasma cells.[3] The market for multiple myeloma treatments is significant. There are approximately 30,000 new cases per year in the US alone.[4] Revlimid, a leading treatment of MM (in addition to myelodysplastic syndromes) marketed by Celgene, had $6.97bn in sales in 2016.

[3] Lee LSH, et al. (2016) An APRIL Based Chimeric Antigen Receptor to Simultaneously Target BCMA and TACI in Multiple Myeloma (MM) Has Potent Activity in Vitro and in Vivo. *Blood* 128, 397.

[4] NCI

To our knowledge, the TCRβ programme is unique in the space. There have not been significant efforts to direct CAR-T therapy towards T-cell malignancies because of the practical problems using T-cells to target T-cells: severe depletion of T-cells is significantly more hazardous than B-cell depletion and the therapy itself would be targeted in the process. However, Autolus has published[5] some in vitro research that uses an often ignored detail of T-cells to avoid this problem. There are two isoforms of TCRβ (TCRβ-1 and TCRβ-2), and only one is expressed on any given cell. The body's natural T-cell population is a mix cells expressing each type, but the population of malignant T-cells will only express a single isoform. Thereby a CAR-T therapy using transgenic TCRβ-1 T-cells can be used to target cancer cells expressing TCRβ-2 while leaving the therapy and non-malignant TCRβ-1 cells intact. T-cell neoplasms are significantly less common than B-cell cancers, accounting for approximately 15% of cases of non-Hodgkin's lymphoma (or 11,000 cases in the US per year).[4,6]

The APRIL programme is targeting entering the clinic in Q217 and the TCRβ programme should be in the clinic by the end of 2017. The company has also announced a dual targeted CAR (anti-CD19 and anti-CD22) for non-Hodgkin's lymphoma (NHL), which it has stated should enter the clinic in mid-2017, although the company has not provided any data or other details on this programme. All of the company's programmes integrate a kill switch to allow the therapy to be terminated if complications such as a cytokine storm become apparent.

Depixus

Depixus is a laboratory technology company that is developing novel methods of sequencing DNA and RNA that reveal epigenetic information in addition to the nucleotide sequence. In May 2016, Arix entered into an agreement to acquire up to 18% of the company for €1.24m, of which €0.93m has been paid (for an assumed current stake of 13.5%). The Arix Investment Director, Edward Rayner, holds a board seat. The company has developed a technology called Single-molecule Magnetic Detection and Quantification (SIMDEQ). SIMDEQ can be used to sequence a single strand of DNA (or RNA), unlike Sanger or "next-gen" sequencing (NGS) technology. The technique is performed by attaching a small magnetic bead to a hairpin of DNA immobilised on a solid substrate and then using magnetic force to unfold the hairpin. A soluble oligonucleotide is added to the solution and the strand is allowed to refold. If the oligonucleotide binds to the DNA strand, it stalls the folding process and alters the force between the bead and magnet. Using a series of oligonucleotides in this way, a complete sequence can be determined. The longest complete sequencing read that has been reported was 286 base pairs, but much longer sequences (over 20,000 base pairs) have been interrogated using the technique, posing the possibility of significant read lengths.

The key aspect of this technology that differentiates it from other sequencing techniques is the ability to perform epigenetic sequencing sensitive to a wide range of modifications. This epigenetic data can provide a more detailed picture of the information embedded in a strand of DNA including which genes are "turned on" in a particular cell. This information is essential to understanding the changes that occur during development as well as those changes to cancer cells that underpin their transformation. Antibodies against nucleotide modifications can be introduced to the SIMDEQ system and the folding of the hairpin can be used to identify the location of the antibody and the epigenetic marker. Moreover, the breadth of modifications that can be detected is only limited by the antibodies available, opening the possibility that a much broader selection of modifications can be detected than other systems.

---

[5] Maciocia PM, et al. (2016) Targeting T-Cell Receptor β-Constant Domain for Immunotherapy of T-Cell Malignancies. *Blood* 128, 811.

