



Avacta Group plc

June 2020 Placing Presentation

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# Introduction





# Avacta Group Overview

**Affimer**<sup>®</sup>  
pre | CISION<sup>™</sup>



**LSE: AVCT ~£400M market capitalisation**

## Therapeutics Division

- Based in Cambridge, UK
- R&D Centre: 33 (inc 20 PhDs) scientists/ technicians
- In-house focus on immuno-oncology
- Global partnerships (oncology, autoimmune, cell and gene therapy)

**Affimer**<sup>®</sup> pre | CISION<sup>™</sup>



## Diagnostics Division

- Based in Wetherby, Yorkshire
- R&D Centre and plc Headquarters
- 40 (inc 22 PhDs) scientists/technicians
- In-house product development
- Global partnerships (undisclosed)

**Affimer**<sup>®</sup>



**cytiva**

**ADEPTRIX**

**moderna**

**ADC**  
THERAPEUTICS



**DAEWOONG**  
PHARMACEUTICAL CO., LTD.

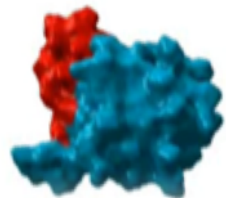


**LG Chem**  
Life Sciences

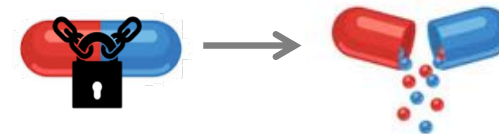
**Affimer: An Alternative to Antibodies**

- Based on a **naturally occurring protein** (stefin A) and engineered to **display a binding surface** like an antibody.
- Can be used to generate a **pipeline of novel immunotherapies for cancer** and other diseases and a **pipeline of immunoassays for diagnostics**
- **Smaller, simpler and more robust, soluble and stable** than antibodies.
- **Low cost of manufacturing and security of supply**
- **Proprietary and unencumbered IP.** (Multiple patent families covering several generations with priority dates 2017/13/09).
- **Freedom to operate** where there is antibody IPR.

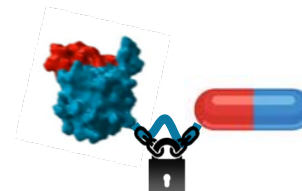
Affimer®

**pre|CISION: targeted chemotherapies**

- pre|CISION is based on chemistry that is **specifically** cut by an enzyme called **fibroblast activation protein-α (FAP)** that is **highly upregulated in most solid tumours**.
- Substrate exclusively licensed from Tufts University. (Multiple patent families with priority dates 2012/14).
- **preCISION substrate renders chemotherapy inactive** until removed in the tumour by FAP.



- Substrate can also be incorporated into a **drug conjugate linker** to release the chemo warhead in the tumour.



pre|CISION™

# Strong Base and Substantial Untapped Potential to Grow Long Term Sustainable Shareholder Value

**Affimer**<sup>®</sup>  
pre | CISION<sup>™</sup>

## Therapeutics

Pre-clinical and clinical pipeline  
Licensing/development partnerships/JVs

**Affimer**<sup>®</sup>

Fully human antibody mimetic

- Immunotherapies
- Engineered cell therapies
- Gene delivery
- Drug conjugates



In-house immunotherapy pipeline:

- AVA004 PDL1 clinical candidate
- Potential for a pipeline of PDL1 bi-specifics



Stem cell therapy JV "AffyXell"

pre | CISION<sup>™</sup>

FAP activated substrate

- Improved safety, tolerability and efficacy of existing chemotherapies
- Novel drug conjugates



In-house pro-drug chemotherapy pipeline

- AVA6000 pro-doxorubicin
- AVA3996 pro-velcade
- Paclitaxel pro-drug
- Oxaliplatin pro-drug
- Plus 7 others prepared



