Training troops to fight Ebola in West Africa

Bodies of data

Putting data to work for the benefit of patient healthcare

Enhancement: Improving medical technology
Future watch: Potential healthcare game changers
Made in the UK: Keeping manufacturing on home turf
Meeting the unmet: Responding to unmet clinical needs
Going global: Cracking global markets

INSIDE:

United Kingdom
advances in health technology

industry
and innovative services to offer our clients real solutions enabling experience guiding products to successful outcomes. With over 50 years experience, an integrated supply network to meet the needs of global studies, and an exemplary regulatory profile, we offer adaptable and innovative services to offer our clients real solutions enabling speed-to-market for their lifesaving medicines.

PCI Clinical Trial Services

Come experience what makes PCI different. We support clients as a true partner and extension of their business, offering expertise and experience guiding products to successful outcomes. With over 50 years experience, an integrated supply network to meet the needs of global studies, and an exemplary regulatory profile, we offer adaptable and innovative services to offer our clients real solutions enabling speed-to-market for their lifesaving medicines.

Expertise • Experience • Partnership

Clinical Services

Manufacturing | Packaging & Labeling | Global Storage & Distribution

Commercial Services

Manufacturing | Packaging | Serialization

A Trusted Partner

Expertise and Care in Clinical Development

The future of healthcare

Digital tools are increasingly being integrated into healthcare, both for patients and for clinicians. Delving into the developing socio-techno-cultural dimensions of digital health, the use of health apps can increase a patient’s interest in staying healthy. Self-monitoring progress could influence a patient’s decisions about what food to eat, the level of activity for the day, and whether to smoke or drink, driving towards a healthier lifestyle.

Data is now integral to clinical care, with efficient sharing of clinical information being essential to the development of modern healthcare systems and research. Using knowledge, data and accurate diagnosis, precision medicine is expected to transform medicine in the coming decades, improving outcomes for patients and the healthcare system.

This edition explores the use of digital tools, data and precision medicine to identify which approaches will be effective for which patients, whilst also featuring an insight into the training of deployed forces to help care for Ebola patients, controlling the unprecedented transmission rates of around 27,000 cases during the epidemic in West Africa.

The publication also investigates the ever-evolving life science sector through the themes of enhancement, future watch, made in the UK, meeting the unmet and going global, highlighting key innovations and advancements within the life science industry.

Tess Coughlan-Allen
Editor

Enhancement

12 Data-driven approach targets improvement in healthcare
14 Aberystwyth Innovation and Enterprise Campus takes shape
15 Data mining for biomarkers
16 Hair-loss solution for chemotherapy patients

Future watch

18 Patient innovation
19 Investing in future talent
20 PINCER tightens controls for patient safety
21 Tablets set to improve care for the elderly
22 World’s first national tissue bank for pancreatic cancer research

Going global

24 Mathematical diagnostics hits US market
25 Arab Health opens up new markets
26 Dubai unveiling for carbon fibre wheelchair
27 Randax Laboratories improving lives around the globe
28 The value of Horizon 2020 funding to SME innovation

Made in the UK

30 Device for rapid detection of heart conditions
31 Wireless body sensors monitor patients vitals
32 Digital Health quarter for Serendip® Smart Cities Incubator
33 SureScreen – Application of innovation
34 Funding for anti-biofilm breakthroughs

Meeting the unmet

36 Clinical innovation booming for Wales NHS
37 Innovative interactive data exploration tools
38 Moving forward with AULE
39 Chilean views develops fibre-optic healing light
40 Voucher system makes consultation safe and successful

View an interactive version of this edition at www.medilinkuk.com
Bodies of data

Putting data to work for the benefit of patient healthcare

As digital tools are integrating firmly into the health technology industry, patients are increasingly interested in taking their treatment and care into their own hands. Connecting patients and professionals, digital healthcare systems can support clinical decision-making and ease the strain on hospitals, with the use of health monitoring devices helping to progress medical research.

It is widely understood that the interaction between lifestyle and genetics can influence the role of developing health problems. Now, with the movement of the ‘measured self’, key data can be gathered to allow scientists to better understand the way genetic and environmental factors impact health.

So, how do we use a digital health application in a clinical setting? It can be incorporated into professional healthcare for data to be collated and support clinical decision-making, which can lead to the remote delivery of expert professional care and advice.

The digital health and social care strategy for Wales aims to make the most of the benefits that digital services can offer, allowing health and social care workers access to digital tools and information to easily co-ordinate care and support people in their homes or local communities. The initiative also ensures patients are able to access their own information relating to health and care needs, enabling them to be in control of their own health and well-being and to play an active role in decisions about the services, care and support we need.