[6] Lymphoma Research Foundation

More data will need to be reported on the technology to fully evaluate its robustness and its optimal applications. Its current manifestation lacks the multiplexing in NGS techniques to be viable for genomics applications, and although this is a possibility in the future, it is unclear what the advantage over the already highly efficient systems currently in use would be. A more immediate application would be as a replacement for Sanger sequencing in certain applications, such as the identification of individual mutations or the genotyping of pathologic species. The ability to perform the technique on a single DNA molecule removes the costly and time consuming DNA amplification process from the workflow. The additional epigenetic information that can be examined during the process increases its value significantly over Sanger sequencing in the research setting. The market for sequencing technology is significant. Illumina had revenue of over $2bn in 2016, driven by NGS and array sequencing products. The Single Molecule Real Time (SMRT) technology marketed by Pacific Biosciences fills a similar niche as SIMDEQ as it is a single molecule technique and can read some epigenetic information, albeit SMRT is highly multiplexed. Pacific Biosciences had sales of $91m in 2016.

Artios Pharma

Arix initiated an agreement with Artios Pharma in May 2016, for up to 17.6% of the company for £5.125m (of which £1.90m has been invested for an estimated holding of 6.5%) and placed Investment Manager Jonathan Tobin on the board. Artios's goal is to develop new cancer therapies that target the DNA damage response (DDR) pathway. The relationship between the DDR and cancer is multifaceted, and many existing cancer chemotherapies utilise DNA damage as their mechanism of action. Cancer cells almost universally have defects in DDR that reduce the fidelity of the repair process, including the downregulation of the major DDR pathways. This allows the cancer cells to accumulate the mutations that are necessary for proliferation and metastasis. However, other error-prone elements of the DDR are upregulated to protect the cells from both the DNA damage associated with chemotherapy and normal wear and tear. The central theory of Artios's technology is that inhibiting these alternative DDR elements will prevent cancer from growing and progressing, and perhaps increase its sensitivity to DNA damaging agents. This type of genetic interaction is called synthetic lethality, and it can be leveraged to kill only those cells that have a damaged DNA repair apparatus and leave native cells intact. The company's lead programme is to develop an inhibitor of DNA polymerase θ (Polθ), a highly error -prone polymerase which is responsible for repairing double strand breaks in DNA. Upregulation of Polθ has been found to be associated with poor prognosis.[7] The company has licensed assets surrounding the programme from Cancer Research Technology, the drug discovery arm of Cancer Research UK, and is targeting first-in-human clinical trials in 2019 or 2020.

The DDR pathway is a high-value target for drug development. Significant effort has been made to develop inhibitors of poly ADP-ribose polymerase (PARP), a protein associated with repairing nicks in DNA that is upregulated in BRCA1 and BRCA2 mutant cancers. Lynparza (olaparib) was the first PARP inhibitor approved in 2014 by AstraZeneca for BRCA mutated refractory ovarian cancer, and sold for $218m in 2016. Artios CEO Niall Martin is the former CSO of KuDOS Pharma, the subsidiary of AstraZeneca that developed Lynparza. The drug has also recently (February 2017) shown positive results for BRCA mutated breast cancer. PARP inhibitors have also been developed by Clovis (approved December 2016), TESARO (approved March 2017), AbbVie (Phase III) and Pfizer (Phase III). We expect the Polθ project to have a similar target market to these drugs, and to potentially work in PARP resistant and refractory patients. There are approximately 3,300 new

[7] Bergoglio FL, et al. (2010) DNA polymerase θ upregulation is associated with poor survival in breast cancer, perturbs DNA replication, and promotes genetic instability. *Proc. Nat. Acad. Sci.* 107, 13390-13395.

ovarian cancer patients with BRCA mutations in the US per year (15% of all ovarian cancer),[8] and 12,000-24,000 new BRCA breast cancer patients (5-10% of total).[9]