Novel TMAC drug conjugates

- PDL1/IDASH
- Potential for a pipeline of PDL1 TMACs

## Diagnostics

Product pipeline and services  
Licensing/OEM

**Affimer**<sup>®</sup>

In-house product pipeline

- Addressing gaps in large testing markets using superior Affimer performance
- Infectious diseases including COVID-19 antigen tests
- Drug monitoring
- Point-of-care

Technology evaluations with partners (>25)

- Rapid point of care testing
- Infectious diseases
- Drug monitoring
- Fertility/women's health
- Other



Strong growth (135%) in early stage revenues from partnered developments and manufacturing

# COVID-19 Antigen Test



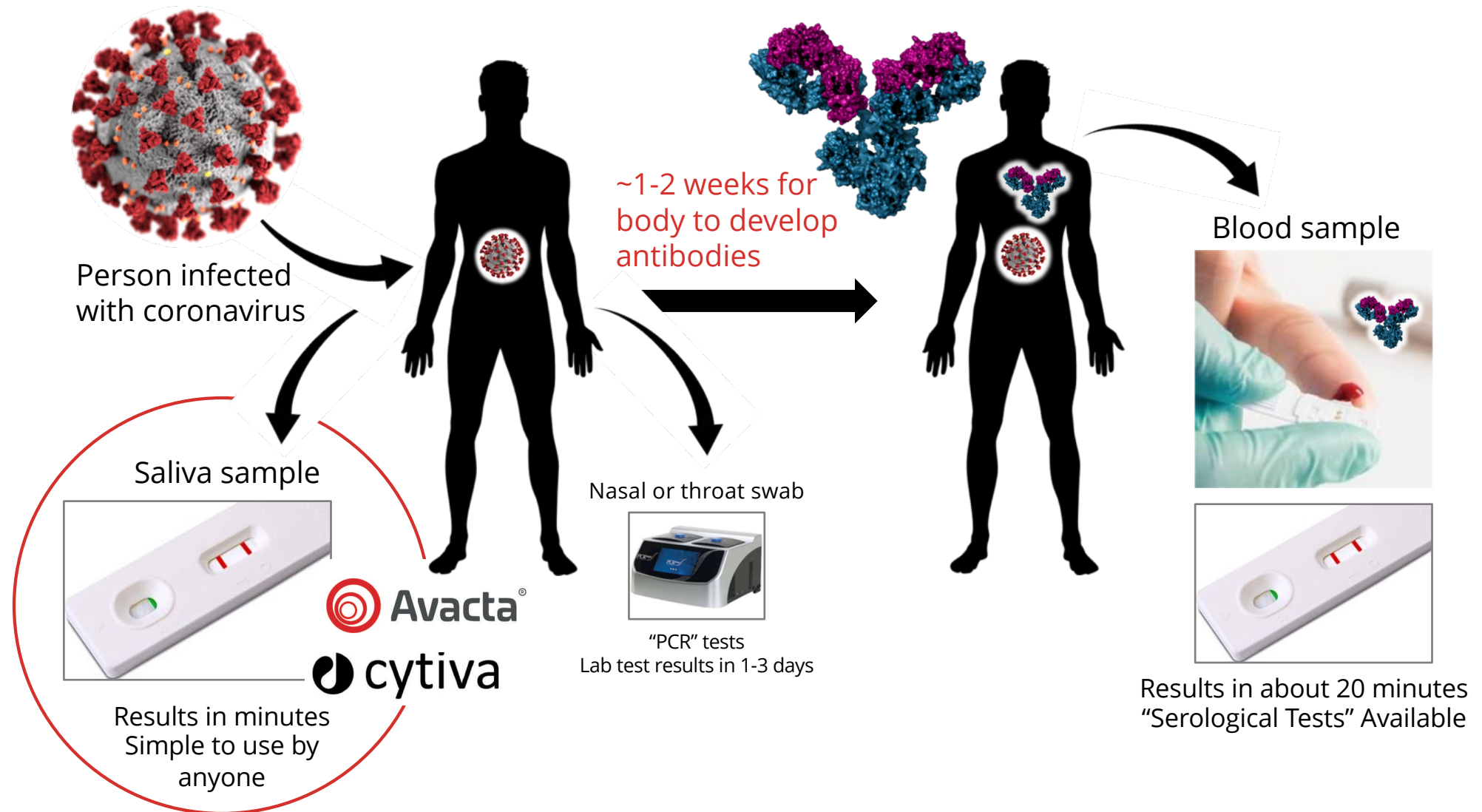


# SARS-COV-2 Rapid Antigen Test: Collaboration with Cytiva (formerly GE Healthcare)

Affimer<sup>®</sup>

pre|CISION<sup>™</sup>

Have I **Got** Coronavirus ? vs Have I **Had** Coronavirus ?





# COVID-19 Antigen Testing Market: Not Just a Short Term Opportunity

**The consensus view is that hundreds of millions of antigen tests will be required per month to support the fight against the pandemic and initial easing of the lock-down during 2020, and to deal with the long term challenge of endemic COVID-19.**

- PCR testing will not be able to provide daily testing for millions of people
- A rapid point-of-care antigen test using saliva is ideal for mass screening of populations for COVID 19 infection.
