

Press release: Manufacturing of life-enhancing medicines boosted by new government funding

- 2 new programmes to help companies produce more medicines and get them to patients quicker have been given a multi-million pound government boost
- companies in Northumberland, Oxford and London have been awarded £4.3 million funding to develop digital solutions, including artificial intelligence, which will streamline production of next-generation medicines
- in a separate series of investments, delivering on the commitment made in the [Life Sciences Sector Deal](#), a further £3 million has been awarded to support the work of Advanced Therapy Treatment Centres in rolling out new cell and gene therapies across the NHS

Patients could soon receive faster treatment thanks to a multi-million pound government boost to streamline the production of medicines and treatments, including those used to treat blood cancers and inherited disorders.

Companies in Northumberland, Oxford and London will adopt new digital technologies, such as artificial intelligence, to support the manufacture of next-generation medicines and treatments.

The £4.3 million funding aims to create more efficient and innovative methods for manufacturing medicines. The challenge works to set the UK apart as a leader with greater capacity for manufacture of safe, affordable and effective therapies.

Life Sciences Minister Lord Henley said:

New technology can help us live longer, healthier lives and the new projects announced today will improve the speed and accuracy with which medicines get to the people that need them.

Advances in technology can help us address the challenges that an ageing society presents and we are backing the technologies of tomorrow in our modern Industrial Strategy, with the biggest increase in public research and development investment in UK history.

The 3 individual projects are:

- Arc Trinova in Northumberland will use new technologies to speed up the process of the production of patient specific medicines; it is currently a timely process dispensing individual doses from bulk because of the careful handling, labelling and batch release processes

- Oxford Biomedica will look to dramatically reduce the supply time for manufacturing by using a new digital and robotics framework to increase capacity, reduce waste and cut costs
- Autolus Ltd in London will look to avoid mix-ups of complex medicines on the supply chain by developing a computer based system that will constantly monitor the operation, making adjustments to timing, coordination and production where necessary, improving the efficiency of the whole system and working at a pace that human operators cannot imitate

One year on from the launch of the Industrial Strategy, this £7.3 million investment is the latest commitment from the £180 million [Industrial Strategy Challenge Fund \(ISCF\)](#) dedicated to leading-edge Medicines Manufacturing.

Taking steps to improve patient access to life-saving treatments and medicines, Advanced Therapy Treatment Centres, working across the UK, will support the roll-out of cell and gene therapies as clinical trials show them to be safe and cost-effective. The centres bring together expert clinicians, researchers, scientists, developers and private companies to demonstrate how the therapies have impact on patients' lives.

Advanced therapies, including cell and gene therapies, represent the next generation of therapies that have the potential to offer treatments for a number of conditions including some blood cancers and inherited conditions for which there are currently limited treatment options.

UK Research and Innovation (UKRI) is responsible for managing the Industrial Strategy Challenge Fund, which funds the winners of the Medicines Manufacturing Challenge.

Dr Ian Campbell, Interim Executive Chair, Innovate UK for UKRI, said:

The projects announced today will bring real benefits to patients and boost the knowledge economy as part of the government's modern Industrial Strategy. This is vital for the UK as a global leader in the development of advanced therapies and medicine manufacturing.

The projects awarded funding in the Digitalisation of Medicines Manufacturing are:

- Autolus Ltd in London 'Digital Delivery of Personalised Advanced Therapies' that will look at using technology to boost the flawless tracking and tracing of thousands of individual patient batches to ensure there are no mix-ups
- ARC Trinova Ltd in Northumberland 'Fill-Inova: Enabling flexible and agile highly potent medicines manufacture' that will use technologies to increase the throughput to thousands of units per hour
- Oxford Biomedica 'Digitalisation of Medicines Manufacturing' that will look at how to dramatically reduce the supply time for manufacturing

The Advanced Therapy Treatment Centres have been established previously by

£21 million funding from the Industrial Strategy Challenge Fund and are working to develop systems and methodologies that will allow the delivery of advanced therapies across the healthcare system.