OptiKira

Arix has supported OptiKira through two separate financing rounds for a total of $1.2m and holds approximately 32% of the company. OptiKira was initially financed by the BioMotiv accelerator, and the Arix stake was sourced through this collaboration. The OptiKira board consists of two officers from BioMotiv, the scientific founder, and Mark Chin, an Investment Manager from Arix. The company is developing drugs targeting the unfolded protein response (UPR) using technology licensed from the University of California, San Francisco and University of Washington. During normal metabolism and in certain degenerative disorders, proteins can misfold and accumulate in the endoplasmic reticulum of the cell. Low levels of misfolded protein trigger the cell to generate chaperone proteins, which assist folding, but higher accumulations can trigger cell apoptosis mediated by inositol-requiring enzyme-1α (IRE1α). This process has been implicated in the degeneration associated with retinitis pigmentosa (RP) and diabetes, and inhibition of IRE1α can prevent cell death in mouse models of these diseases.[10] The company is developing a new class of small molecule drugs, which it terms Kinase Inhibitor RNase Attenuators or KIRAs to inhibit IRE1α for the treatment of RP. The company has reported that one molecule has successfully prevented retinal degeneration in rat models of autosomal dominant RP. RP is the leading cause of congenital blindness in the world and is caused by the progressive degeneration of the rod photoreceptors of the eye. The underlying root of the disorder is complex, and there have been over 40 mutations identified that are associated with the disease. Additionally, there are few treatment options for the disease. No medications are approved for RP and the standard of care is vitamin A supplementation to delay progression. Approximately 25 per 100,000 people, or 80,000 in the US, are diagnosed with the disease. The preclinical model used to identify the OptiKira lead compound was specifically for the autosomal dominant form of the disease, which affects 15-20% of patients,[11] but the addressable portion of RP patients may be expanded with better understanding of the role of the UPR in individual genotypes.

Verona Pharma

Arix's first and currently only public equity investment is in Verona Pharma (LON: VRP). The company has a collective 10.6% stake in the company (4.1% through Arthurian, the remainder through the parent company), which at the current stock price of 145p corresponds to an £8m market valuation. Additionally, Arix has approximately 516,000 warrants exercisable at 172p per share for 1% more of the company, contingent on a proposed NASDAQ IPO. Verona is a clinical-stage pharmaceutical company focused on respiratory disorders. Its lead programme is RLP554, a first-in-class dual inhibitor of phosphodiesterase-3 (PDE3) and -4 (PDE4) in development for chronic obstructive pulmonary disease (COPD) and cystic fibrosis (CF). PDE3 and PDE4 are enzymes that degrade cyclic adenosine monophosphase (cAMP), an important signalling molecule across a very wide array of functions in the immune, nervous and muscular systems. Verona is investigating RLP554 in an inhalable form (principally in a nebulised formulation) to control the symptoms associated with COPD and CF and is currently in Phase II clinical trials for both

---

8 Pal T, et al. (2005) BRCA1 and BRCA2 mutations account for a large proportion of ovarian carcinoma cases. *Cancer* 104, 2807-2816.

9 Campeau PM, et al. (2008) Hereditary breast cancer: new genetic developments, new therapeutic avenues. *Hum. Genetics* 124, 31-42.

10 Ghosh R, et al. (2014) Allosteric inhibition of the IRE1α RNase preserves cell viability and function during endoplasmic reticulum stress. *Cell* 158, 543-548.

11 Chang S, et al. (2011) Diagnostic Challenges in Retinitis Pigmentosa: Genotypic Multiplicity and Phenotypic Variability. *Curr. Genomics* 12, 267-275.

indications. The drug should reduce airway constriction through multiple mechanisms, by both reducing inflammation and relaxing smooth muscle. In earlier clinical trials, RLP554 was able to provide additional improvement in lung function (forced expiratory volume 1 FEV_1) of 50% or more ($p<0.001$) when co-administered with standard of care ipratropium and salbutamol. A new Phase IIa COPD trial is examining the ability of the drug to improve lung function when added to drug Spiriva (tiotropium), and the company plans to initiate Phase IIb trials for COPD maintenance and for acute exacerbations in 2017. The market for COPD is significant, with over 24 million Americans affected by the disease and the high unmet medical need given current therapies. The prevalence in Europe is similar to the US, affecting an estimated 4-10% of the population.[12] However, diagnosis remains a significant issue with estimated underdiagnosis rates of 50% in the US to 80% in the UK.[13] Another potential limitation is that RLP554 is currently being tested for use in a nebulizer. The company is performing clinical trials in two different settings: in the hospital following an acute exacerbation, and at home for maintenance use. Nebulizer use is common in the hospital setting, but nebulizers are only used by 9% of the much larger COPD maintenance population, which would be the primary revenue driver. The hope is that patients will take a nebulizer home and continue therapy with the drug following a hospitalisation. The company has also performed feasibility studies on inhaler formulations, which have a much broader market. However, this market is dominated by big pharma, and the company has delayed development until after approval of the nebulizer formulation. This represents a potential future upside, although it will require additional clinical studies. CF, in comparison with COPD, is an orphan condition with a population of approximately 30,000 individuals in the US, but the market opportunity is significant if the company can demand orphan pricing. Vertex Pharmaceuticals recorded $9.7bn in revenue in 2016 from its CF products Orkambi (lumacaftor/ivacaftor) and Kalydeco (ivacaftor). The company initiated a double-blind, placebo-controlled Phase IIa study in April 2017 to examine lung function in CF patients on the drug. The trial is being supported by a grant from the UK Cystic Fibrosis Trust.

