

SOUTH WEST OF ENGLAND: COMMERCIAL BIO-DIVERSITY



The South West has a host of biotechnology businesses including agri-bio, the manufacture of biological reagents, marine sciences and particularly bio-medical applications – an area in which the region has real strength.

This diversity stems from a combination of major Government funding related to human and animal health at Porton Down in Wiltshire, world-class research and teaching in the region's universities and a combination of indigenous companies and inward investment in the region.

The South West presents great investment opportunities to companies wishing to tap into outstanding research, develop partnerships with some of the successful companies (many of which seek to out-licence their technologies), or find a well educated workforce with access to the EU market of 300 million people.

The following review of companies operating in the region is far from exhaustive but gives a flavour for the sector and its strengths.



Commercial laboratory work, courtesy of Biovault Ltd

HUMAN HEALTHCARE

Most new drugs until the 1970s were largely discovered by intuition or serendipity. With the increased understanding of genomics and the dramatic advances in computer technology, drug discovery can now be undertaken on a more rational basis and South West academia and companies are in the vanguard of some of the most significant developments.

The whole drug development process can take up to 15 years and \$500m - \$700m from concept to market; bioinformatics can reduce the expense of drug discovery whilst expanding the search for effective compounds. In addition to having one of the few dedicated bioinformatic departments at the University of Exeter, the region has a number of specialist drug screening and lead generation companies.

Molecular Sensing Plc for instance, have developed both hardware and software technologies for DNA analysis to provide quick and sensitive tools for pharmaceutical, biotechnology and research applications. This can assess the amount of virus in an infected blood sample, or if a particular gene has been modified. The market for such analysis is valued at over \$1.5 billion pa, and the market for DNA analysis is growing at over 20% pa.

Mobious Genomics Ltd based in the Exeter Innovation Centre, have also developed an alternative to gel electrophoresis for rapid DNA sequencing, which has widespread application in screening for new drug candidates, as well as diagnostics for cancer, heart, and bone diseases.

ProXara Biotechnology Ltd is one of the successful spin-out companies from Bristol University. The company offers high throughput screening, enabling them to identify high value drug leads for diabetes, obesity, inflammation and cancer treatments and is a good example of the commercial successes developing from the region's science base.

One of the largest businesses in the South West biotech industry is **Triplos Receptor Research** in Cornwall. It is a world leader in information products and services for pharmaceutical, agro-chemical and petrochemical research. The company offers drug discovery software, informatics, chemical compound libraries and fully integrated chemistry services which are extensively used in pre-clinical phases of new pharmaceutical research.

The latest \$25 million investment in a new 160,000 sq. ft. facility will employ 250 people (many of whom are post-graduates) and will represent one of the most advanced facilities of its type in the world - a graphic demonstration of the strength of the science base in the region.

Also in Cornwall, **Key Organics** offers compound screening services, contract research and a library of over 30,000 high purity synthetic compounds for the life-science market.

Another spin out company is **Neuro Targets**, who is a provider of novel drug targets for nerve regeneration, inflammation, cognitive disorders and other areas of neuroscience. Their proprietary technology enables them to identify bank of novel genes that are difficult to detect by conventional techniques.



DNA Double Helix

DRUG DISCOVERY

Porton Down is home to three innovative new drug development companies: Regma, Enact, and GW Pharmaceuticals.

Regma Biotechnologies Ltd is a US owned drug discovery company working on the prevention and treatment of infectious diseases by means of alternatives to antibiotics. Tuberculosis is one such disease which is responsible for the deaths of more than 3 million people each year.

The company has research and pilot production facilities at Porton Down where it has developed novel bacteriophage therapies to combat microbial pathogens. The company has entered into collaborative research agreements with pre-eminent organizations across the world including the Institute Pasteur de Lille and the US Naval Medical Research Center and out-licensing its products to major pharmaceutical companies.

Enact Pharma Plc is a biopharmaceutical company focused on cancer and neurological diseases. It has a proprietary drug technology based on the selective activation of a normally latent enzyme present at elevated levels in some tumour types as compared to normal cells. This tumour-targeting drug is currently entering clinical trials. The company is also about to commence named patient sales of an enzyme which rescues cancer patients in danger through methotrexate intoxication. Enact is also undertaking nerve growth research and developing the ability to generate biologically active nerve fibres on biodegradable polymers.