The Advanced Therapy Treatment Centres are:

- Innovate Manchester Advanced Therapy Centre Hub (iMATCH),
- The Midlands-Wales Advanced Therapy Treatment Centre (MW-ATTC, comprising Birmingham, Wales and Nottingham)
- The Northern Alliance Advanced Therapies Treatment Centre (NAATTC, comprising Scotland, Newcastle and Leeds)

The Cell and Gene Therapy Catapult is playing a key role in the coordinating the work of the 3 Advanced Therapy Treatment Centres to ensure that learning and best practice is shared effectively. They will allow the creation of bespoke manufacturing and supply systems capable of operating across the entire NHS with the potential to treat many patients each month.

[Press release: From science fiction to reality: People in London and Edinburgh set to be the first to trial self-driving vehicle services](#)

Government support for the first UK trials of self-driving vehicle services.

[Press release: From science fiction to reality: People in London and Edinburgh set to be the first to trial self-driving vehicle services](#)

- For the first time, the public will experience self-driving vehicle services thanks to government backing for 3 world-leading public trials by 2021
- pilots will include an autonomous bus service across the Forth Bridge from Fife to Edinburgh, and self-driving taxi services in London
- also announced is funding to further strengthen the environment for

testing and development of self-driving technologies in the UK

- a year on from the launch of the modern Industrial Strategy, these projects will fulfil our ambition to see self-driving vehicles on UK roads

People in London and Edinburgh will soon be the first in the UK to experience self-driving vehicle services as part of 3 new public trials announced today by Business and Energy Secretary Greg Clark on a visit to Oxbotica, part of one of the winning consortia.

Once the preserve of science fiction and Hollywood films, the projects will allow the public to ride autonomous buses on a 14-mile route across the Forth Bridge, as well as book self-driving taxis to travel around parts of London.

The projects were selected following a competitive process and will share a £25 million government grant through the fourth round of the Connected and Autonomous Vehicles Intelligent Mobility Fund.

Each pilot combines the strengths of leading names from business, technology and academia – including Jaguar Land Rover, Addison Lee, Fusion Processing, Oxbotica, and the universities of Nottingham and the West of England – and support the government's ambition to have self-driving vehicles on UK roads by 2021 through the modern Industrial Strategy and Future of Mobility Grand Challenge.

Business Secretary Greg Clark said:

Self-driving cars will revolutionise the way we move goods and people around the UK. These Industrial Strategy projects and investments are exciting examples of our long-term plan in action – ensuring we build on our strengths to reap the rewards as we accelerate towards our ambition to have autonomous vehicles on UK roads by 2021.

Autonomous vehicles and their technology will not only revolutionise how we travel, it will open up and improve transport services for those who struggle to access both private and public transport.

The UK is building on its automotive heritage and strengths to develop the new vehicles and technologies and from 2021 the public will get to experience the future for themselves.

All the projects will include social behavioural research to further explore how driverless technology can seamlessly integrate into society, with the findings applied to the development for future autonomous service models.

Future of Mobility Minister Jesse Norman said:

The UK is a world leader in transport innovation, and our work on

the Future of Mobility Grand Challenge will ensure this long continues.

Automated driving technology is advancing rapidly, and the UK market for connected and autonomous vehicles is forecast to be worth up to £52 billion by 2035.

This pioneering technology will bring significant benefits to people right across the country, improving mobility and safety, and driving growth across the UK.

The Centre for Connected Autonomous Vehicles was established in 2015 to ensure the UK is a world-leader in the development and testing of self-driving technologies. £250 million, match-funded by industry, is being invested by the government, propelling self-driving technology in the UK.

To further strengthen the environment for testing and development of self-driving technologies, £18 million is also being awarded to four successful projects through the Meridian 2 and 3 competition. The Meridian 2 project will develop a digital platform to allow the exchange of data which technology developers and fleet operators can use to deliver better transport systems, while the Meridian 3 projects will focus on developing controlled test environments for highways, and public test environments for highways and rural roads.

Meridian CEO Daniel Ruiz said:

This is great news for the UK. Leading technology businesses from Japan, Germany and Spain, alongside homegrown innovators, are all investing significant sums in the UK to accelerate development of self-driving technologies. Their business decisions are an endorsement of our capabilities in this globally competitive sector. We've got the talent, the tools and strong government support to consolidate our world leading position in this transport revolution.

