



Healthcare and Medical Technology



South West England

An Overview of Healthcare and Medical Technology in the South West of England

The South West of England is renowned across the world as a leader in biohazard, biodefence, diagnostics and marine sciences. There are more than 1,500 overseas-owned businesses in the region and a number of market leaders have established European and global operations here.

These include multinationals such as AstraZeneca, Becton Dickinson (BD), Catalent, Covidien, GE Healthcare, Patheon, Perrigo, Renishaw, Thermo Fisher Scientific and West Pharmaceutical Services. Altogether 450 small to medium-sized enterprises (SMEs) and multinationals are active in life sciences and healthcare, excelling in biodiagnostics, medical devices, biomanufacture and marine biology. These have a very productive workforce of 20,000 workers enjoying the highest levels of happiness and motivation anywhere in the UK. There is a rich environment of innovation and the region has produced 10 Nobel prize winners or Nobel laureates within life sciences and healthcare.

In the UK, medical technology companies registered sales of more than £5.6bn in 2007 and employed around 47,000 people. This country's ageing population is an important driver for the healthcare sector and nowhere more so than in the South West, which has a higher percentage of over 65s than the national average. The market is also being driven by the need for healthcare improvements and efficiency. High growth areas are in: new composite material applications; imaging technology; tools for earlier diagnosis; assistive technologies including e-health; miniaturisation of medical devices; and high throughput health information technology.

The term "medical technology" generally refers to a product or software, necessary for the diagnosis, prevention, alleviation, monitoring or treatment of disease, injury or inability. Supportive medical technologies in

the South West of England include: rapid diagnostics; specialist medical device manufacturers; electronic engineering; orthopaedics and mobility devices; dental and ophthalmological. Overall, there are around 300 medical technology companies in the South West of England and the region is renowned across the world for diagnostic technologies. The region's world class expertise in convergent technologies from a wide range of different disciplines – including life sciences, ICT, nanotechnology, photonics and advanced electronics – provide a solid foundation for medical innovation.

All of this expertise, coupled with the region's strong track record in innovation and outstanding quality of life, makes the South West of England an ideal location for medical technology investors.

"The South West of England has played a crucial role in our development to date. Ultimately, the product is likely to be manufactured outside the region, however, the R&D capability will remain here in the South West. We have excellent links with the region's universities and we are within a knowledge triangle that includes the Health Protection Agency and other leading life science organisations. We have had no problem in attracting first choice candidates for all our key positions as this is an attractive part of the world and people are happy to come here."

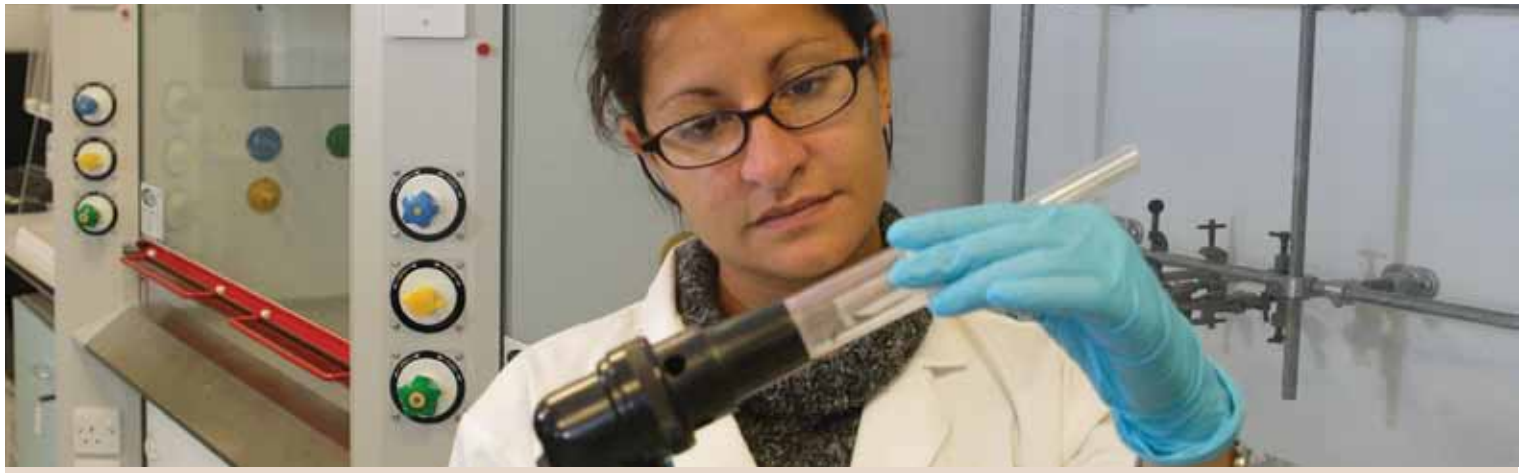
Dr John Clarkson, Chief Executive, Atlas Genetics