- There are only a few rapid antigen test strips in development to our knowledge and none have CE/FDA approval yet.
- Avacta has put in place a distribution partner for the direct-to-consumer market (Medusa19) and will put in place additional distribution partners for the healthcare professional/work-force testing markets, as well as OEM partnerships in order to maximise the commercial opportunity.
- Given the expected volume of sales for COVID-19 antigen testing products the potential revenue stream has the potential to be transformational for Avacta.



(formerly GE Healthcare Life Sciences)

Development partner for rapid, saliva based COVID-19 antigen test



Development partner for high-end, high-throughput laboratory COVID-19 test



**MEDUSA 19**

Direct-to-consumer distribution partner for COVID-19 antigen test and future self-test products

# Therapeutics Pipeline





## AVA6000 addresses the safety issues of a \$1bn generic chemotherapy

### Background

Doxorubicin has been a standard of care treatment for advanced soft tissue sarcoma (ASTS) for 40 years.

Treatment is limited to six cycles due to cumulative cardio-toxicity.

**Nevertheless, the global market for this generic drug is \$1bn.**

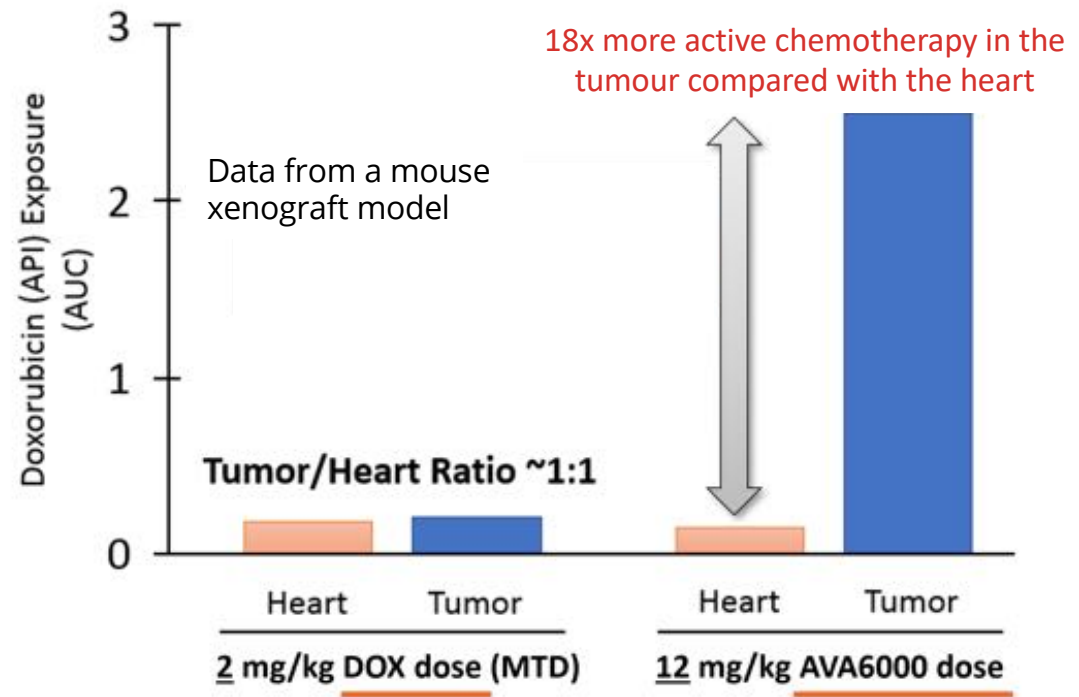
Improved safety could permit many more cycles of treatment per patient at the same dosing level.

