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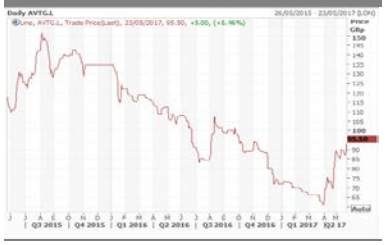
Pharmaceuticals & Biotechnology



Source: Eikon Thomson Reuters

Market data	
EPIC/TKR	AVCT
Price (p)	95.0
12m High (p)	110.0
12m Low (p)	60.0
Shares (m)	68.4
Mkt Cap (£m)	65.0
EV (£m)	48.8
Free Float*	57%
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 which benefits from near-term revenues from research and diagnostic reagents.

Company information	
CEO	Alastair Smith
CFO	Tony Gardiner
Chairman	Trevor Nicholls
	+44 1904 217 046
	www.avacta.com

Key shareholders	
Directors	4.2%
IP Group	24.8%
Henderson	11.8%
Aviva	9.7%
Baillie Gifford	7.2%
Ruffer LLP	7.1%

Next event	
Oct-17	Finals
Jan-18	AGM

Analysts

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Avacta

Affimers 2 – Antibodies 0

Avacta is the proprietary owner of Affimer technology for the development of bio-therapeutics, diagnostic tests and research reagents. Affimers represent a radical alternative to established antibody technology which dominates the drug industry despite its limitations. Avacta has made considerable progress towards its strategic goal to have a first-in-man Affimer therapeutic by the end of 2019. Meanwhile, recognition that Affimers can hit specific targets in areas where antibodies have failed, has resulted in the signing of two distinct agreements with US-based biotechs to provide highly specific Affimers for in-house research programmes.

- **Strategy**: To commercialise its Affimer technology through a combination of bespoke research tools, collaborative deals and by identifying and developing its own proprietary therapeutic Affimer leads. The company has sufficient cash resource to identify an Affimer lead through to IND submission (end fiscal 2018).

- **Licensing deals:** Avacta has entered into two exclusive licensing agreements with different US-based biotech companies for use of bespoke Affimers for in-house research use. The first aims to differentiate a human protein vs similar proteins from other species; while the second is targeting a protein important in oncology.

- **Relevance:** With these additional licensing deals, Avacta continues to demonstrate the advantages of its Affimer technology compared to antibodies. Avacta has yet again delivered Affimers in areas of great specificity where antibodies failed to provide an answer, or did not satisfy the specified criteria.

- **Risk:** Affimers represent a new disruptive technology and the potential customer base might take time to recognise their advantages. While all new drug development carries a high risk, Avacta has hit a number of important milestones over the last years which have considerably altered the risk profile.

- **Investment summary:** Avacta has made considerable progress towards its goal of having its own proprietary Affimer-based drugs. In just 18 months, it has identified potential leads and completed *in vitro* and *in vivo* pharmacokinetic pre-clinical tests. The next step is to prove lack of immunogenicity before selecting its immuno-oncology lead candidate and filing an Investigational New Drug (IND) in 2018, as a prelude to beginning clinical testing in 2019.

Financial summary and valuation

Year end July (£m)	2014	2015	2016	2017E	2018E	2019E
Sales	3.18	1.81	2.17	3.00	3.40	3.80
EBITDA	-1.33	-2.34	-4.59	-6.20	-6.68	-7.26
Underlying EBIT	-1.86	-2.91	-5.39	-7.50	-8.03	-8.66
Reported EBIT	-2.07	-5.57	-5.66	-7.80	-8.36	-9.03
Underlying PBT	-1.83	-2.89	-5.29	-7.43	-7.99	-8.67
Statutory PBT	-2.04	-5.54	-5.57	-7.72	-8.32	-9.04
Underlying EPS (p)	-3.07	-4.50	-6.46	-9.59	-10.24	-11.05
Statutory EPS (p)	-3.57	-9.84	-6.86	-10.03	-10.72	-11.58
Net (debt)/cash	11.48	7.33	19.52	11.58	2.82	-6.61
Capital increases	14.54	0.02	21.05	0.00	0.00	0.00
P/E (x)	-	-	-	-	-	-
EV/sales (x)	-	-	-	-	-	-

Source: Hardman & Co Life Sciences Research

Research licensing deals

Avacta is a biopharmaceutical company focused on commercialising its proprietary Affimer platform as an alternative to antibody technology. The company is developing Affimers for a wide range of applications as reagents, diagnostic platforms and in the therapeutic field. Avacta is able to provide a custom service to create novel bespoke reagents, and is also aiming to develop its own drug pipeline in the same way that many major drugs based on antibodies have been developed and marketed.

Exclusive licensing deals with two US-based biotechs

Avacta entered into two licensing agreements with two US-based biotechs for the use of Affimers…

Avacta took the strategic decision to target Affimers at areas where antibodies cannot and/or have difficulties in providing a satisfactory solution. This is exemplified by the signing of two very recent licensing deals with undisclosed US-based biotech companies. Following fully funded development projects and after careful evaluation of several Affimer products, both companies have entered into an exclusive arrangement for access to one bespoke Affimer each to help with their in-house research programmes. Avacta did not disclose any financial arrangements, but these Affimer reagents were developed and provided under Avacta's custom Affimer process, which the company has previously indicated cost in the range £25k-£100k.