An increasingly digital future keeps our healthcare at the pace of our information technology: fast, flexible and mobile. With a better-connected healthcare system and more tools to monitor and understand health, we hope to continue to improve and better manage the wellbeing of the nation.
Exploring precision medicine for effective treatment

The ‘one size fits all’ approach to patient treatment is increasingly recognised as being both ineffective and costly. Clinicians and researchers are now looking to precision medicine to ensure that a patient receives the most appropriate treatment at the right time.

Precision medicine is a medical model, sometimes called stratified or personalised medicine, which proposes customised healthcare, with medical decisions, practices, and products being tailored to the individual patient. By identifying which approaches will be effective for which patients, the method can improve response rates with quicker and less costly decisions about treatment and an easier route to recovery.

The technique involves grouping patients based on factors including their genetic profile, response to a particular drug, or the molecular basis of their disease, rather than the traditional symptoms-based approach. This means that the patient receives a precise drug treatment at the optimum dose and with the correct combination of other medication, to deliver improved healthcare outcomes.

Predicting how a patient will respond to a treatment can be done using pharmacogenetics, the study of inherited genetic differences in drug metabolic pathways, and pharmacogenomics, the role of acquired and inherited genetic differences, aided by a range of diagnostics tools and informatics. Looking at large groups of patients to try and find ways of predicting response to treatment can be effective for patients with cardio-vascular, inflammatory and infectious diseases, and for certain therapeutics, where scientists make predictions by looking in detail at the cancer cells and their genetic make up.

Researchers from Nottingham University Hospitals NHS Trust and the Jvan Geest Cancer Research Centre at Nottingham Trent University have shown that a molecule, called SPAG5, is associated with the clinical outcome and response to chemotherapy in patients with specific subtypes of breast cancer. The biomarker can identify patients with a 60% reduction in the risk of death compared with those not exhibiting the molecule. This makes it a novel biomarker that enables the tailoring of breast cancer treatment to individual patients, and the molecule has the potential to be a novel therapeutic target in future.

Researchers are increasingly using precision medicine to develop a better understanding of disease progression and deliver appropriate treatment for patients suffering from diseases that are health and social care priorities, such as cancer, diabetes and Alzheimer’s.

It is estimated that 60% of people with Alzheimer’s have not been properly diagnosed and therefore are not being given vital drugs and care. The capability to distinguish between the levels and progression of the disease could enable drug developers to substantially improve patient care and people with mild cognitive impairment are likely to benefit the most from such disease-modifying drugs.

In half of all melanoma patients, the cancer is driven by a mutation in the BRAF gene, which can result in a fault in the BRAF protein. The faulty protein can cause uncontrolled cell growth resulting in spread of the tumour. Roche has developed a polymerase chain reaction-based diagnostic test that can identify tumours that carry the mutated gene, allowing patients to be treated with a therapy that blocks the abnormal function of the BRAF protein, shrinking the tumour.

Precision medicine combines the use of biomarkers, diagnostic tests and data-based insights to understand a patient’s disease more precisely. This knowledge allows a healthcare professional to select treatments with safer, more predictable and cost effective outcomes, so the development of new IT and e-health systems is fundamental to the success of the UK’s precision medicine industry.

Researchers from the NIHR Maudsley Biomedical Research Centre (BRC) for Mental Health, Proteome Sciences and Merck Millipore successfully collaborated on a 1,000 sample Alzheimer’s disease biomarker validation study. Preliminary data suggested that blood protein biomarkers could help to identify dementia in preclinical phase, or predict progression from mild cognitive impairment to dementia. During the study, researchers tested biomarker panels of between 11 and 16 proteins in a very large replication study. These biomarkers have significant potential to form the basis of a series of simple blood tests for the diagnosis and management of Alzheimer’s.

Moleculomics, a start up from Swansea that has recently expanded to North America, is innovating new precision medicine approaches and products based on computation of interactions of compounds with the entire 3D human proteome, accounting for individual polymeric variation. This allows assessment of the impact of the genetic composition on the efficacy and clearance of a particular therapeutic, and identification of potential adverse events.

The approaches may be applied early in the drug discovery pipeline to incorporate the effects of genetic variation across a whole target group or population, or in the development of clinical stratification tools to be employed with currently prescribed medicines, particularly in polypharmacy. These techniques can also be used to develop better predictions of adverse drug reactions, which currently account for 6% of hospital admissions. This approach could save lives whilst creating significant cost savings for the NHS.

The Precision Medicine Catapult is the UK’s innovation centre for precision medicine, showcasing the UK as a key location for the development and delivery of precision medicine as a targeted approach to healthcare. The initial locations of the regional centres of excellence network are Belfast, Cardiff, Glasgow, Leeds, Manchester and Oxford. Each centre will engage in regional precision medicine activities within the UK-wide network, co-ordinated from the Cambridge headquarters. The centres will work on locally driven programmes, developing innovative technologies and solutions for broader use across the UK’s healthcare sector.

