

Market data

EPIC/TKR	AVCT
Price (p)	22.7
12m High (p)	70.5
12m Low (p)	21.0
Shares (m)	115.5
Mkt Cap (£m)	26.2
EV (£m)	15.0
Free Float*	78%
Market	AIM

*As defined by AIM Rule 26

Description

Avacta is a pre-clinical stage biotechnology company developing biotherapeutics based on its proprietary Affimer protein technology. It benefits from near-term revenues from research and diagnostic reagents.

Company information

CEO	Alastair Smith
CFO	Tony Gardiner
Chairman	Eliot Forster

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www.avacta.com

Key shareholders

Directors	3.9%
IP Group	18.2%
Baillie Gifford	8.5%
JO Hambro	7.5%
Carlton Int. Holding	7.3%
Fidelity	5.9%

Diary

Jan'19	AGM
1H'19	PD-L1/LAG-3 drug candidate selection

Analysts

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AVACTA

Wake-up call for the market

Avacta (AVCT) is a pre-clinical stage biotechnology company and the proprietary owner of Affimer technology. Affimers represent a radical alternative to the established antibody technology. The significant technical and commercial benefits of Affimers are being recognised increasingly through corporate and academic interest, ongoing evaluations, and deal flow. AVCT has just concluded an Affimer therapeutics development and commercial agreement with the global pharma company, LG Chem, worth up to \$310m in upfront and milestone payments. This represents a huge endorsement of the Affimer platform.

- **Strategy:** AVCT is aiming to commercialise its Affimer technology through licensing for research and diagnostics, and by identifying and developing its own proprietary therapeutic pipeline for partnering. AVCT has sufficient cash resources to identify an Affimer lead to be ready for first-in-man trials in 2020.
- **Major licensing agreement:** AVCT has announced a licensing deal with LG for the discovery and development of Affimer therapeutics in oncology and inflammatory disorders, potentially worth up to \$310m in upfront payments and near-term and long-term milestones. Royalties would also be payable on net product sales.
- **LG Chem:** Part of the multinational conglomerate, LG Group, this Korean-based company has a strong position in marketed life science products and in developing new biologicals through to commercialisation. It is an excellent and valuable partner for AVCT, and likely paves the way to further major deals.
- **Risks:** Affimers represent a new disruptive technology, and the potential customer base has taken some time to recognise their advantages. While all new drug development carries a high risk, AVCT has hit a number of important milestones over the last two years which have reduced the risk profile greatly.
- **Investment summary:** AVCT has made considerable progress towards its goal of having a number of commercial partnerships for its Affimer technology, as well as developing its own proprietary Affimer-based drugs and growing a separate profitable reagents business. The rising number of collaboration deals being discussed and signed is a clear indication of the long-term value of its Affimer technology, which the market is currently only just beginning to recognise.

Financial summary and valuation

Year-end Jul (£m)	2016	2017	2018	2019E	2020E	2021E
Sales	2.17	2.74	2.76	3.17	4.69	8.60
R&D spend	-1.50	-2.60	-3.78	-4.50	-5.50	-6.50
EBITDA	-4.79	-6.66	-9.15	-8.88	-8.72	-7.00
Underlying EBIT	-5.39	-7.60	-10.12	-9.85	-9.69	-7.97
Reported EBIT	-5.66	-7.98	-10.43	-10.19	-10.07	-8.38
Underlying PBT	-5.29	-7.51	-10.08	-9.82	-9.67	-7.99
Statutory PBT	-5.57	-7.89	-10.39	-10.16	-10.05	-8.40
Underlying EPS (p)	-6.46	-8.75	-13.07	-7.42	-7.12	-5.48
Statutory EPS (p)	-6.86	-9.31	-13.55	-7.72	-7.44	-5.83
Net (debt)/cash	19.52	13.17	5.22	7.75	-0.74	-7.32
Capital increase	21.05	0.01	0.05	10.92	0.00	0.00
EV/sales (x)	10.4	8.3	8.2	7.1	4.8	2.6