There have been several approvals of PDE4 inhibitors: Otezla (apremilast) and Eucrisa (crisaborole) have been approved for the treatment of psoriasis, and Daliresp (roflumilast) for the treatment of COPD. Additionally, at least eight other PDE4 compounds are in clinical trials. Daliresp is likely the best current comparator to RLP554, despite being an oral compound without bronchodilation effects. However, sales of the drug have been limited, with only $154m in 2016 following five years on the market. This is likely due to the limited treatment effect of the drug (15-18% reduction in exacerbations over the course of a year) and dose-limiting cardiac side effect risk. Pletal (cilostazol) is the only specific PDE3 inhibitor that has been approved as an anticoagulant, but has known cardiac side effects as well. The hope is that the toxicity seen in this class of drugs will be limited by avoiding the oral route in the case of RLP554.

Management

One of the core strengths of Arix is the experience of its senior management. Collectively, the executive team has over 110 years of experience in pharma and investing. We believe that this experience has already translated into the strength of the portfolio and sourcing pipeline, and we expect that the team will be able to continue identifying undervalued opportunities in the space. Moreover, given the company's strategy of participation in these companies, we expect that management experience will translate into performance across the portfolio.

[12] Halbert RJ, et al. (2004) Interpreting COPD Prevalence Estimates: What Is the True Burden of Disease? *Chest* 123, 1684-1692.

[13] Lamprecht B, et al. (2015) Determinants of Underdiagnosis of COPD in National and International Surveys. *Chest J.* 148, 971-985.

The company's chairman is the pharma veteran Jonathan Peacock. Peacock previously served as the CFO of both Novartis Pharma (from 2005 to 2010) and Amgen (from 2010 to 2014), and he is currently on the board of Bellerophon and Kite Pharma. He has experience in deal-making that can only be achieved at the highest levels of the industry, having closed many billions in transactions. These deals include involvement in the multi-year acquisition of Alcon by Novartis valued at $51.6bn (initiated in 2008 but completed shortly after the end of his tenure), the 2012 acquisition of Micromet by Amgen for $1.2m, and the 2013 acquisition of Onyx Pharmaceuticals by Amgen for $10.4bn. This is combined with over $20bn in capital raised throughout his career.

CEO Joe Anderson brings venture investing experience to the team with 25 years in life sciences, 12 of which were spent as a partner at Abingworth LLP, as well as the Ciba Foundation and The Wellcome Trust. He served as director of Algeta, starting with a market cap of $36m and exiting with the $2.9bn sale to Bayer after four years. Additionally, he served as director of Amarin through the approval and launch of Vascepa, seeing the company grow from a $45m to $841m valuation. Other notable public investments include Alnylam, Sirna Therapeutics, Micromet and Epigenomics.

Deputy Chairman Sir Chris Evans brings an additional perspective to the team as a serial entrepreneur and a senior executive of 11 academic spin-out companies, 10 of which have gone public or been acquired. These notable include Chiroscience, which merged with Celltech in 1999 for £700m, and Biovex, which was acquired by Amgen in 2011 in a $1bn deal. He additionally founded and served as director for the Merlin Biosciences venture capital fund, which raised approximately $450m.

We believe this is a very well curated management team combining complementary areas of expertise that should enhance the company's ability to source and execute favourable deals. Each member of the team has a demonstrated track record of identifying value at a different stage in the development arc, which we believe will facilitate productive interactions on both the buy and sell side of deals.

Sensitivities

The stated goal of Arix's investment strategy, and indeed all early-stage investment companies, is to limit risk by diversifying into a portfolio of otherwise high-risk investments. Indeed, we consider the individual companies in the Arix portfolio high risk because of the substantial hurdles in developing preclinical therapeutics and diagnostics. Importantly for Arix, these companies also face the significant hurdle of sourcing additional financing, which depends not only on the strength of the clinical programme, but also on the broader life sciences market. This being said, the amount of capital deployed by Arix to date in these companies is small (£13.7m) and is significantly exceeded by our valuation even with high-risk adjustments. Also, the ability to source these deals at attractive valuations speaks to the strength of the apparatus that Arix has built.