The Modern Industrial Strategy

Our modern [Industrial Strategy](#), published last year, set out how the whole of the UK can build on its strengths, extend them into the future, and capitalise on new opportunities. Investing in science and research to keep us at the forefront of new technologies and the benefits they bring. Nurturing the talent of tomorrow – through more outstanding schools, world-leading universities and the technical skills that will drive our economy. And transforming the places where people live and work – the places where ideas and inspiration are born – by backing businesses and building infrastructure not just in London and the South East but across every part of our country.

It has been taken forward at pace over the last year:

- innovative ideas that bring together world-class UK science, research and innovation to develop cutting edge products and services of the future have received an extra £1.7 billion making it the largest increase for 40 years (to £7 billion) – that includes £210 million to develop new medical diagnostic tools and treatments, £90 million for the food and farming industry to embrace agri-tech and £184 million for 41 UK universities to train the next generation of world-class scientists and engineers
- 6 sector deals between government and industry have been published, from construction and automotive to nuclear and the creative industries, including £1.9 billion of investment in life sciences and £1 billion for artificial intelligence – they are not only about attracting investment and growth, but also ensuring we have the skilled, diverse workforce we need for the future
- plans for new Technical Qualifications (T-Levels) and to transform the quality and quantity of apprenticeships
- furthered the connectivity of Britain’s towns, cities and rural areas, including the first allocations of the £190 million full-fibre challenge fund and £25 million for six 5G testbeds across the UK
- opened the Transforming Cities Fund with billions of pounds ready to go to projects that drive productivity by improving connections within city regions
- opened the Faraday Institution in Oxford to keep the UK at the forefront of global battery manufacture
- announced plans for a new spaceport in Sutherland
- we now have the fastest growing infrastructure investment across the G7, providing £31 billion of additional capital spending to areas critical to improving productivity
- we have launched the £9 million Centre of Data Ethics and Innovation to act as an advisory body to government and regulators on ethics of data and its use, including for AI
- we recently launched the Patient Capital Fund, which will invest £2.5 billion in our most innovative companies
- we will shortly publish the Business Productivity Review setting out ways to support improving productivity in many of our smaller businesses.

Notes to editors:

1. In Budget 2018, £90 million investment was announced for future of mobility zones for trialling new transport modes and services.
2. Additional information on the projects funded through the Connected and Autonomous Vehicles Intelligent Mobility Fund:

Project CAV Forth

An Autonomous Bus Service from Park & Ride Across Forth Bridge to Edinburgh Park Train & Tram Interchange Fusion Processing (lead), Uni of West of Eng.,

Alexander Dennis, Edin. Napier Uni. & ESP Systex, Transport Scotland, Stagecoach. Total: £6.09 million, £4.35 million grant.

Project CAV Forth, led by Fusion Processing, will bring together organisations from across the UK to develop a high capacity Autonomous Bus Pilot Service across the Forth Bridge – a UNESCO World Heritage site. The project will convert five full-size Alexander Dennis single decker manually driven busses into autonomous vehicles. These self-driving buses will provide a service capable of carrying up to 42 passengers 14 miles across the Forth Bridge to Edinburgh Park Train and Tram interchange. With buses every 20 minutes this could provide an estimated 10,000 weekly journeys, and support the case for rolling out similar services across the UK.

Project Apollo

Addison Lee (lead), DG Cities – Greenwich (site), Oxbotica, Immense Simulations, Nominet Total: £15.15 million, £8.84 million grant.

Project Apollo, led by Addison Lee with Oxbotica, Nominet, Immense Solutions and DG Cities, will develop and deploy 4 autonomous taxi pilot services, that increase in complexity and distance in Greenwich, London.

The project will build on the self-driving technology under development by Oxbotica as part of an existing Government-backed project called 'DRIVEN', combining 6 vehicles from that project with a further 9 new vehicles to provide the 4 pilot customer services: (i) feed North Greenwich Station (ii) a Hub-to-hub (no public transport) service (iii) a restricted on-demand service and (iv) a 'go anywhere in borough service'. Once proven this project will lead to the launch of a public service in 2021 (or sooner) whilst bringing together leading UK organisations and helping strengthen the UK Connected and Autonomous Vehicle supply chain in the emerging global market.