Source: Hardman & Co Life Sciences Research

Major endorsement for Affimers

Background

Enormous progress has been made in developing the Affimer technology as a therapeutic and diagnostic tool

In 2015, AVCT embarked upon a series of challenging objectives, with the goal of having its Affimer platform technology accepted as a viable alternative to antibody technology and validated through licensing deals with strong partners. Management has made exceptional progress in achieving these goals, culminating in the first development and collaboration agreement with a major biotechnology partner for Affimer therapeutics. This may well be the trigger for many more deals with potential partners that are currently undertaking validation testing of specific Affimer molecules of interest. Given the potential size of this first significant deal, we believe that it is time the market started to wake up to the long-term value of AVCT's Affimer technology.

Avacta – progress against 2015 objectives				
Therapeutics		Reagents		
In-house	Partnered	Research	Diagnostics	
1.	Develop the first Affimer therapeutic candidate for clinical development			✓
2.	Build a pipeline of therapeutic Affimers and enabling Affimer platform technologies for licensing or future in-house development			✓
3.	Secure further Affimer therapeutic licence/partnering deals [particularly with some of the major pharmaceutical/biotech companies]			✓
4.	Grow a custom Affimer revenue stream with the potential for long-term royalties			✓

Source: Avacta reports, Hardman & Co Life Sciences Research

Strategic Affimer therapeutics deal with LG Chem

The deal with LG Chem has potential to generate up to \$310m in upfront and milestone payments plus royalties on net sales

A major partnership deal has been signed between AVCT and LG Chem Life Sciences (LG), the life sciences division of the Korean-based multinational conglomerate, LG Group. Full financial details of the collaborative agreement have not been disclosed; however, the headlines indicate that this is a major deal with an important strategic partner that follows along the lines of normal industry practice.

- ▶ Total potential deal value of \$310m.
- ▶ Upfront, near-term milestones, and longer-term clinical development milestones of up to \$180m.
- ▶ \$130m in additional payments in the event that LG exercises its option for additional Affimer programmes.
- ▶ AVCT would receive royalty payments on the net sales of any products emanating from this development alliance.
- ▶ AVCT's costs associated with the alliance will be covered by LG Chem.

To put this deal with LG into perspective, we have compared it with 22 other deals for pre-clinical oncology technology access/assets over the last three years, summarised in the following table. It is worth commenting that many of these deals involved platforms that were clinically validated, even if the asset in question was pre-clinical, and also that AVCT's Affimer platform has yet to be clinically validated in man – an event anticipated to happen in 2020 with the first Phase I/II with the PD-1/LAG-3 bispecific Affimer – which will presumably be reflected in the size of the upfront payment, which is our estimate based on recent similar deals by LG.

Pre-clinical oncology deals – 2016-18		
	Up front (\$m)	Milestones (\$m)
Average	38.4	666.2
Median	30.0	500.0
Range	5–800	186–2,300
Avacta-LG	*5–10	180–310

*Hardman & Co estimate
Source: Hardman & Co Life Sciences Research

The deal is focused on therapeutic Affimers directed towards undisclosed targets in oncology and inflammatory disorders

Collaboration agreement with LG

Headlines

The Affimer therapeutics development collaboration with the multi-national, multi-billion-dollar group, LG, represents a major endorsement of AVCT’s Affimer technology platform. LG is a strong partner, and its wholly-owned pharmaceutical subsidiary, LG Chem, has a track record of being able to develop new biopharmaceutical drugs all the way to commercialisation. The first part of this deal would entitle AVCT to receive up to \$180m in upfront payments and milestones, which falls within the normal range for access to such assets and is particularly good for a platform that is yet to be validated in man, event expected to happen in 2020. In return, LG receives the exclusive rights to develop and commercialise, on a worldwide basis, multiple Affimer molecules in two therapeutic areas:

- ▶ inflammatory disorders; and
- ▶ oncology

Under the terms of the agreement, the collaboration is segregated into three stages:

- ▶ **Step 1:** AVCT to generate Affimers and carry out the discovery, optimisation and protein engineering of Affimer drug candidates against a number of undisclosed targets.
- ▶ **Step 2:** LG and AVCT to collaborate to progress these candidates through to drug candidate selection.
- ▶ **Step 3:** LG to be responsible for the pre-clinical and clinical development, and worldwide marketing of any resulting products.