The only two companies in the portfolio that are developing technology, which has been vetted by previous clinical development are Autolus and Verona. Autolus's CAR-T technology, while targeting novel antigens, has a well-established track record in the industry. Similarly, Verona is developing PDE inhibitors, of which there are several approvals including for the company's current primary indication of COPD. By comparison, Artios and OptiKira are targeting proteins that have never before been examined for clinical activity.

The company with the highest degree of commercial risk is Depixus. There is currently very little insight into the parameters essential for predicting commercial viability such as read length and cycle speed, and although the technology can be used to detect epigenetic modifications, the market for epigenetic sequencing is in its infancy. Any commercial genomics application will likely

require a multiplexed device, for which there is no working prototype as of yet, although we do not have any reason to assume this will be unfeasible.

Finally, a broader risk facing Arix is that, although it has been able to construct an exceptional network of sources, these agreements have earmarked a large fraction of its capital at the current stage, trading in effect greater sourcing capacity for less versatility in the near term. However, given the current pace of deals (guidance towards full deployment of current capital in 18 months), we believe that excess cash should provide sufficient latitude for the time being and that any sourcing partnerships can be terminated in the event they prove unfruitful.

Valuation

Using a risk-adjusted NPV analysis, we arrive at a valuation of Arix's assets (investments and cash) of £171.9m or 179p per share. We should note that stock is currently trading at an 11% premium to our valuation and a 28% premium over our estimated book value of £150m (£47m NAV reported as of September 2016, £103m estimated net proceeds from IPO). It is not uncommon for investment companies to trade at a premium to their asset value. This premium reflects confidence in the company's ability to further leverage its assets, which is understandable considering management's experience and the very well characterised business plan it has presented. Moreover, we believe the current premium is modest in light of Arix's active investment model in which the operational expertise of management should support development of the portfolio through participation in company boards. We arrive at a current value for the Arix portfolio companies (not including Arthurian and BioMotiv) of £27.3m, a 99% premium over the total cash used on acquisitions (£13.7m). We have also included valuations on the remaining equity the company can acquire under existing agreements in place for Autolus, Depixus, and Artios. These reflect the value of the additional shares less the acquisition cost under the agreement.

Our valuation of each individual company relies on a series of assumptions regarding its market, potential costs and probability of success. Our valuations are made on the basis of commercialisation in the US and Europe, assuming a 40% lower price for therapeutics in Europe. We also assume discounts to payers of approximately 30% for all therapeutics. We assume a probability of success of 5% for each programme, which is our unadjusted prior probability for programmes at this stage. We may adjust these probabilities with the publication of supporting data or with advancement of the programmes to the clinic.

We consider Autolus as the company's highest value asset at £10.0m. We value Autolus as a whole at £81.2m. The company was valued at £67m based on the terms of the Autolus acquisition agreement (£10m for 15% of the company). Using other CAR-T clinical programmes as a model, we expect the company to require approximately 150 patients for each indication for Phase I/II and Phase III trials and a total cost of £26m. We model a price (WAC) at launch of $300,000, which represents a premium for cell-based therapy adjusted for growth to the launch date in 2026. We also expect COGS to be high for the programme (at 20%) given the degree of manipulation required to culture and transfect autologous T-cells. We note that the pricing and COGS are currently a matter of speculation and that these values may change to reflect the market once the first therapies of this class have been approved.

We have modelled the Depixus development and commercialisation timeline on the example of Pacific Biosciences. We expect that the company will be able to launch its first product around 2023 and currently model a peak market share for the company of 4.9% in 2036. However, the majority of the growth in sales is expected to be market growth associated with the expanding need for sequencing technology. We expect the current £3.5bn global sequencing market to grow to £10bn

in the next decade.[14] We model a cost of selling of £8m plus 20% of sales to reflect the significant competition in this market.

We expect Artios to launch into the same initial target markets as PARP inhibitors: refractory BRCA mutant ovarian and breast cancer. Our probability of success is 5% because of the limited data supporting the development of therapeutics that target Polθ for these indications. We expect the programme to require £22m to complete, and we assume a launch pricing of $160,000 based on inflation from current targeted cancer therapies.