GW Pharmaceuticals is a pharmaceutical group developing a portfolio of prescription medicines derived from cannabis to meet patient needs in a wide range of therapeutic indications. Positive results have been reported for each of the first four completed Phase III trials in multiple sclerosis and brachial plexus avulsion. Their developing portfolio of prescription medicines and drug delivery systems are targeted at multiple sclerosis, spinal cord injury, neurogenic pain, spasticity and other neurological dysfunction, arthritis, migraine, head injury, schizophrenia, weight loss associated with cancer and AIDS, and chemotherapy induced nausea and vomiting.

Bristol based **Hunter-Fleming Ltd** is a drug development company which has attracted heavy venture capital funding. It acts as a bridge between academic research from leading universities (in the region and internationally) and large pharmaceutical companies. It licences-in technology from the universities and undertakes development work up to and including Phase II human clinical trials. It then licenses-out the projects to large pharmaceutical companies for completion of the development process and for the marketing of products. The company has particular focus and expertise in Central Nervous System (CNS) and Immunological/inflammatory disorders.

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WORLD-CLASS DRUG DELIVERY TECHNOLOGY

Vectura Ltd is unusual in that it is both a pharmaceutical development company with pilot-scale GMP manufacturing capability and skills in research-based particle science and device engineering. As such, it produces innovative formulations and the device systems for pulmonary, oral, and dermal drug delivery. It is a recognized leader in the fields of powder engineering, aerosol physics and micro-particle processing and is another example of commercialization of advanced technologies developed at one of the region's universities, in this case, Bath.

VACCINES

CAMR (Centre for Applied Microbiology & Research) and **DSTL** based at Porton Down in Wiltshire, are organizations which together employ over 1000 people and have evolved from the UK government's long term research into infectious diseases and vaccine development.

CAMR conducts research, development and production contracts both for the UK Department of Health and a range of pharmaceutical and biotech companies. It has highly specialized facilities for research into pathogenic microorganisms (including TB, Meningitis, HIV/AIDS and TSEs) and the production of highly purified biopharmaceuticals, vaccines and biologically active compounds.

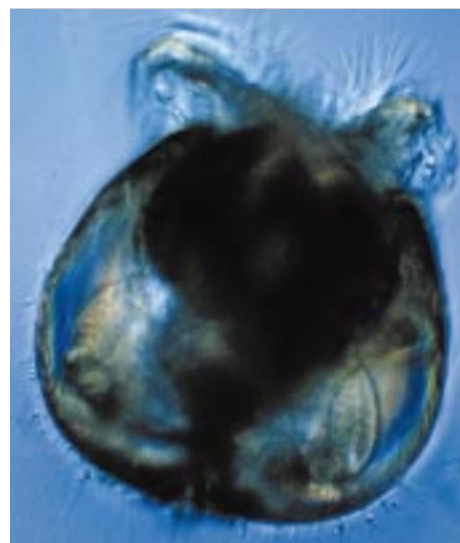
As a WHO reference centre for virus research, CAMR is one of the UK's two diagnosis and reference laboratories for dangerous pathogens with facilities to handle pathogens up to and including biosafety level 4. They are also one of the few manufacturers of anthrax vaccine which is supplied to both the UK and US governments.

DSTL Chemical and Biological Sciences is a part of the Ministry of Defence but works in collaboration with a range of companies to exploit its patents and technology for mutual benefit. With over 800 employees and over 80 years of experience, DSTL has some of the finest biotech facilities in the world.

DSTL undertakes targeted commercial research in vaccine development and production, drug evaluation, pharmacology, human science and animal breeding under the most secure conditions.



Courtesy of Coastal & Marine Technologies Ltd



Courtesy of Knight Scientific Ltd – a cultivated baby piddock

Plymouth is home to one of Europe's largest hospitals, the headquarters of the new Peninsula Medical School, Plymouth University's Postgraduate Medical School and Department of Psychology, the Plymouth Marine Laboratory and a rapidly increasing number of companies in the biotech and healthcare sectors. This provides the city with strength in clinical medicine and research.



Courtesy of Phase 1 Clinical Trials

In the medical field, **Phase 1 Clinical Trials Unit Ltd** is a company working in partnership with other companies and university departments to provide a comprehensive outsourcing facility for the pharmaceutical industry in the fields of pre-clinical and clinical research. They offer pharmaceutical companies a wide range of services in Phase I to IV drug development, such as bioanalytical method development and guidance with project management, report writing and regulatory affairs.

Coastal & Marine Biotechnologies Ltd emerged from this cluster of science based organizations and has developed practical technologies to monitor marine pollution and is developing new applications for its cryo-technology in the medical and pharmaceutical field. This has resulted in the formation of BioVault Ltd providing specialized temperature critical storage, tissue processing facilities and R&D laboratories.