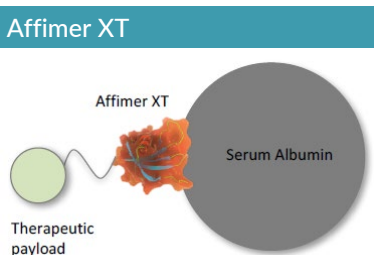
Moreover, LG has the option to add further targets and, if the option is exercised, AVCT will be entitled to receive up to an additional \$130m in fees and milestone payments. This values the whole agreement at \$310m.

Additionally, LG has shown interest in developing products utilising the Affimer XT platform

Additional products

It has been disclosed also that both companies will develop jointly two products using the Affimer platform to modify the pharmacokinetic (PK) and ADME (absorption, distribution, metabolism and excretion) profiles of established undisclosed biologics. Such results could be obtained using the Affimer XT platform that uses the ability of a specific Affimer to bind to, for example, serum albumin, and then changing the properties and bioavailability of such molecules – although we understand that these undisclosed targets specifically exclude serum albumin.

Affimer XT is a proprietary Affimer technology platform that can be used to control and modulate the half-life of a biotherapeutic when in the blood system. The idea behind this technology is to attach an Affimer with sensitivity to a protein, such as albumin, to the drug.



Source: Avacta

In the case of albumin, the main protein in blood plasma that has the ability to bind and transport a therapeutic around the body, such a complex effectively hides the drug from the enzymes responsible for its metabolism. Since the Affimer XT is recycled along with the serum albumin, it retains a similar serum half-life of around two weeks in humans. Such products allow the emergence of different molecular properties:

- ▶ **Half-life extension:** by modulating the binding strength of the Affimer to serum albumin, the platform is able to influence the half-life of the protein.
- ▶ **Biobetter:** a biobetter is a new version of the original drug with improved attributes, such as efficacy, safety and delivery. It is considered less of a commercial risk than developing a brand-new class of biologic.

According to the terms of the partnership agreement, both parties have the right to develop such modified products, and the option to take exclusive responsibility for the development, manufacture and commercialisation of those products.

LG Chem Life Sciences

LG Chem Life Sciences is a global pharma company with a vast and diversified portfolio of products

LG Chem Life Sciences is a business division within LG Chem, itself part of the LG Group. LG Chem was founded in 1947 and is now the leading chemical industry in Korea, with more than 29,000 employees and annual sales totalling KRW25.7 trillion (\$23bn/£18bn). It is engaged in the development, manufacturing and commercialisation of pharmaceutical products globally. LG Chem Life Sciences has a broad list of marketed products in key areas of:

- ▶ **Pharmaceuticals:** growth hormones, infertility treatment, biosimilar, renal diseases, musculoskeletal diseases, cosmetic surgery, diabetes, cardiovascular drugs as well as diagnostic kits.
- ▶ **Vaccines:** Hepatitis B, Haemophilus type B, combination vaccines.
- ▶ **Fine chemicals:** including crop protection products, (herbicides, insecticides, fungicides), medicinal chemistry (active pharmaceutical ingredients, pharmaceutical intermediates) and chemical materials (battery materials, chemical materials, display materials).