We value Arix's shares in OptiKira at the highest premium over its acquisition cost ($1.2m) at £5.3m. We currently model penetration into the market of autosomal dominant RP patients, although we acknowledge that the technology may have better or worse activity due to more complex underlying genetics, and we assume a launch price of $120,000 per year. We expect the clinical programme to require a large number of patients (over 400) to provide sufficient powering on a vision test, although per-patient costs should be lower than other indications at approximately $50,000 each. Our probability of success is 5% because of the lack of precedent for drugs targeting the UPR for any indication and the early stage of development.

Verona has the most advanced clinical programme (Phase II) and further development is backed up by statistically significant clinical data. We model Verona at £110m (and the Arix stake at £7.2m) compared to current market value of £73.4m. Verona announced in April 2017 the offering of American Depository Shares (ADSs) for a proposed aggregate price of $86.25m. The conclusion of this offering and the degree of participation from Arix may affect our future valuation. Our probability of success is 30% which is higher than our standard for this stage of development prior due to the previous clinical results and the fact that similar drugs have been approved in the past. We currently only model commercialisation into the fraction of COPD sufferers that are diagnosed and use a nebulizer, with peak penetration of 10% of the maintenance population. Due to the high degree of competition and the broad prescriber base, we assume higher costs of selling of £8m per year and 10% variable costs. We expect the remaining clinical trials for acute COPD to cost £26m and require over 600 patients, based on the clinical trials for approved COPD products. Pricing is also in line with other COPD products at $3,900 per year at launch. The licensor of the drug Vernalis is entitled to payments that are largely undisclosed but include a low to mid-single digit royalty, 25% of milestones and sublicenses, and a milestone payment on first regulatory approval. We model 6% of revenue (to account for the royalty and any potential sales milestones) and £5m on approval will be paid to Vernalis. We currently do not model the CF programme as we see this as a stopgap measure in the event the COPD programme does not meet its endpoints, as there is limited profit potential in the CF market at COPD pricing. Additionally, at this point we do not model an inhaler formulation of RPL554 as further development of this programme is contingent on approval of the lead formulation. The stake in the company for the purposes of this model only includes those shares held directly by Arix as the shares held in Arthurian are beneficial to the WLSIF.

Our valuation of Arthurian is based on the assumption that it can maintain returns in line with the MSCI UK healthcare index past 10 year performance of 8.76%. We assume that the fund is maintained at £50m and the 2.5%/20% fee structure remains unchanged, and has a margin of 25%. We should note that recent performance of the fund has far outpaced these assumptions in the period before it was acquired by Arix with an internal return rate of 26% (as of March 2016). Our value is based on 15x multiple on management fees and an 8x multiple on performance fees, which are derived from prevailing market valuation trends.

Due to limited insight into the allocation and performance of BioMotiv, we have modelled the value of the stake in the company as the amount of capital currently spent.

[14] Chemical and Engineering News, (2014) "Next-Gen Sequencing Is A Numbers Game", 92, 11-15.

We expect to update our valuation whenever Arix enters into a new investment, as well as with any exits or milestones reached with the portfolio companies. Additionally, we intend to update our valuation in the event that additional funds are opened at Arthurian or based on that model.

Exhibit 6: Valuation of Arix assets

Investment	Prob. of success	Profitability	Peak sales (£m)	Margin	rNPV (£m)	Ownership	Value of committed capital	Share value (£m)
Autolus	5%	2026	2,095	48%	81.2	12.3%	0.4	10.0
Depixus	5%	2025	696	23%	9.5	13.5%	0.2	1.3
Artios	5%	2025	971	59%	54.9	6.5%	2.9	3.6
Optikira	5%	2026	540	49%	16.5	31.9%		5.3
Verona	30%	2021	519	20%	110.2	6.5%		7.2
Arthurian						100%		4.9
BioMotiv								3.0
Total								38.6
Net cash and equivalents (Sept 2016 + offering - deals) (£m)								133.2
Total asset value (£m)								**171.9**
Total shares (m)								96.1
Value per share (p)								**179**

Source: Arix Bioscience, Edison Investment Research

Financials

The gross proceeds from the company's recent IPO were £113m for 54.4m new shares, bringing the total number of shares to 96.1m. The most recent period reported by the company was the six months ending 30 September 2016, at which time the company had £32.2m in cash reserves. This brings the total estimated NAV to approximately £150m based on September 2016 holdings. The company had a carrying value of investments of £11.1m at the last report and has deployed £1.5m in additional capital. We currently model significant increases in the amount of deployed capital, with a total of £66m by FY18 and £141m by FY19. This schedule is in line with the company's announced plans of deploying the recent IPO capital over the next 18 months. Management has informed us that it intends to close 10-15 deals over this period.