Our sectors

Aerospace • **Biotechnology & Bio-medical technologies** • Creative industries • Environmental technologies
Food and drink • Information communications technologies • Marine industries • Nuclear energy
Manufacturing & advanced engineering (including composite technologies) • Renewable energy

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South West
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Electronic engineering

In the field of electronic engineering there are more than 30 multiple-application medical technology organisations in this region, including Siemens Flow Instruments, Unomedical and Xograph. Research instrument specialists include multinationals such as GE Healthcare and Renishaw.

Robotics is an emerging strength for the South West of England. The Bristol Robotics Laboratory (BRL) is engaged in fascinating research into the link between humans and robots and how we can work more effectively together. Research using its “Jules” humanoid, for example, explores the use of facial expressions, while “Bert” looks at gesturing and the use of indexicals. Ultimately, BRL aims to develop robots that respond to gesturing and non-language utterances as well as body pose, facial expressions and speech. Other groundbreaking organisations in this area are OC Robotics and Elumotion.

Among the specialist electronic engineering companies in the region is Unomedical, a global company specialising in single-use devices for hospitals and healthcare sectors. Also in Gloucestershire, Xograph supplies radiology equipment to hospitals, veterinary practices, forensics associations and industrial users. Its products include dental imaging, surgical imaging, digital mammography, general radiography and mobile imaging equipment. The company was the first in Europe to install a Canon CXDI portable digital detector plate and is the market leader in Digital Radiography systems in the UK.

CASE STUDY: OC ROBOTICS

OC Robotics is the world’s leading manufacturer of snake-arm robots. It is based in the South West of England at the heart of an emerging robotics cluster.

Robots will have a far-reaching impact on all of our lives in the future, as Managing Director, Rob Buckingham explains: **“Early adopters of snake-arm robot technology include the nuclear, aerospace and security industries, but it has considerable potential elsewhere – in the workplace, in the home, in the environment and even inside our bodies. The military is interested in using snake-arm robots for counter-terrorist applications, such as searching for and defusing bombs. For surgeons this technology represents the next generation in minimally invasive surgery, using tiny snake-arm robots to get inside the human body and perform complex procedures.”**

OC Robotics is the only commercial supplier of this type of robotics technology in the world and is responsible for coining the term “snake-arm robots”.

As the company develops, its location in the South West of England is proving to be an important benefit. Rob comments: **“Not only are we strategically positioned alongside two of our largest customers but we are also located in a city that we believe will become a major centre for robotics. Bristol recently saw the opening of the Bristol Robotics Laboratory and, alongside our own pioneering work and the work of companies like BAE systems, this places the city at the forefront of an emerging technology. Robotics is forecast to be a €55bn per annum market by the year 2025 and we are well placed to take advantage of this.”**



Medical Technology Hotspots

Rapid diagnostics and point of care

The Health Protection Agency and Defence Science Technology Laboratories at Porton Down are the focus for a new diagnostic consortium whose aim is to develop diagnostic technologies that are:

- fast
- easy to use and interpret
- low cost
- highly sensitive
- and able to detect a multitude of different pathogens.

Infectious diseases are the greatest global killer, accounting for around 13 million deaths a year. Porton Down in the South West of England is the focus for a new diagnostic consortium whose aim is to develop diagnostic technologies that are fast, easy to use and interpret, low cost, highly sensitive and able to detect a multitude of different pathogens. The idea is to develop products and processes that can be used at the point of care (POC), rather than requiring samples to be sent away to the laboratory for testing. They should provide immediate, reliable answers that are easily interpreted.

The consortium, which has an R&D budget totalling around £20m, includes representatives from the Health Protection Agency, the Defence Science Technology Laboratory, the NHS, higher education institutes (University of the West of England and the Institute of Bio-Sensing Technology) and innovative SMEs including Atlas Genetics, Enigma Diagnostics and Attomarker. The consortium covers 25 technology platforms, ranging from genomics and proteomics through to spectroscopy and biomarkers. It targets diseases ranging from hospital acquired infections and global diseases like malaria through to sexually transmitted diseases, blood-borne viruses and veterinary threats like foot and mouth.

Specialist equipment

There are more than 160 organisations in the South West of England involved in the manufacture of specialist medical equipment.