### AVA6000 Market Opportunity

For three indications only (ASTS, breast and ovarian cancer) peak sales for a safer/more efficacious form of dox in the US/EU alone is estimated to be **\$1.5bn\* pa with a 5-10% royalty to Avacta plus development milestones in near term.**

\* Commercial Evaluation: AVA6000 (Globe Life Sciences, March 2020)

### Targeting of Drug to Tumour Spares Heart Tissue

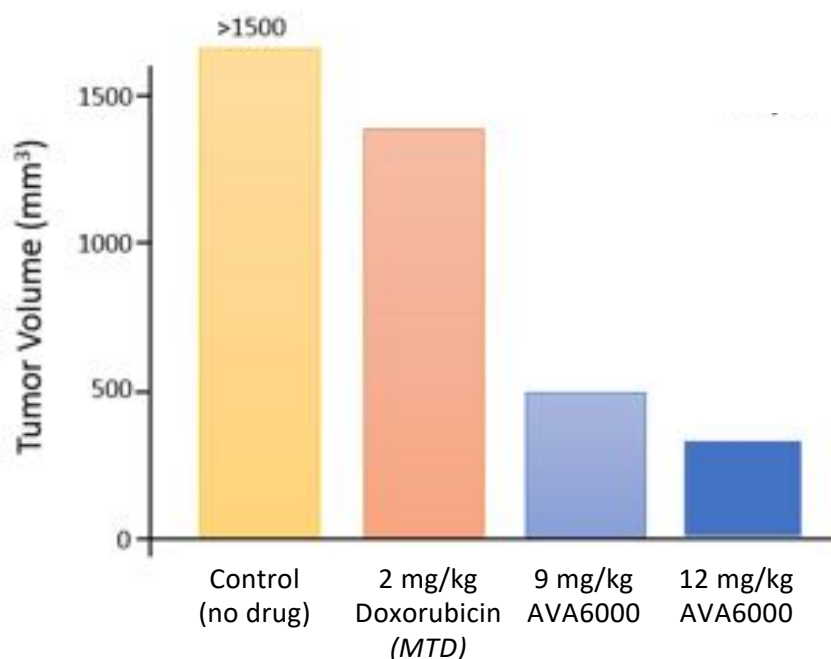


### Phase I Timeline

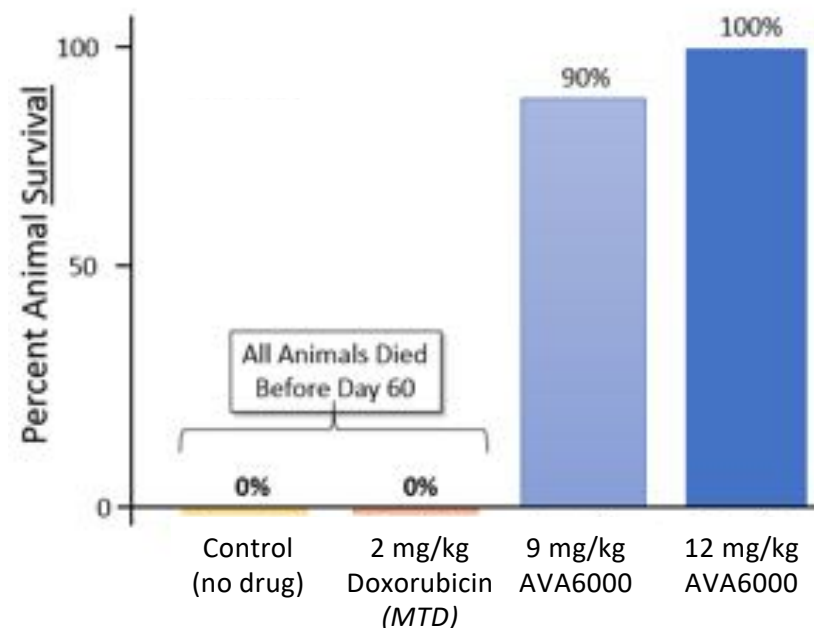
Expected CTA filing Q3 2020 and dosing first patients late 2020/ early 2021. **Proceeds of the placing will allow Avacta to also file an IND in 2020.**

**AVA6000 Pro-doxorubicin permits higher doses than the MTD for doxorubicin resulting in better anti-tumour activity in mouse xenograft model**

**Effect on Tumour Size**



**Effect on Survival**



Xenograft Model: (This and previous slide) Fox Chase SCID mice were inoculated subcutaneously with HEK-mFAP cells. When tumours had grown to a mean volume of 100 mm<sup>3</sup> (Day 28), the mice were randomized to the indicated treatment groups (n = 10). Agents were administered once per week by intravenous injection, continuing until mean tumour volume reached 1500 mm<sup>3</sup> or other humane endpoints were reached. Presented data represents mean ± SEM.

# Wider pre|CISION Pro-drug Opportunity

**pre|CISION can be widely applied to a range of chemotherapies in a market expected to be worth \$56.5bn (2024) (CAGR 11.50%) driven by increased cancer detection rates**

## Example: Velcade

- Bortezomib (Velcade, Takeda Pharmaceuticals) had annual sales of \$1.2bn (2018)