The company has £147.5m in investment targets through different agreements (Exhibit 7). The biggest fraction (£120m) are goalposts attached to some of the first-look and first-investment rights with academic institutions, where Arix agreed to invest a certain amount cash as part of the agreement. These amounts are discretionary on the part of Arix and there is no commitment to deploy capital in the event that the institution fails to produce actionable investments. Moreover, these are goals cover the entire contract periods (five to 10 years). However, these agreements may be at risk if the institution feels that these goals will not be met. The remaining earmarks (£27.5m) are future tranches for the previously initiated equity deals. These payments are expected to be made following milestones by the companies.

Exhibit 7: Arix future investment targets

Discretionary	Earmark (£m)
University of Dundee	25.0
University of Manchester	50.0
University of Exeter	15.0
Lead Discovery Center	30.0
Non-discretionary	
BioMotiv	17.3
Autolus	6.7
Depixus	0.3
Artios	3.2
Total	**147.5**

Source: Arix Bioscience

Exhibit 8: Financial summary

£000s	2016	2017e	2018e	2019e
Year end 31 March	IFRS	IFRS	IFRS	IFRS
INCOME STATEMENT				
Revenue	1	5,325	2,127	2,127
Cost of Sales	0	0	0	0
Gross Profit	1	5,325	2,127	2,127
EBITDA	(2,209)	(5,086)	(6,040)	(6,040)
Normalised operating profit	(2,209)	(5,086)	(6,040)	(6,040)
Amortisation of acquired intangibles	0	0	0	0
Exceptionals	(596)	3,198	0	0
Share-based payments	(1,401)	(10,726)	(6,436)	(6,436)
Reported operating profit	(4,206)	(12,614)	(12,475)	(12,475)
Net Interest	10	585	5,548	4,368
Joint ventures & associates (post tax)	0	0	0	0
Exceptionals	0	0	0	0
Profit Before Tax (norm)	(2,199)	(4,501)	(491)	(1,671)
Profit Before Tax (reported)	(4,196)	(12,029)	(6,927)	(8,107)
Reported tax	0	0	0	0
Profit After Tax (norm)	(2,199)	(4,501)	(491)	(1,671)
Profit After Tax (reported)	(4,196)	(12,029)	(6,927)	(8,107)
Minority interests	0	0	0	0
Discontinued operations	0	0	0	0
Net income (normalised)	(2,199)	(4,501)	(491)	(1,671)
Net income (reported)	(4,196)	(12,029)	(6,927)	(8,107)
Basic average number of shares outstanding (m)	10	96	101	106
EPS - basic normalised (p)	(21.52)	(4.68)	(0.49)	(1.58)
EPS - basic reported (p)	(41.07)	(12.52)	(6.87)	(7.65)
Dividend (p)	0.00	0.00	0.00	0.00
BALANCE SHEET				
Fixed Assets	5,078	19,638	69,638	144,638
Intangible Assets	0	2,415	2,415	2,415
Tangible Assets	7	729	729	729
Investments & other	5,071	16,494	66,494	141,494
Current Assets	41,080	139,577	87,712	11,041
Stocks	0	0	0	0
Debtors	442	875	350	350
Cash & cash equivalents	40,638	138,702	87,363	10,691
Other	0	0	0	0
Current Liabilities	(935)	(6,370)	(4,997)	(4,997)
Creditors	(935)	(6,370)	(4,997)	(4,997)
Tax and social security	0	0	0	0
Short term borrowings	0	0	0	0
Other	0	0	0	0
Long Term Liabilities	0	(1,157)	(1,157)	(1,157)
Long term borrowings	0	0	0	0
Other long term liabilities	0	(1,157)	(1,157)	(1,157)
Net Assets	45,223	151,687	151,196	149,525
Minority interests	0	0	0	0
Shareholders' equity	45,223	151,687	151,196	149,525
CASH FLOW				
Op Cash Flow before WC and tax	(2,209)	(5,086)	(6,040)	(6,040)
Working capital	494	5,002	(848)	0
Exceptional & other	(596)	3,198	0	0
Tax	0	0	0	0
Net operating cash flow	(2,311)	3,114	(6,887)	(6,040)
Capex	(7)	0	0	0
Acquisitions/disposals	(5,071)	(13,838)	(50,000)	(75,000)
Net interest	10	585	5,548	4,368
Equity financing	50,050	104,566	0	0
Dividends	0	0	0	0
Other	(2,033)	3,637	0	0
Net Cash Flow	40,638	98,064	(51,339)	(76,671)
Opening net debt/(cash)	0	(40,638)	(138,702)	(87,363)
FX	0	0	0	0
Other non-cash movements	0	0	0	0
Closing net debt/(cash)	(40,638)	(138,702)	(87,363)	(10,691)