1. http://www.nocri.nihr.ac.uk/media/13712/blood_test_-_a_simple_diagnosis_for_alzheimer_s.pdf
2. https://pm.catapult.org.uk/about-us
3. http://www.uk-pgx-stratmed.co.uk
By September 2014, the Ebola Virus Disease outbreak in West Africa was spiralling out of control, with unprecedented transmission rates. Epidemiology modelling suggested alarming forecasts in the spread of the virus; this was the largest and most complex outbreak of Ebola ever reported. The outbreak was caused by the Zaire strain, which is typically associated with mortality rates of 50-90%. With around 27,000 cases, West Africa was overwhelmed with transmission rates.

Ebola treatment centres were created to allow isolation and safe treatment of suspected and confirmed cases of the disease to reduce fatality rates and prevent further transmission. However, despite a rapid scaling up of treatment centres focussed in Liberia and Sierra Leone, there were inadequate numbers of healthcare workers.

The deployment of foreign medical teams to support host nations was requested by WHO and the Ministries of Health in the affected countries. Despite this effort, a military response was required to contain the epidemic. Operation GRITROCK was the name given to the British Ministry of Defence (MOD) mission in Sierra Leone.

During planning for Operation GRITROCK, predictions about the course of the outbreak were dire. Initial capability was sufficient only for a small 8-bed unit with four beds for recovery, making 12 in total. This unit would be reserved for healthcare professionals. Other treatment units were built with the help of British military expertise, including a 70-bed unit run by Save the Children, with funding support from the Department for International Development (DFID) to cater for the general population.

The rationale for establishing a unit for healthcare professionals was not to stop the spread of Ebola but to treat everybody that deserved care, but to increase confidence of overseas workers that were coming to the country to help. This caused an ethical dilemma of empty beds in an Ebola treatment facility for healthcare professionals, whilst people were dying outside. The empty beds created the most prevalent and difficult ethical challenge faced during the deployment. However, to achieve clinical success, treatment delivery and patient care had to be finely balanced against staff safety.

The first challenge was to understand what could be the highest level of UK standard care that is safely delivered at a tented facility within a jungle environment. WHO recommended a staff ratio of 4:1 nurses to patients. 1:1 doctors to patients to balance required levels for patient care and allow adequate rest. Equally important to clinical staff were the support staff, including leadership, water and sanitation, logistics and infection prevention and control professionals, who also required basic and mission-specific skills training.

To ensure staff safety whilst delivering treatment, it was imperative that all processes were highly methodical, understood by all and repeatedly rehearsed. A simulated layout of the Ebola treatment environment was developed to create a highly effective educational platform, achieving excellence through rehearsal and repetition.

Army Medical Services Training Centre (AMSTC) is a centre of excellence for the training of deployed hospital care that is delivered first-class regardless of the environment. The centre is responsible for training and assessment and validation of medical treatment facilities, and uses the methodology of assurance known as HOSPEX, which is internationally recognised as best practice. For Operation GRITROCK, the assurance process had to be reviewed, adjusted and compressed without compromise to ensure deployment timelines could be achieved whilst providing assurance of safe systems of operating.
As a key platform that can push forward essential networking and business opportunities, the Med-Tech Innovation Expo is positioned to help exploit the growth potential for the life science industry in the UK.

Now four events in one, this year’s Expo will include the Med-Tech Innovation Exhibition, the Med-Tech Conference, the Med-Tech UK Healthcare Business Awards and Gala Dinner and a range of specialist seminars.

**Med-Tech Innovation Exhibition**

As the largest manufacturing exhibition in the UK, the Med-Tech Innovation Exhibition features more than 130 companies covering packaging, medical electronics, medical plastics and manufacturing.

The exhibition connects stakeholders involved in the innovation process, bringing together all parties involved in creating the next generation of medical devices, from concept and design to manufacture.

Drawing a wide range of visitors that are servicing the medical technology industry in different ways, this event can be instrumental in moving forward the development of individual components into full-scale medical devices.

**UK Med-Tech Innovation Conference**

Addressing the key trends and topics within the medical technology sector, the UK Med-Tech Innovation conference includes a keynote presentation on creating value through innovation by Dr Amir Babaei-Mahani, Senior Director of New Ventures for Medical Devices at Johnson & Johnson Innovation. The conference programme also includes an update on the Accelerated Access Review from the Department for Business, Innovation and Skills (BIS) and Department of Health (DH), as well as implications for medical technology businesses due to the new medical device regulation from the Medicines and Healthcare products Regulatory Agency (MHRA).

Other key areas of the programme include digital health, precision medicine and a patient-centred approach to healthcare.

**Med-Tech UK Healthcare Business Awards & Gala Dinner**

The Med-Tech UK Healthcare Business Awards & Gala Dinner celebrates the best advancements from healthcare businesses from around the UK. This year, the event welcomes national broadcaster, Paul Sinha, as the guest speaker and presenter on the evening of Wednesday 20th April.