- **BUT - approval limited to multiple myeloma because of dose limiting toxicities,**
- **AND - coming off patent by 2022.**
- Pre-clinical development of AVA3996 pro-velcade will be restarted using placing proceeds.

## Example: Taxanes

- Taxanes, such as the Paclitaxel, are used to treat a range of cancers such as prostate, breast and cervical.
- Paclitaxel has global sales of \$2.96bn (2018) and is expected to generate revenue of \$6.63bn by end of 2025.
- **BUT - significant toxicities, such as myelosuppression and peripheral neuropathy, limit the effectiveness of paclitaxel-based treatment regimens.**

**Ideal for pre|CISION tumour activation to create safer and proprietary pro-drugs.**

**Conservatively assume the pre|CISION prodrug versions of these can achieve similar market sizes delivering 5-10% pa royalty to Avacta plus development milestones.**

Part of proceeds to be used to develop a pipeline of pre|CISION pro-drugs, some of which have already been synthesized, with an addressable market of many \$billions pa.

Including but not limited to:

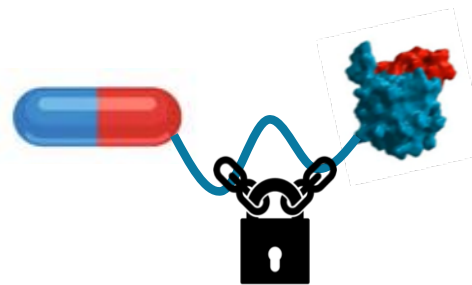
- preCISION Velcade
- preCISION Paclitaxel
- preCISION Oxaliplatin
- preCISION Gemcitabine
- preCISION Capecitabine
- preCISION PARP inhibitor
- preCISION PD-1 Inhibitor
- preCISION AKT inhibitor
- preCISION Balixafortide



## Combination of Avacta's two proprietary platforms to deliver a chemotherapy and an immunotherapy in a single drug molecule