Source: Arix Bioscience accounts, Edison Investment Research

Contact details	Revenue by geography
20 Berkeley Square London W1J 6EQ United Kingdom +44 (0)20 7290 1050 arixbioscience.com	N/A

Management team

Jonathan Peacock: Chairman

Jonathan has 35 years' global experience in operations, strategy and business development and extensive expertise within the biopharma industry. Jonathan is the former CFO of Amgen based in California, US, and prior to that was the CFO of the Pharmaceuticals division of Novartis, based in Switzerland. Before joining the pharmaceutical industry, Jonathan was a partner at McKinsey & Company where he was co-head of the European corporate finance practice. He was also a partner at PwC in London and New York. Jonathan is currently chairman of Bellerophon Therapeutics and is non-executive director of Kite Pharma.

Dr Joe Anderson: CEO

Joe has over 25 years' experience in the life sciences industry with a successful track record of generating investment returns. He was a partner at Abingworth LLP for 12 years, where he led venture capital-style investments in public companies. He has founded and managed public equities funds and been a director of Algeta (acquired by Bayer for $2.9b), Amarin, Cytos (merged with Kuros) and Epigenomics, and is currently a director of Autolus.

Sir Chris Evans: Deputy Chairman

Sir Chris is a renowned scientist and highly successful entrepreneur with numerous prestigious awards and medals for his work over the last 30 years. He is the founder and chairman of Excalibur Group and has created 11 successful academic spin-outs, and founded notable companies such as Chiroscience, Celsis, BioVex, ReNeuron, Vectura and Merlin Biosciences. He directed the raising of c $450m for Merlin Biosciences Funds and $2.6bn from disposals including the sale of BioVex Group to Amgen and Piramed to Roche Group.

James Rawlingson: CFO

James has substantial experience at board and senior management level gained over 20 years of involvement in financial services and UK public companies. His former role was group CFO of Charles Stanley, a leading wealth manager with over £20bn of funds under management and administration. Previously, James was group CFO for Coutts Bank, where he was responsible for the global finance function and held a key role in setting strategy. Before this, he spent two years at UBS Wealth Management based in Zurich after promotion from his role as CFO of UBS Wealth UK.

Principal shareholders	(%)
Woodford Investment Management Ltd	30.7%
Christopher Chipperton	10.9%
Chris Evans	7.6%
Takeda Ventures, Inc.	5.0%
Barclays Wealth	4.5%
Ruffer	4.3%
UCB Ventures SA	4.0%
FIL Investment International	3.8%

Companies named in this report

AbbVie (ABBV), Adamas Pharmaceuticals (ADMS), Alnylam (ALNY), Amarin (AMRN), Amgen (AMGN), AstraZeneca (AZN), Bellerophon (BLPH), Cyclacel (CYCC), Daiichi Sankyo (TYO:4568), Fate Therapeutics (FATE), Infinity Pharmaceuticals (INFI), Johnson & Johnson (JNJ), Juno Therapeutics (JUNO), Kite Pharma (KITE), Novartis (NVS), Pfizer (PFE), ReNeuron (LON:RENE), Roche (RHHBY), Takeda (TYO:4502), TESARO (TSRO), UCB (Brussels:UCBCT), Verona Pharma (LON:VRP), Xenon Pharmaceuticals (XENE)