**2016 finalists are:**

**Innovation:**
- Cardiocty - Medilink North West
- Trio-Healthcare - Medilink Yorkshire & Humber
- NolVision Biotherapies Ltd - Medilink East Midlands
- Primacell Silicones Ltd - Medilink West Midlands
- Nervencentre Silicones Ltd - SEHTA
- Huntsleigh - MediWales
- QuantuMDx - Medilink North East
- Ulramed Ltd - Medilink South West

**Expo:**
- Vernacare - Medilink North West
- Brandon Medical - Medilink Yorkshire & Humber
- Hospital Aids - Medilink East Midlands
- Kimal PLC - Medilink West Midlands
- Abdalitis - SEHTA
- MedaPor - MediWales
- Physicool Ltd - Medilink South West

**Partnership with the NHS:**
- Advance Medical Solutions - Medilink North West
- InHealthcare - Medilink Yorkshire & Humber
- Wellbeing Software Group - Medilink East Midlands

**Digital Life Sciences** - Medilink West Midlands
- IXICO - SEHTA
- Recall - MediWales
- Core Health Consultancy - Medilink South West

**Start up:**
- Microbiosensors - Medilink North West
- SleepCegai - Medilink Yorkshire & Humber
- Ayva Pharma Limited - Medilink East Midlands
- Spring Active Limited - Medilink West Midlands
- Walk With Phys - SEHTA
- Solar Surgical - MediWales
- Socksone UK Ltd - Medilink South West

**Outstanding achievement:**
- Healthcare Matters - Medilink North West
- Sidb - Medilink Yorkshire & Humber
- Inspiration Healthcare Ltd - Medilink East Midlands
- NutraHealth - Medilink West Midlands
- Rescon Ltd - SEHTA
- Sharp Clinical Services - MediWales
- QuantuMDx - Medilink North East
- Kemandent - Medilink South West

**The Welsh NHS:**

Clinical, care and research communities meet to share in celebration of innovation and collaboration

The first of its kind in Wales, this event offers:
- Presentations from two parallel streams -
  - Health and care research & innovation showcase: Presentations from health boards and trusts sharing the potential of new developments in research and patient care.
  - NHS industry collaborations: An opportunity to explore successful industry projects.
- Feature zones - Exhibition, technology demonstrations and innovations that are transforming patient care.
- Seminars - Interactive training workshops, celebrating and sharing success as well as exploring issues and challenges.
- Industry symposiums - Company led training and skills sessions.

**For further information email:**
connects-nhs@mediwales.com
www.mediwales.com/contacts-nhs

**The Bill Mapleson Centre**

A new state-of-the-art centre based in the Cynon Valley:

**Medical Device Testing**

Unique testing facilities for a wide range of medical products. Built on the expertise and years of experience in testing medical devices for industry and the MHRA at the Department of Anaesthetics in Cardiff University.

**Consultancy**

Access to health care professionals with a wide variety of expertise in anaesthetics, pain and critical care. The Department of Anaesthetics has a long history of collaborative research with industry partners.

**Training Courses / Simulation**

Training courses with high-fidelity simulation and video recording / playback facilities.

For more details please visit: http://blogs.cardiff.ac.uk/bmccu/

@CardiffBMC
For inquiries please contact Jeff Clark: clarkj11@cf.ac.uk or 029 2074 4886

www.mtiexpo-uk.com
Data-driven approach targets improvement in healthcare

Modern society is developing a data-driven approach to healthcare, evident within the health service in Scotland, which allocates a unique identifier that links to electronic health records for every member of the Scottish population. With a stable population but a relatively high incidence of chronic disease including heart disease, stroke, diabetes and multiple sclerosis, Scotland has established itself as a valuable location and multiple sclerosis. Scotland has now has the capability of supplementing the rich, historical data sets already accessible under appropriate governance, with disease-focused genotypic and phenotypic data from discrete patient projects.

The recent announcement of an additional £4m of funding from the Scottish Government to create the Scottish Precision Medicine Ecosystem, is therefore the latest of a series of initiatives that have helped to establish a considerable resource, capabilities and expertise in the area of stratified and precision medicine which promises to have significant impact in our future approach to healthcare. The Ecosystem will co-ordinate precision medicine resources and opportunities across Scotland, bringing together the findings from individual research projects and improving information sharing in the fight against diseases. The University of Edinburgh hosts the Farr Institute of Health Informatics Research as well as the Usher Institute of Population Health Sciences and Informatics – two leading centres that have, under the leadership of Prof. Andrew Morris along with Prof. Anna Dominiczak from the University of Glasgow and SMS-IC, played a central role in establishing the Scottish Precision Medicine Ecosystem.

