Avacta: Stock Data

Share Price:	119.5p
Market Cap:	£297.3m
Shares in issue:	248.8m

Company Profile

Sector:	Healthcare
Ticker:	AVCT
Exchange:	AIM

Integumen: Stock Data

Share Price:	1.90p
Market Cap:	£20.5m
Shares in issue:	1,072.4m

Company Profile

Sector:	Healthcare
Ticker:	SKIN
Exchange:	AIM

Modern Water: Stock Data

Share Price:	1.85p
Market Cap:	£9.71m
Shares in issue:	524.7m

Company Profile

Sector:	Elect. & Electr. Eq.
Ticker:	MWG
Exchange:	AIM

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Avacta Group plc
Integumen plc
Modern Water plc

Avacta Group plc ('Avacta'), Integumen plc ('Integumen') and Modern Water plc ('Modern Water') are collaborating to complete development and roll-out through an existing distribution channel, of a wastewater detection system that represents a ground-breaking initiative for control of the Pandemic. Their proposal comes in the form of an essential real-time wastewater detection and identification test package for governments, industries, military, corporates, etc. urgently seeking real-time identification of local COVID-19 hotspots, prediction of fresh coronavirus outbreaks and advice on required areas of containment.

Unique package being created by collaboration partners

Having Avacta confirm that Affimers have the ability to detect the coronavirus spike protein in a clinical diagnostic test on 9 June 2020, today Integumen and Avacta have announced their signing of a Material Transfer Agreement ('MTA'). One of Avacta's unique competences is in the creation of Affimer® reagents as tools for a wide variety of diagnostic/research applications. This collaboration will evaluate recently generated Affimer® reagents that bind the SARS-CoV-2 spike protein for detection of the coronavirus in wastewater and so provide real-time alerts to warn of localised COVID-19 outbreaks.

Planned follow-on testing of the Affimer® reagents is expected to take a few weeks, followed by validation of next-generation sensors based on the real-time bacteria detection and alert system developed by Rinocloud Ltd, a subsidiary of Integumen. Subject to successful completion, Integumen and Avacta then propose to enter into a supply agreement to allow Integumen to manufacture and commercialise the wastewater detection devices globally by retrofitting into the Microtox® water contamination system developed and distributed by Integumen's commercial partner, Modern Water.

Rapid commercialisation of detection and test packages

The three companies, which are all TPI clients, are collaborating to deliver a unique package of wastewater SARS-CoV-2 hotspot detection and follow-through individual COVID-19 test-kits. Multiple international commercial opportunities exist beyond individual equipment unit sales, with all three parties standing to enjoy long-term recurring revenues generated through the supply of Affimer® reagents in each of the proprietary consumable test cartridges, AI-as-a-Service predictive alerts and maintenance contracts. The true scale of this opportunity is perfectly demonstrated by, for example, the global cruise line industry which handles 32 million passengers in a market annually worth US$31.5 billion, yet is likely to remain entirely disabled and passengers effectively uninsurable until perpetual coronavirus monitoring, detection and testing systems are installed. In this respect, Avacta, Integumen and Modern Water appear to have not only rapidly recognised one of the world's most pressing needs, but are also combining their core competencies and well-established worldwide marketing reach to develop and distribute a unique, seemingly unmatched technological package of potential global significance.

Combining the core competencies of the three different companies

With an installed base of more than 3,000 Microtox® equipment installations and commercial relationships established around the world over the past 30 years, Modern Water's systems are already relied upon for detection of some 2,700 water contaminating bacteria, viruses and toxins.

The addition of Integumen's novel sensor with Avacta's Affirmer® reagents, however, uniquely enables immediate, continuous and specific identification of COVID-19 (and potentially also its mutations) in real-time.

Integumen meanwhile has successfully demonstrated semi-permanent on-site equipment capable of delivering bacteria identification alerts within seconds using proprietary RAWTest nano-photonics and AI technologies. Integumen will also provide software for additional online/remote automation opportunities, having already commenced discussions on proprietary designed hardware supplies with a major internet-of-things ('IOT') OEM equipment producer.

Affimer® reagents are ideal for deployment in real-world situations

Affimer® reagents are ideal tools for use in a wide variety of diagnostic and research applications. They are highly suited for insertion into Integumen's novel sensor to capture the virus and the subsequent retrofitting into existing, and all new, Modern Water Microtox® water contamination alert systems, not only because of their sensitivity and specificity, but also because of their robustness which is essential when being deployed in real-world situations like real-time wastewater analysis.

Affimer® technology offers highly specific target recognition in a variety of complex samples, while retaining both chemical and thermal stability. Affimer® molecules offer flexibility in formatting via both genetic and chemical means. A single strategic cysteine residue addition allows for site specific functionalisation with enzymes, dyes, fluors, or immobilization onto a variety of surfaces or mediums. In addition to classical chemical methods of modification, Avacta's technology is also able to express genetic modifications to optimise performance (GFP, carrier proteins, and even multimers). It develops highly specific, reproducible, and stable tools for use in point of care (POC) tests, ligand binding assays and bioprocessing and separations from complex matrices.

Academic support for mass wastewater screening

Significantly supporting and reinforcing Integumen's original initiative for detection of COVID-19 hotspots and prediction of local outbreaks through wastewater analysis, the KWR Water Research Institute on 1 July 2020 similarly called for the establishment of a global sewage epidemiology system based on standardised virus monitoring criteria. Sewers4COVID, the international research team organised by the European Commission, on 1 July 2020 also envisioned that tracking COVID-19 in sewage will become a coordinated, global effort.