To achieve its long-term strategy, LG actively pursues global collaborations encompassing asset-centric to strategic investment and collaboration. This has been highlighted in a number of recent research collaborations with biotech companies that are developing innovative technologies:

- ▶ **Cue Biopharma:** on 21 November 2018, LG announced a research collaboration with Cue to develop Immuno-STAT biologics in oncology. The deal terms with AVCT mirror those declared for Cue to engineer selected Immuno-STATs, with LG providing the development funds and commercialisation of the selected candidates. Cue received an undisclosed upfront payment as well as a \$5m equity investment at a 20% premium, and milestones up to \$400m.
- ▶ **HitGen Ltd:** signed in August 2018, this multi-year drug research collaboration is for the discovery of small molecule leads using HitGen's DNA-encoded library design, synthesis and screening system. HitGen will receive technology access, research support and milestone payments for multiple targets using its technology platform. No financial details were disclosed.
- ▶ **IONTAS Ltd:** in June 2018, LG signed a collaboration agreement with the UK-based company IONTAS for the use of its proprietary antibody discovery platforms to deliver reagents against a number of biological targets. No financial details were disclosed.

Commercial potential

The antibody market

As an antibody mimetic reagent, the Affimer platform will compete in the antibody market, valued at ca.\$100bn in 2017

Given that Affimers are antibody-mimetics that overcome most of the well-known disadvantages of antibodies, a successful drug would compete within this market. In 2017, drugs derived from monoclonal antibodies had ex-factory sales of \$99.4bn and represented 12% of the entire global prescription drug market. There are now nearly 80 regulatory approved monoclonal antibody drugs on the market, the first being ReoPro (abciximab) in 1995. Humira (adalimumab) is the top-selling drug in the world, with sales in 2017 of \$18.4bn, and cumulative sales since launch (2003) exceeding \$100bn. Our estimates show that the top 10 drugs derived from antibodies have generated cumulative sales since launch approaching \$480bn, out of a total estimated at \$670bn. Therefore, the therapeutic opportunity is enormous.

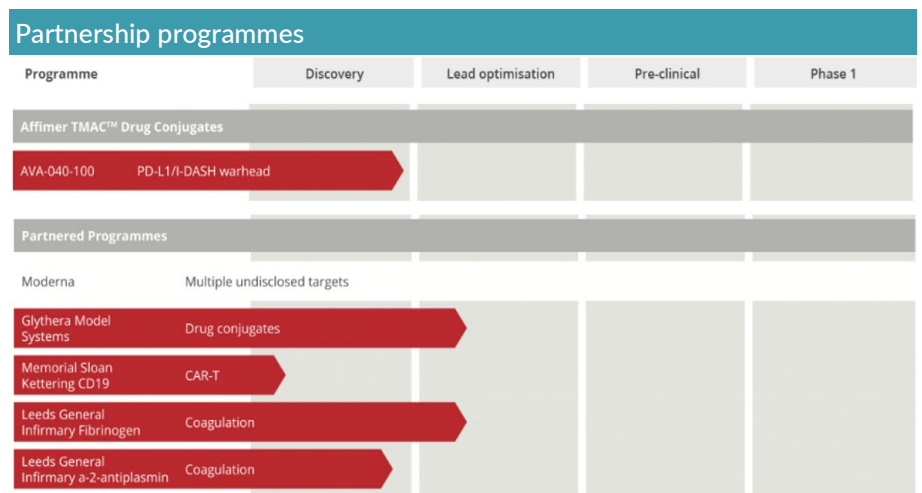
Conclusion

In line with high-level objectives

The new partnership deal with a major pharmaceutical partner is a strong endorsement of the Affimer platform...

AVCT's proprietary Affimer technology represents an alternative approach, with the aim of overcoming the disadvantages of antibodies. Knowledge about, and understanding of, the characteristics of Affimers has led to a number of companies taking up simple licences in order to validate the technology. Therefore, although this is not the first licensing deal for AVCT's therapeutic Affimer business, it is the first that extends well beyond these earlier validation-type deals. Moreover, LG is a credible, deep-pocket pharmaceutical company with the experience of developing a biopharmaceutical all the way through to commercialisation. Therefore, this collaboration agreement represents a major step for AVCT and a huge endorsement of the Affimer technology platform by a major pharmaceutical player.