SMS-IC has already implemented four Exemplar Projects to demonstrate the core capabilities in place, to make rapid progress in the understanding of the development of chronic diseases and to design more effective treatments for defined patient populations. These studies are:

1. Possible extension of the use of PARP inhibitor drugs to a wider group of patients with High Grade Ovarian Cancer
2. Identification of a genetic signature for Galectin - an Epidermal Growth Factor Receptor (EGFR) kinase antagonist - response in patients with Oesophageal Cancer
3. Identification of a genetic signature in Rheumatoid Arthritis patients that can predict those who will and those who will not respond to standard methotrexate treatment
4. Investigation of the observed significant variation in vitro responses to known drugs, using human tissue samples collected from patients with Irritable Bowel Disease (IBD) or Chronic Obstructive Pulmonary Disease (COPD)

A further two projects are planned as a result of the further Scottish Government funding:

1. PrecisionPANC is a project intended to rapidly characterise an individual patient’s pancreatic cancer and introduce each to an appropriate clinical trial designed to test that specific tumour type. This project coincides with a recent analysis of the blueprint of pancreatic cancer, revealing for the first time that there are 4 distinct types of mutation. The initiative is structured as a consortium of approximately 100 clinical and research partners from across five CTRx centres including Glasgow, Manchester, Cambridge, Oxford and London.
2. FutureMS aims to develop an evidence-based predictor for disease progression in patients with Multiple Sclerosis. This will deliver a tool that allows patients, carers and healthcare professionals to predict with certainty the type of multiple sclerosis that will improve the quality of clinical decisions around risk or benefit relationships with existing treatment options.

Stratified Medicine Scotland Ltd.

www.scottish-enterprise.com

Industry activity and participation within the Scottish Precision Medicine Ecosystem is growing with the involvement of large companies such as ThermoFisher Scientific and Illumina, and a specialised SME base offering support and innovation in diagnostics, data handling and data analysis. Partners of the SMS-IC are Aridhia, Fios Genomics, Pharmatics, Sistemic, Destina Genomics, Bioptra and Arryjet, with many others represented at Industry Precision Medicine Focus Groups run by SMS-IC, and the Scottish Life Sciences Association. To help facilitate collaboration, technology development and validation in this fast-growing area, Scottish Enterprise has recently launched its £3.5m Genomic Medicine Industry Catalyst Fund – initially for Scottish companies, but will soon be rolled out to companies outside Scotland who wish to collaborate with or become part of this concerted, national programme of cutting edge activities in precision medicine.

www.scottish-enterprise.com
Aberystwyth Innovation and Enterprise Campus takes shape

Plans for the new £40 million Aberystwyth Innovation and Enterprise Campus (AIEC) are starting to take shape. The exciting new proposals, designed by IBI Group, will provide world-leading facilities and expertise to create market-focused solutions for the agri-tech industry.

Funded by the European Regional Development Fund through the Biotecnology and Biological Sciences Research Council (BBSRC), Welsh Government and Aberystwyth University, this flagship scheme will be designed to empower researchers to work more collaboratively and productively in a commercially focused environment.

IBI Group has delivered world-class facilities for some of Wales’ major scientific investments in recent years, including the Hadyn Ellis Building at Mendip Park Innovation Campus, Health Vision Swansea at Morriston Hospital and Cardiff University Brain Research Imaging Centre (CUBRIC).

Mark Drane added: ‘We have been supported by our inhouse R&D programme £800 THIN for over 20 years, through which our team of designers can focus their dedication to exploring, developing and implementing new solutions that optimise the way we use space. From clean rooms to lab suites, we understand the challenges and rapid change faced by our scientific and medical research clients, and how high quality design can add value to long-term investments."

Speaking about the new AIEC facility, Richard Golledge of IBI said: ‘A scientific and commercial facility, it will be designed to stimulate entrepreneurial spirit, industry relationships, and help initiate start-up companies. This will be done by bringing the facilities together within a single building. ‘Through our ‘4 Labs 4 Cities’ research projects, which is an analysis of metric data and post occupancy evaluation of research facilities that IBI has designed within the UK and North America, we understand the importance of bringing varied research groups together, to help foster collaboration, incorporating collision spaces to stimulate new and existing research ideas. ‘Scientific research in the UK represents the leading edge of a global industry and in order to maintain world-renowned research, which is currently delivered from Aberystwyth University, it is vital we develop innovative building and facilities that are responsive to change, can accommodate evolving research, are energy conscious and inspire collaboration and productivity.’

Max Watkins, AIEC Project Director said: ‘We look forward to working closely with the team at IBI Group to progress the development of this exciting project and have already benefited from their approach, relevant experience and creativity. ‘We will also be hosting supply chain events in spring for early engagement with local and national suppliers interested in the excellent opportunities created by the investment in the Innovation and Enterprise Campus.’