CASE STUDY: *BECTON, DICKINSON UK*

Becton, Dickinson UK Limited is a wholly-owned subsidiary of BD, a leading global medical company that is focused on improving drug therapy, enhancing the diagnosis of infectious diseases and advancing drug discovery. BD's plant in Plymouth, established in 1981, is one of the leading evacuated tube and needle production facilities, and employs more than 700 associates, making it a key contributor to the local Plymouth economy. The importance of the Plymouth plant is reflected in BD's continued investment in the facility over the years. BD recently launched the BD PureCoat™ product line, a family of chemically-defined, animal-free cell culture surfaces designed to enhance performance of a wide range of cell types used in cell research and drug discovery applications. BD continues to attract the skilled, engaged workforce it needs to meet stringent medical production standards, and BD's close links with leading universities, colleges and medical institutions in the area also contribute to the company's knowledge base.

CASE STUDY: *GOOCH AND HOUSEGO*

Gooch and Housego is a leading supplier of critical components to the world's major optical and laser system manufacturers. Its facility in Torquay, Devon, leads the world in manufacturing high spec optical fibre components. Across the group as a whole, the company's groundbreaking technologies include crystal growth, acousto optics and RF drive electronics, electro optics, fibre optics and optical polishing and coatings.

For more than 25 years, telecommunications has been a key market for its fibre optic technology, but more recently Gooch & Housego has become established as a leader in optical coherence tomography for ophthalmic instrumentation. Fibre optics are used to guide the light that examines the retina at the back of the eye. The company supplies its technology to leading players in Europe, the US and Asia, and is keen to establish a presence in Japan's growing biomedical sector.

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Medical Technology Hotspots – continued

In 2009, Gooch & Housego was part of a delegation of British companies that travelled to Japan as part of JETRO – the Japan External Trade Organisation programme. JETRO is a regional industry tie-up (RIT) initiative which promotes two-way industrial exchange and collaboration between regions in Japan and other countries. As a direct result of the visit, Gooch & Housego has secured a significant order to supply a prototype to a leading Japanese manufacturer of ophthalmic imaging equipment.

Vice-President of Engineering, Dr Andrew Robertson commented: **“Although we had been working to develop this opportunity independently, the support of the South West Regional Development Agency and the fact that we were invited to attend this trip helped enormously and gave the process extra impetus. Historically, the South West of England has been a hotspot for fibre optics and there is a strong, well-educated workforce here that contributes to the success of our business. We are looking forward to continuing to develop our presence in key world markets from our base here in the region.”**

Orthopaedic and mobility devices

There is growing demand in healthcare for high quality orthopaedic and mobility devices that support healthy ageing and improved quality of life. Advanced Control Research is a University of Plymouth spin-off company that carries out research and development into all areas of intelligent and innovative control systems. It has developed advanced microcontrollers for upper limb prostheses, as well as a portable system for diagnosing imminent heart attacks, based on pattern recognition technology.

Alongside innovative spin-off companies like this are global players such as Biomet UK, Arjo, Zimmer and Corin, which have chosen to locate in the region. Corin is a world leader in reconstructive orthopaedic

devices, particularly for young, active patients. It has its headquarters here in the South West of England. The company is highly regarded in financial circles as a classic example of a British success story. It aims to restore quality of life to young, active patients around the world and to relieve the pain of osteoarthritis by developing innovative products and processes such as hip resurfacing, knee, ankle and shoulder replacements, ligament reconstruction and augmentation. All of its products are manufactured in the South West of England and even some of the raw materials (stainless steel, titanium, cobalt chrome alloys) are machined on site. R&D is carried out in-house by a team of nine specialist scientists headed up by a technical director.

Dental and ophthalmic laboratories

There are more than 25 dental organisations in the South West of England. Phoenix Dental Castings is one of the largest manufacturers of cobalt chrome frameworks in the UK. By using high performance, dimensionally stable alloys, it can produce dentures that have high flexural strength, are lightweight and biocompatible. The Barden Corporation is a world leader in the design and manufacture of ball bearings, producing some of the most precise bearings in the world.

It supplies both the x-ray and dentistry markets with bearings that can withstand rotation speeds of up to 500,000 rpm in hand piece turbines, as well as repeated sterilisation cycles. Among the ophthalmological organisations in the region are Essilor, the world's largest manufacturer of ophthalmic lenses, and Clearlab, which is a leading manufacturer of contact lenses. Pioneering work is underway in the region to use composite additive layer manufacturing techniques, more commonly found in aerospace, for new applications such as hip replacements and dentistry.