In an interview with The Daily Telegraph on 5 July 2020 , academic Dr Tom Jefferson, from the Centre for Evidence-Based Medicine ('CEBM') at Oxford University, went further in pointing out a string of recent discoveries of the COVID-19 virus' presence around the world prior to its emergence in Asia, as growing evidence of its true origin as a global organism that was simply waiting for favourable existential conditions to finally proliferate. Along with CEBM director Professor Carl Heneghan, Dr Jefferson believes this could potentially uncover new transmission routes, such as through the sewerage system or shared lavatory facilities.

Dr Jefferson noted that "There is quite a lot of evidence of huge amounts of the virus in sewage all over the place, and an increasing amount of evidence there is faecal transmission". He went on to suggest "There is a high concentration where sewage is 4°C, which is the ideal temperature for it to be stabled and presumably activated. And meatpacking plants are often at 4°C." Adding finally that "These outbreaks need to be investigated properly."

Assuming further studies reinforce Dr Jefferson's findings, the call for such monitoring to become a permanent feature in all wastewater and sewerage processing facilities is likely to grow louder. In this respect, it is believed that the only product and technology offering presently under development for this purpose and seemingly capable of satisfying such requirements in the near term, is the one presently under joint development by Avacta, Integumen and Modern Water.

Detection, identification, containment and vaccination are all part of the solution

Prospective global demand for technology packages capable of identification of the SARS-CoV-2 virus together with broad detection of multiple other viruses/bacteria/toxins in a world that recognises containment and vaccination can be the only routes by which global populations might return to something like 'normal' is clearly enormous.

Other than obvious demand from governments, agencies and utilities, future regulation may also require perpetual standalone installation and monitoring by a whole range of other independent entities that routinely create high footfall, ranging from hospitals, dental clinics, airports, stadiums and concert venues to hotels, cruise ships, etc.

Cruise Liners – Just one of a number of significantly disabled industries

In June, the giant cruise line operator Carnival Corp. (NYSE:CCL) highlighted the effects of the Pandemic that continues to disable its sector, noting that its monthly average cash burn rate for the second half of 2020 is estimated to be 'approximately US$S650 million'. According to the global cruise industry trade association, the CLIA, each day US cruise operations are suspended results in a total loss of approximately US$110 million in economic activity.

Carnival also noted, in common with many of its competitors, that a good level of demand continues for its 2021 season, but that it needed to remain in active consultation with science and medical experts seeking relevant insights with regard to containment and opportunity to continue the future offer of safe passage for its clients. This industry is just one of many that deals with and sustains high volumes of frequently changing people originating from different locations and backgrounds year-round. Clearly, it requires a standardised and robust solution capable of ensuring that COVID-19, its mutations and/or other viruses, along with identification of bacteria/toxins that might threaten their wellbeing, can be perpetually monitored and immediate detection alerts registered without being seen to interfere with the passengers' daily routines or require them to frequently undertake potentially disruptive testing.

Indeed, perhaps the bigger issue for cruise industry in general is not the level of bookings it might presently be achieving, but whether or not the insurance/underwriting industry is going to be comfortable enough to provide policies for passengers against the threat of contracting the virus or other contagious diseases once onboard.

Recognising the urgent need of both the cruise line and insurance industries, the three-company collaboration could, for example, potentially offer a bespoke package to include general wastewater detection of multiple infectious diseases, including the COVID-19 virus, plus the ability to individually test areas of the ship right down to individual passengers. The installation of such perpetual monitoring equipment could go a long way to getting the cruise industry operational again over the coming months.

Blockchain audit for insurable COVID-19 risk assessment

Integumen's novel sensor equipment and consumables will be subject to blockchain identification. Data collected and analysed will provide audit tracking of any outbreak of a coronavirus hotspot or local area under containment. This high-integrity data could potentially be subscribed for and utilised by the insurance industry, not just for the cruise line industry, but also at other locations/operations (like hotels, hospitals, venues etc.) in order to calculate actuarial risk for COVID-19, along with other infectious diseases, such as noroviruses and e.coli, legionella, etc. This approach could form a key part of future governmental regulation designed to permit the global population's return to some form of 'normal'.

Equity research and valuations

Turner Pope acts a corporate/joint corporate broker to each of the three AIM-quoted companies detailed in this report and routinely publishes equity research on all of them. While it is clear that success in the collaborative venture detailed in this Research Update offers potential to become wholly transformative for each of the participating companies, this consideration has yet to be formally factored into any individual valuation consideration by TPI. TPI awarded a share price target of 3.23p/share for Integumen plc in its Initiation Research of 9 January 2020.

Please note our valuation is relative and such valuation may never be realised, therefore please do not base investment decisions on this valuation alone.

Avacta Group plc - Activities

Avacta Group plc is a biotechnology company which has developed the proprietary Affimer® technology platform, a unique engineered alterative to antibodies. Affimer® proteins can be developed quickly for drug development and a wide range of life sciences applications in the diagnostic and research sectors.

1-year share price performance

Source: LSE

Integumen plc - Activities

Integumen plc is a vertically integrated test services company focused on developing and commercialising technology and products that scientifically prove the impact of skin care product claims for healthcare, life sciences, clinical research, pharmaceutical and cosmetics industries.

1-year share price performance

Source: LSE

Modern Water - Activities

Modern Water is an AIM listed Water Technology Group that was established in 2006 by IP Group Plc to develop and commercialise IP and technologies related to the treatment of water. It has a portfolio of over 100 patents focused on making the treatment and recycling more efficient.

1-year share price performance

Source: LSE

Past performance is not an indication of future performance.

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