One of the existing buildings on the Gogerddan site has already been refurbished to a high standard and will provide over 300m2 of rental office accommodation to the business community. The facility has been modernised to cater specifically for companies wishing to get closer to the world leading research excellence undertaken by scientists at (IBERS, Aberystwyth University’s Institute of Biological Environment and Rural Sciences.

www.ibigroup.com

"The research carried out at Aberystwyth University is globally pioneering. We are very proud to be involved with such an exciting development and to be given the chance to design an innovative hub that will inspire successful collaboration between researchers and budding entrepreneurs.”

Mark Drane Architect IBI Group

Data mining for biomarkers

Researchers at Nottingham University Hospitals NHS Trust and The John Van Geest Cancer Research Centre at Nottingham Trent University have used a patented data mining approach to look at expression of genes in the human genome for a series of breast cancer patients, to find genes associated with a number of clinical and molecular features that effect the proliferation, or speed, that cells grow and divide.

The technology, including the patented algorithm, was developed by Nottingham Trent University spin-out, CompanDX Ltd, which uses bioinformatics algorithms to identify patients who respond to a particular therapy in new clinical trials or in previous, failed trials. The company identifies patterns in healthcare datasets and applies its technology to trial data to find new disease markers.

The breast cancer patient analysis was run repeatedly for three independent data sources, assessing over 2,500 cases. The results identified 30 genes that consistently appeared across all data sources and were associated with multiple proliferation-related features in breast cancer, suggesting them as very strong biomarker contenders due to the consistency and number of cases examined.

Of those genes, a marker gene called SPAG5 was found to be one of the most important. To validate the work, further investigations into the way SPAG5 gene expression was associated with over 10,000 patients across multiple centres was the first study to report on the clinical utilities of SPAG5 as a novel oncogene and biomarker in breast cancer.

In aggressive oestrogen receptor (ER) negative breast cancer patients who were administered anthracycline adjuvant chemotherapy and were positive for chemotherapy.

SPAG5 had a 60% reduction in the risk of death in comparison to patients without the gene. Furthermore, in a clinical trial cohort, SPAG5 gene expression and tissue protein expression were found to be independent predictors for higher response rates to combination cytotoxic chemotherapy.

The study showed that for a large clinical cohort, SPAG5 is amplified in specific subtypes of breast cancer. Both its gene and protein products are associated with clinical outcomes and response to combination chemotherapy and breast cancer patients, making it an attractive biomarker for tailoring of breast cancer treatment with a potential to be a novel therapeutic target. The study also showed that combining a computational approach using a novel algorithm with proven biological laboratory techniques can lead to the identification of significant biomarkers.

CompanDX is working with partners to develop markers for the stratification of sepsis and HIV, and is undertaking a major project in China to explore validating markers to be used for a low cost diagnostic for individuals with latent tuberculosis. In the future, CompanDX is looking to apply its technology in all clinical trials where patient stratification matters, seeking to help drug developers create more approved drugs.

www.compandx.artisteer.net
Hair-loss solution for chemotherapy patients

Collaboration between Primasil Silicones and its academic partner, the University of Huddersfield, has enabled Paxman to bring relief to cancer patients undergoing chemotherapy by further reducing the risk of hair-loss during treatment.

The latest innovations in development are being designed to improve the effectiveness and availability of the cooling cap, which Paxman first developed in the late 1990s with help from Primasil. Their main challenge was to create a new silicone rubber formulation that would give the reusable cap greater flexibility to adapt to varying head shapes and sizes. In addition, the partners looked at ways of increasing automation in the cap’s production to satisfy increasing demand for the product.

Chemotherapy affects rapidly dividing cells, which include most of our hair follicles. An unintended consequence can be atrophy of the hair root bulb. The Paxman cooling cap essentially consists of a compact refrigeration system connected to a lightweight silicone rubber cap. By lowering the head and scalp temperature, immediately before, after and during treatment, it reduces blood flow to the follicles and so prevents or minimises damage.

“Primasil silicone’s rubber experience in the medical industry and its understanding of quality standards and certifications has made them an invaluable partner in both developing and improving the cooling cap,” Richard Paxman, Managing Director, Paxman Coolers explains.

Medical innovation is not just about curing illnesses, it also helps the treatment process. In the case of chemotherapy, hair loss can have a devastating effect on a patient’s self-image and confidence, which is why the Paxman cooling cap was originally developed and launched to the market in 2000.

www.primasil.com
www.paxmanscalpcooling.com

“Our latest joint efforts have produced a better fitting cap which ensures that the coolant running through it is always in close contact with the scalp, all over the head and throughout the treatment. We also now have a manufacturing process that allows increased efficiency and higher volume supply in response to market needs and opportunities. Silicone rubber is a remarkable material that is flexible in every sense of the word. Through subtle alterations of its chemistry, we can bend and shape its properties to meet most needs. When the right minds are brought together our potential for creating, improving and transforming medical devices is almost limitless.”