Regional Research Institutes and Universities

There is a strong track record of collaboration between the South West's teaching hospitals and the medical technology industry, as well as with the region's seven world class universities. The South West also collaborates with many other national centres of excellence in R&D, including London and Cambridge. There are 63 healthcare trusts in the region, including Derriford Hospital, the fifth largest teaching hospital in Europe. Key centres of research include:

Combined Universities of Cornwall – www.cuc.ac.uk

University of Bath – www.bath.ac.uk

University of Bournemouth – www.bournemouth.ac.uk

University of Bristol – www.bristol.ac.uk

University of Exeter – www.exeter.ac.uk

University of Plymouth – www.plymouth.ac.uk

University of the West of England – www.uwe.ac.uk

Campden BRI – www.campden.co.uk

Centre for Environment, Fisheries and Aquaculture

Science (CEFAS) – www.cefas.co.uk

Defence Science and Technology Laboratory –

www.dstl.gov.uk

Health Protection Agency – www.hpa.org.uk

Institute of Bio-Sensing Technology –

www.biosensingtech.co.uk

Plymouth Marine Sciences Partnership – www.pmsp.org.uk

Peninsula School of Medicine and Dentistry – www.pms.ac.uk

Bristol Robotics Laboratory – www.brl.ac.uk

Some examples of biomedical research excellence include:

- **Bournemouth University** – the Academic Biomedical Engineering Research Group researches functional electrical stimulation and rehabilitation engineering, sensor development and physiological measurements.
- **University of Bath** – research into the medical device and healthcare sectors within its Mechanical Engineering and Medical Sciences departments. Also, the Centre for Orthopaedic Biomechanics.
- **Bath Institute of Medical Engineering** – based at the Royal United Hospital and Universities of Bath. A medical engineering charity that works with users and professionals to solve problems of disability and healthcare with practical technology.

- **University of Exeter** – pioneering work is underway in the Composite Additive Layer Manufacturing Institute, incorporating techniques more commonly found in aerospace for new applications such as hip replacements and dentistry.
- **University of the West of England (UWE)** – home to the UK's first Institute of Bio-Sensing Technology, acting as a technology accelerator for biodiagnostic applications in human health, advanced technologies and the environment.
- **UWE and University of Bristol** – the Bristol Robotics Laboratory (BRL).

Medical Technology Facilities

There are six science parks in the South West of England; SPark, Bristol MediPark and Truro and Porton Bioscience & Technology Centre in Salisbury. All include biocubators, while Exeter Science Park, Plymouth International and Tamar Science Park have grown-on space. The region also has five dedicated science incubators and this number is increasing all the time.

Specialist Support Organisations

Support for medical technology companies in the region is provided by a new biomedical iNet consortium, which offers free information, advice and networking opportunities for the sector. It can be accessed through Business Link (www.businesslink.gov.uk) by following the links to the South West of England or NHS Innovations South West (www.nisw.co.uk) which exists to support the National Health Service (NHS) in bringing forward intellectual property for commercialisation and actively encourages investment partners. The international team at the South West of England Development Agency also provides specialist support to medical technology companies.

Whether you are considering product distribution, or establishing a direct market presence in the UK, please get in touch with our International Business Team. We will answer your questions, provide business introductions and make it simpler for you to enter the South West of England, which is your springboard to Europe.



Contacts

Advanced Control Research

www.advancedcontrolresearch.com

Arjo

www.arjo.com

AstraZeneca

www.astrazeneca.co.uk

Atlas Genetics

www.atlasgenetics.com

Barden Corporation

www.bardenbearings.co.uk

Becton Dickinson

www.bd.com

Biomet UK

www.biomet.co.uk

Catalent

www.catalent.com

Clearlab

www.clearlab.com.sg

Corin

www.corin.co.uk

Covidien

www.covidien.com

Defence Science Technology

www.dstl.gov.uk

Elumotion

www.elumotion.com

Enigma Diagnostics

www.enigmadiagnostics.com

Essilor

www.essilor.co.uk

GE Healthcare

www.gehealthcare.com

Gooch and Housego

www.goochandhousego.com

Health Protection Agency

www.hpa.org.uk

OC Robotics

www.ocrobotics.com

Patheon

www.patheon.com

Perrigo

www.perrigo.com

Phoenix Dental Castings

www.phoenix-dental.co.uk

Renishaw

www.renishaw.com

Siemens Flow Instruments

www.siemens.co.uk

Thermo Fisher Scientific

www.thermofisher.com

Unomedical

www.unomedical.com

West Pharmaceuticals

www.westpharma.com

Xograph

www.xograph.com

Zimmer

www.zimmer.co.uk

The companies above represent just some of the expertise and experience you can find here in the South West, offering you the perfect environment for investment, development and partnership. To find out more on how South West England can help your business grow, talk to our team.

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