### Chemo "Warhead"

- Released in the tumour by the preCISION linker chemistry.
- Selected to kill tumour cells and create an inflammatory event that recruits the immune system.
- Potential for a pipeline of TMACs using different immuno-active warheads e.g:
- I-DASH = DPP8/9 inhibitor
- STING and TLR7/8 agonists



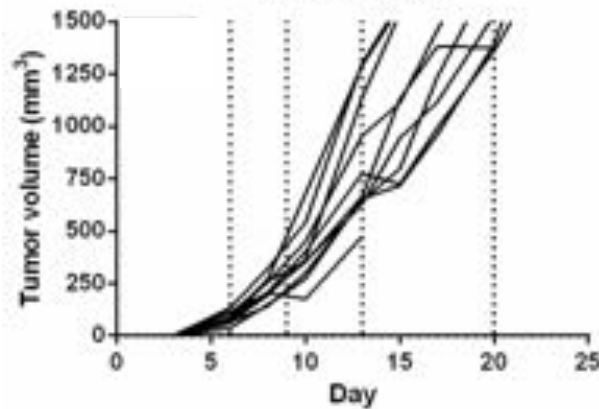
pre|CISION™  
**FAP Sensitive Linker**

### Affimer Immunotherapy

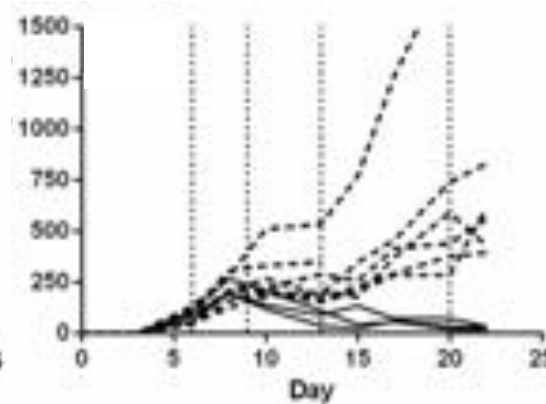
- Supports the immune attack on the tumour by blocking the signal the tumour uses to evade the immune system.
- Potential of a pipeline of immunotherapy and targeting Affimers including bispecifics.

**In the colorectal tumour model CT26 VbP TMACs produce full regression of the tumours**

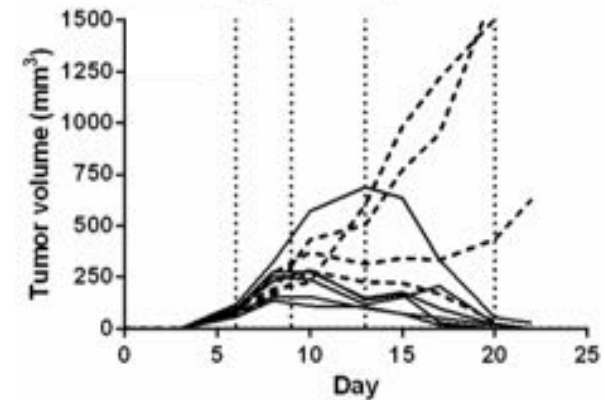
**Control**



**AVA04 anti-PD-L1 | VbP TMAC**



**Undisclosed Affimer | VbP TMAC**



- Two TMAC formats were tested in a CT26 tumour model. The TMACs incorporated a VbP warhead (talabostat mesylate) with either a PDL1 antagonist Affimer or an undisclosed Affimer.
- Work carried out at Tufts University Medical School.

- In the case of the PD-L1/VbP TMAC, this produced complete regression in 30% of the tumours, and in the case of the undisclosed Affimer/VbP TMAC, 60% of the tumours showed complete regression.
- These data give us strong belief that the VbP TMACs hold great promise as a transformative therapy for cancer patients.