AVCT has attracted diverse partners in a broad range of applications, targets and areas, which once again, provides grounds for the flexibility of the Affimer platform. We also believe that discussions are on-going for additional partnerships.



Source: Adapted from Avacta website

With this LG announcement, AVCT is delivering on one of its high level objectives for 2018-21, "partnering assets with a significant pharma partner", set out in its recent capital increase documentation.

...and set to be a wake-up call for the market

AVCT has a market capitalisation of just £26.2m which is way below the investment needed to get the company where it is today. Moreover, in the context of this deal, the current value represents an enormous opportunity that the market is totally overlooking. This deal looks set to be a wake-up call for the market.

Financial summary

- ▶ At this stage, no changes have been made to our forecasts as a consequence of this deal.
- ▶ The upfront payment, currently undisclosed, and near-term milestones will be recorded as 'other income' in our P&L statement.
- ▶ When the Services part of the LG contract is considered, there will be a boost to sales, but there will also be an associated increase in costs.

Financial summary						
Year-end July (£m)	2016	2017	2018	2019E	2020E	2021E
Profit & Loss						
Sales	2.17	2.74	2.76	3.17	4.69	8.60
COGS	-0.90	-0.94	-0.89	-0.99	-1.13	-1.47
SG&A	-5.16	-6.79	-8.21	-7.53	-7.75	-8.60
R&D	-1.50	-2.60	-3.78	-4.50	-5.50	-6.50
Other income	0.00	0.00	0.00	0.00	0.00	0.00
Underlying EBIT	-5.39	-7.60	-10.12	-9.85	-9.69	-7.97
Share-based costs	-0.27	-0.39	-0.31	-0.34	-0.37	-0.41
Statutory EBIT	-5.66	-7.98	-10.43	-10.19	-10.07	-8.38
Net financials	0.10	0.09	0.04	0.03	0.02	-0.02
Underlying pre-tax profit	-5.29	-7.51	-10.08	-9.82	-9.67	-7.99
Tax payable/credit	0.92	1.53	1.53	1.25	1.45	1.66
Underlying net income	-0.16	-0.19	-0.15	-0.12	-0.14	-0.20
Underlying basic EPS (p)	-6.46	-8.75	-13.07	-7.42	-7.12	-5.48
Statutory basic EPS (p)	-6.86	-9.31	-13.55	-7.72	-7.44	-5.83
Balance sheet @ 30 Jul:						
Share capital	6.92	6.92	6.98	6.98	6.98	6.98
Reserves	28.94	22.97	14.44	16.45	7.85	1.11
Debt	0.00	0.00	0.00	0.00	0.00	0.00
less: Cash	19.52	13.17	5.22	7.75	-0.74	-7.32
Invested capital	16.68	17.06	16.19	15.68	15.57	15.41
Net cash/(debt)	19.52	13.17	5.22	7.75	-0.74	-7.32
Cashflow:						
Underlying EBIT	-5.39	-7.60	-10.12	-9.85	-9.69	-7.97
Change in working capital	-0.31	0.04	0.31	-0.32	-0.59	-0.89
Tax & interest	0.67	1.83	1.30	1.50	1.25	1.45
Operational cashflow	-4.23	-4.24	-5.47	-5.65	-5.88	-4.06
Capital expenditure	-2.86	-0.66	-0.58	-0.68	-0.78	-0.91
Capitalised R&D	-1.76	-1.47	-1.95	-2.06	-1.82	-1.61
Free cashflow	-8.86	-6.37	-7.99	-8.39	-8.49	-6.58
Capital increases	21.05	0.01	0.05	10.92	0.00	0.00
Change in net debt	12.19	-6.36	-7.95	2.53	-8.49	-6.58

Source: Hardman & Co Life Sciences Research

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