Steve Wheeler
Managing Director
Primasil

Is your brand in need of some life support?

We help science, technology and innovation organisations across the UK to promote their products and services through effective design and communications.

To find out more, or arrange a chat, visit www.teamworksdesign.com
**Patient innovation**

Founder of 11Health, Michael Seres, was diagnosed with Crohn’s Disease at age 12. In 2011, Michael became the 11th patient in the UK to undergo a rare bowel transplant at The Churchill Hospital, Oxford. As a part of his surgery, he had an ileostomy, where part of the bowel is brought to the outside of the body and your effluent is collected in a stoma bag.

Living as a patient coping with multiple complex chronic conditions, Michael looked for a solution to his stoma issues. When he did not find anything, he decided to make one himself. When patients are given a stoma, they lose control of something most people take for granted; going to the toilet. The nerve endings in the bowel are cut and patients have no control of the volume that comes out and when it happens, leading to many complications such as leaks and spills. In addition, one of the key metrics for recording gut function is to measure the volume of output by manually recording the result. Michael used social media to contact around 20,000 patients to ask how they cope with the issue, to see if they experienced the same problems as him and find out how they solved them. It soon became clear that most patients accept this new way of life, but Michael looked for solutions. At every step he went back to the patient community and asked for feedback. He then did the same with healthcare professionals to ensure everyone felt the same way about the issues he was trying to address.

11Health’s first connected device is the Ostom-i Alert Sensor. It clips on to the outside of most stoma bags and links to a free mobile app, allowing patients to set alarms to alert them when their bag is filling. The sensor is designed to replace the nerve endings and therefore alert patients before the bag overflows, enabling better self-management.

The device automatically captures the output data, plotting the volume and time of output on a graph that can then be accessed via email or through the cloud. Using the software, healthcare professionals or carers can remotely monitor the patient, allowing for early intervention to prevent arising issues.

**Investing in future talent**

Students in Swansea will be at the forefront of life science and health innovation thanks to winning backing from two global tech companies.

Talent Bank, which is part of the ARCH Programme, has just secured investment from Fujitsu in collaboration with Intel as part of its Fujitsu Ambassador Programme. The investment from two of the world’s leading technology firms will mean Talent Bank’s intake of Swansea students will learn in Wales’s First-ever Fujitsu Innovation Hub.

Talent Bank, which is led by Gower College in partnership with the Institute of Life Science at Swansea University Medical School, is a new education and skills programme specifically designed to support the evolving life and health science sector in South West Wales. The project will ensure young people in Swansea are given the necessary work-based skills to progress to university, go on to work-based learning or directly into employment.

Beverley Wilson-Smith, Director of Talent Bank said: “We are absolutely thrilled and excited to be chosen as the first Fujitsu Innovation Hub in Wales. This is an exciting opportunity for our students, and by working together with industry, we can design relevant and dynamic learning experiences, using technology as an interface to the real world.”

Through the ARCH programme, the Singleton Health Campus will be a centre of excellence for a broad range of care. It will also be an environment based on learning, research and innovation to inspire young people in the area to take up a STEM-related subject.

The Talent Bank will be positioned next to ABMU’s Singleton Hospital site, which will form the new MediPark. Students will benefit from state-of-the-art resources from the Fujitsu Digilab, providing them with one of the most advanced technological learning spaces in the region. The Fujitsu programme already supports 10 schools, colleges and universities across the UK. The initiative aims to enhance teaching and unleash students’ potential by putting technology at the heart of education. Fujitsu, alongside partners Intel, Brocade and Kyocera, will help fund the set up of the Swansea Innovation Hub, along with the technology to support project-based learning and skills development.

www.swansea.ac.uk
PINCER tightens controls for patient safety

A ground-breaking project to reduce the risk of patients being prescribed the wrong medication is being rolled out across 150 East Midlands general practices – with plans to increase this to 500 by the end of 2016. National statistics show that 1 in 20 prescriptions contain an error, leading to 1 in 25 of all admissions to hospital. This data has been a catalyst in the launch of PINCER, a pharmacist-led intervention to reduce errors in medication management, which is being implemented with support from the East Midlands Academic Health Science Network (EMAHSN).

The initiative has already been shown to be effective in reducing prescribing errors in general practices (Lancet 2012) and is supported by the National Institute for Health Care Excellence (NICE) in its ‘Medicines Optimisation’ guidance (2012) and is supported by the National Institute for Health Care Excellence (NICE) in its ‘Medicines Optimisation’ guidance (2012). The review has been really successful and could increase the number of unnecessary admissions to hospital, placing extra pressure on services. So far, rolling out this project across the East Midlands has been going really successfully and we want to thank all partners and the Clinical Commissioning Groups involved.