ServCity

JLR (lead), Addison Lee, Uni. Nottingham, TSC, TRL Total: £19.8 million, £11.15 million grant

ServCity project, led by Jaguar Land Rover with Addison Lee, Transport Systems Catapult, TRL and the University of Nottingham, will develop a mobility service based in London using 6 autonomous Land Rover Discovery vehicles. Building on expertise from the Government-backed UK Autodrive project, the consortium will test and further develop existing JLR sensing and autonomy systems in Coventry and the Midlands before deploying a pilot of a premium mobility service across four Greater London boroughs.

The project will also develop analytical models to understand and demonstrate the wider positive impacts of connected and autonomous vehicles on cities – from reduced air pollution to easing congestion.

1. Additional information on the projects funded through Meridian 2 & 3:

Meridian 2

ConVEX – Connected Vehicle Data Exchange

Bosch (lead) with JLR as one of 7 partners Total: £8.4 million project, £4.4 million grant.

This project looks to accelerate the development of CAVs by aggregating data from a diverse range of sources and share this data via a commercial exchange platform.

Meridian 3

Physical testing infrastructure

- Stream 1 (controlled highways): Highway Intersections at Bruntingthorpe Proving Ground, led by Idiada Total: £8.4 million, £4.0 million grant
- Stream 2 (live highways and rural): Midlands Future Mobility: Rural and Highway Extension, led by Warwick Manufacturing Group Total: £11.3 million project, £7.9 million grant
- Stream 3 (controlled parking): Park-IT – Trusted Autonomous Parking, led by Horiba MIRA Total £4.3 million, £2 million grant

[News story: Quantum leap: prototype devices will be ready in 2 years' time](#)

Advancements in quantum technologies are predicted to have a big impact on our lives – from creating navigation systems that can operate without GPS to new cameras that can see around corners.

To help accelerate progress in this field, the government is funding 4 projects that will use the latest quantum technology to develop prototype devices. Projects will receive a share of £20 million from the Industrial Strategy Challenge Fund, delivered by [UK Research and Innovation](#).

It follows the Chancellor's announcement of [up to £235 million of further support](#) to develop the next generation of transformative quantum technologies in the [Budget 2018](#).

This includes a new national quantum computing centre, additional investment in the next wave of the Industrial Strategy Challenge Fund, and a training and skills package.

Leading the development of quantum technologies

Projects will receive funding to develop quantum prototypes in 4 fields.

Surveying underground before you start digging

[RSK](#) will lead a project with a consortium of businesses and universities to use quantum sensors to detect objects underground. Initially, the technology will be used by road-working companies, but it could also be used in the rail network.

Precise timing

Manufacturer [Teledyne e2V \(UK\)](#) will lead a project to develop a pre-production prototype of a miniature atomic clock.

It will enable services such as energy supply, transport and mobile communications to function in the event of disruption to the current standard timing service, Global Navigation Satellite Systems (GNSS).

Secure encryption

[Toshiba Research Europe](#) will lead a project to develop the UK supply of low-cost integrated chips, which will enable more secure transmission of data using new encryption technologies.

Keeping data safe

Another encryption project will be led by [ArQit](#). It will create advanced receivers to pick up quantum key signals. These keys are used to keep data safe by using quantum technology to let companies know if the data they are transmitting has been accessed.

Making the impossible possible

Business Secretary Greg Clark said:

There is a huge future for cutting-edge science in the UK, which is why we are investing in ambitious technologies like quantum in our modern Industrial Strategy.

The projects announced today will benefit ordinary people around the country, from easing traffic congestion to offering more data security for online transactions.

Quantum technology has already developed sensors that can see around corners, and make the impossible, possible. We are backing world-leading innovators to continue this important work.

Working across industry, academia and government

Roger McKinlay, Challenge Director for Quantum Technologies at UK Research and Innovation, said:

The rise of quantum technologies will bring a huge impact on all our lives. In order to secure the UK lead in this area, and make sure that companies based here and UK jobs take a significant share of this opportunity, we must continue to work across industry, academia and government to achieve innovation.

This is why the government's investment of £20 million through these 4 successful, pioneer challenge-funded projects will put prototype quantum-enabled devices into the hands of users.

Press release: £500,000 fund launched to celebrate Windrush Generation throughout the year

Communities across the country will have the opportunity to bid for a share of £500,000 of new funding to hold their own local events.