… in areas of discovery where antibodies failed to deliver

Both deals concern the use of Affimers as research tools to detect specific proteins where very close analogues exist. In both cases, we believe that antibody technology was unable to provide an acceptable solution in terms of specificity and reliability. Added to this, the speed of development of Affimers in the range of 7-12 weeks, was considered to be very favourable compared to several months for antibodies.

These deals are important for Avacta as they increase the awareness of the potential of Affimers as a concrete solution, in situations where antibodies have failed to deliver. Neither licensee company is allowed to commercialise the technology without renegotiating the deal with Avacta.

A Species Specific Affimer

One Affimer to be used in detecting species specific proteins

The first deal is with a top fifteen US-based biotech company. Avacta has provided an Affimer that captures a human protein with no cross-reactivity with the same protein derived from animal species used in *in-vivo* models. During the technical evaluation, several Affimers were generated by Avacta and, following the terms of the contract, the biotech company will take the exclusive right to only one of them.

The species-specific recognition of the biotech's target protein has not been possible with antibody technology. No similar assays exist in the market and this will allow the licensee company to progress its own in-house discovery programme. This represents another example of the advantages of Affimers over antibodies in certain areas.

Specific detection of a mutated human protein

One Affimer to be used in the detection of a protein relevant in cancer prognosis

The second deal concerns the detection of a specific protein amongst a group of similar proteins. Avacta has been asked by a clinical-stage US biopharmaceutical company to provide a reliable Affimer able to detect a particular human protein that is associated with poor prognosis in some cancer patients. Avacta has overcome the difficulty in distinguishing this exact protein from other very similar proteins in the same family using Affimer technology.

Antibody technology was also unable to provide a reliable solution in this case. During the evaluation phase, Avacta provided the licensee with several Affimers, and

under the terms of the contract, a license will be granted to for use in its in-house research programme.

Affimers as Reagents & Diagnostics

Affimers can be discovered and validated in 7-12 weeks…

…which, along with other performance advantages…

…makes them a very attractive alternative to antibodies

Avacta is developing Affimers for a wide variety of research and diagnostic applications. Due to its rapid development timeline of 7-12 weeks, Affimers provide an adaptable solution in finding the right reagent(s) in a variety of applications with high growth markets. Avacta has selected three such applications/markets on which to focus initially:

- **Affinity separation:** Protein purification
- **Immunoassays:** Lab kit (ELISA assays) and diagnostics
- **Lateral flow diagnostic:** Point of care diagnostic kits

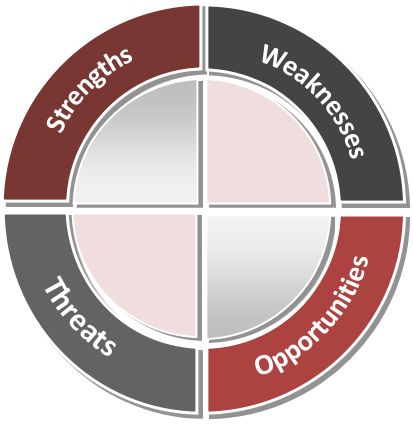
Avacta has adopted a licensing business model for its Affimer technology. For example, Avacta entered recently into an agreement with one of the top three global diagnostic developers for the exclusive rights to several Affimer reagents for an undisclosed sum. This is an important commercial step and a validation of the significant potential of the licensing business model.

Investment conclusion

Each of Avacta's markets is an attractive $bn commercial opportunity

Avacta has developed the concept of Affimers as the new generation technology platform, spanning both diagnostics and therapeutics. Affimers provide a real alternative in the global multi-billion antibody market, estimated at $90bn for 2016, that includes therapeutics, diagnostics and research tools.

SWOT analysis



Strengths
- Affimer technology and IP
- Speed, time, cost advantage over competitors
- Ability to make bi-specifics and tri-specifics
- Antibody technology provides precedent

Weaknesses
- Relatively small player in a competitive field
- Time/cost to develop Affimer-derived drugs
- Will require more capital in the future
- Extremely large number of targets

Threats
- Patent challenges
- Strength and number of antibody companies
- Management may choose the wrong targets
- Time taken to negotiate licensing deals

Opportunities
- Pathway well trodden by antibody technology
- Affimers is a disruptive technology
- Antibody products now an $90bn market (2016)
- High prices paid for technology/product access

Source: Hardman & Co Life Sciences Research

Expected newsflow

Timing	Event
Mid-2017	Continued development of PD-L1 leads, candidate selection, pre-clinical tests
Mid-2017	Details on Affimer Drug Conjugate progress from partner Glythera
3Q 2017	Details on CAR-T cell therapy progress from partner Sloan Kettering
4Q 2017	Detailed *in vitro* data from blood coagulation programme
End 2017	Potential update from Moderna Therapeutics, notwithstanding restrictions
2018	Selection of immune-oncology lead candidate for pre-clinical development

Source: Hardman & Co Life Sciences Research

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(Disclaimer Version 3 – Effective from May 2017)

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