**Fully funded programmes with partners and retention of the commercial rights to the Affimer molecules outside of the collaboration**



**Multi-target development partnership and licensing deal worth up to \$310m with \$2.5m upfront, \$5m in near-term milestones, royalties on future products and full research costs**

The LG Chem Partnership continues to advance, with LGC having selected two additional targets – one being a new therapeutic target and the other being a PK/ADME modifier for modifying the biodistribution and tissue retention of Affimers.



**Three target deal to develop Affimer-drug conjugates incorporating ADCT's proprietary PBD warheads (licensed from AZ). Fully funded by ADCT with development milestones and royalties on future sales.**

ADC Therapeutics have selected the first target and work has commenced to generate Affimer leads for ADCT to evaluate in cell killing assays and then to progress into animal models.



**Fully funded programmes with partners and retention of the commercial rights to the Affimer molecules outside of the collaboration**



**Established JV January 2020 to develop next generation engineered stem cell therapies that secrete immuno-modulatory Affimer proteins, with an initial focus on autoimmune diseases.**

**AffyXell is focusing on both anti-inflammatory and tissue regenerative applications.**

**Avacta owns 45% of AffyXell.**

AffyXell has moved forward quickly with the first three candidate Affimer programs underway along with the generation by AffyXell of GMP-compliant banks of mesenchymal stem cells (MSCs) to be engineered to express the Affimers at the site of inflammation.



**First therapeutic partnership established in 2015 which triggered Avacta's therapeutic programmes and the establishment of the therapeutics business unit.**

**Multi-target research collaboration to develop Affimer drug candidates for mRNA delivery.**

Commercial option exercised by Moderna in 1Q2019 to take Affimer lead molecules against one particular target into clinical development.

## Accelerated scale-up of diagnostics business and expansion of therapeutics pipeline

### **Rapid Scale-up of Diagnostics Business, approx. £10 million:**

- Working capital for the COVID-19 testing opportunity
- Expansion of in-house diagnostics product development capabilities including facilities, capital equipment; scientific, commercial and senior leadership teams
- Acceleration of broader diagnostics product pipeline and commercial partnerships

### **Accelerated Expansion of Pipeline of Differentiated Cancer Therapies, approx. £35 million:**

- Rapidly growing the pre | CISION<sup>™</sup> pre-clinical pipeline and delivering pre-clinical packages for several pro-drugs (pre | CISION<sup>™</sup> velcade, paclitaxel and oxaliplatin).
- Expanding the Affimer<sup>®</sup> immunotherapy pipeline (PDL1-TGFβ inhibitor and PDL1-cytokine bispecifics).
- IND/CTA filings for one or more Affimer immunotherapies (TMAC drug conjugate (PDL1-IDASH) or first bispecific candidate) and one or more pre | CISION pro-drugs.
- Obtain first-in-human data for the Affimer<sup>®</sup> platform.
- UK phase I clinical trial for first pre | CISION<sup>™</sup> chemotherapy AVA6000 pro-doxorubicin covered by current cash reserves, with the proceeds of the placing being used to fund IND filing AVA6000.



In-house and partnered pipelines of novel cancer therapies based on two proprietary platform technologies: Affimer<sup>®</sup> - antibody mimetic platform - and preCISION<sup>™</sup> - tumour targeted chemotherapy platform.



In-house and partnered pipeline of diagnostics based on the Affimer platform including saliva-based COVID-19 rapid antigen test.



Potential near-term value inflection points arising from launch of COVID-19 antigen tests and phase I clinical trial of AVA6000 pro-doxorubicin.



Partnerships in place with LG Chem Life Sciences, Moderna Therapeutics, Daewoong Pharmaceuticals, ADC Therapeutics, Tufts University and Cytiva (formerly GE Healthcare Life Sciences) and others; discussions on-going with potential new partners.



Placing to raise working capital to fund scale-up of the COVID-19 antigen testing opportunity, and funding to accelerate expansion of in-house pipeline of Affimer immunotherapies and preCISION cancer therapies, and accelerate expansion of in-house diagnostic product pipeline.





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