“PINCER tightens controls for patient safety”

“We are delighted to support this project, which is supporting GPs to make prescribing safer. We believe it will make a massive impact and lasting improvements to the way health care is delivered, across our region and beyond.”

Professor Rachel Munton
Managing Director
EMAHSN

Tablets set to improve care for the elderly

SEHTA has launched a review providing an analysis of the way information and communication technology (ICT) applied to the care sector has the potential to improve the efficiency and effectiveness of care provision.

The Technology and Innovation in Care Homes: The SEHTA Review was launched at the Care Showcase in March 2016. The review comes at a time when the healthcare system faces rising costs, rising demand and reduced funding, with a 17% drop in social spending on the elderly since 2009/10, and the number of people aged over 85 is projected to more than double between 2010 – 2035.

Both residential and nursing homes care are an indispensable component of the portfolios of long-term care options available in the UK. There are an estimated 5,153 nursing homes and 12,525 residential homes in the UK today providing accommodation to more than 426,000 people. A significant proportion of the UK’s elderly population are resident in these homes – around 4% of people aged 65 or over, and more than 16% of people aged 85 or over. Unless significant changes are made to our health and social care services, this provision of long-term care will be insufficient to meet the needs of our ageing population.

“Tablets set to improve care for the elderly”

The review comes at a time when the healthcare system faces rising costs, rising demand and reduced funding, with a 17% drop in social spending on the elderly since 2009/10, and the number of people aged over 85 is projected to more than double between 2010 – 2035.

Both residential and nursing homes care are an indispensable component of the portfolios of long-term care options available in the UK. There are an estimated 5,153 nursing homes and 12,525 residential homes in the UK today providing accommodation to more than 426,000 people. A significant proportion of the UK’s elderly population are resident in these homes – around 4% of people aged 65 or over, and more than 16% of people aged 85 or over. Unless significant changes are made to our health and social care services, this provision of long-term care will be insufficient to meet the needs of our ageing population.

There is a growing body of research showing that Technology Enabled Care Services (TECS) have the potential to reduce health and care costs, increase access and improve patient outcomes. However, evidence also shows that health and care practitioners and care home managers have not yet embraced and benefitted from ICT like other sectors have. Using SEHTAs TECS cost-benefit calculations, the efficiency gain of digital physiological monitoring of residents is estimated to be more than +£33,400 for a care home per year, by using a device that simplifies the recording of vital signs of relevance to a particular resident, for example measuring respiratory rate and temperature for those with COPD, and observations, measuring behaviour and mood for those with dementia. The electronic nature of the device would allow personal risk scores to be calculated automatically and for early-warning alerts to be escalated automatically too. Further calculations showed the efficiency gain of this technology is conservatively estimated to be more than +£19,500 a year for the NHS.

This review has made a convincing case for the potential of technology to reduce the impact of the impending long term care crisis. Although there are challenges to care homes adopting technologies, they can increase the efficiency and effectiveness of staff and care home facilities whilst raising client satisfaction.

In undertaking this work with care home providers, SEHTA has become more acutely aware that many of the opportunities for technology solutions apply in other care settings. As well as working with care home managers to explore technology solutions for care challenges to drive efficiency and effectiveness, SEHTA will be investigating further opportunities to transfer this learning and experience to other care settings, including domiciliary care.

To download your copy of The Technology and Innovation in Care Homes: The SEHTA Review please visit www.sehta.co.uk/tich or contact us at TIC@sehta.co.uk

www.sehta.co.uk
World’s first national tissue bank for pancreatic cancer research

Around 8,800 people in the UK are diagnosed with pancreatic cancer each year. It’s known as the UK’s deadliest cancer, with a survival rate of just 3% - a figure that has barely improved in 40 years. Surgery to remove the tumour offers the best chance of survival, but most patients are diagnosed when the cancer has already spread to other organs. Without surgery, the average survival time from diagnosis is 6 months; new treatments are desperately needed.

The Pancreatic Cancer Research Fund Tissue Bank brings together surgeons, pathologists, oncologists, researchers and database experts to co-ordinate a national resource to help develop new treatments and bring these to patients faster. The Tissue Bank is being funded with £2 million from the UK research charity, Pancreatic Cancer Research Fund (PCRF).

The six initial key NHS partners are: Barts Health NHS Trust, the Royal Free London NHS Foundation Trust; ABM University Health Board in Swansea; University Hospitals of Leicester NHS Trust, Oxford University Hospitals NHS Foundation Trust and University Hospital Southampton NHS Foundation Trust. These partners will act as Tissue Bank collection centres, adding samples of tissue, blood, urine and saliva from around 1,000 new patients each year.

A new facility at Barts Cancer Institute, Queen Mary University of London (BMLU) will store tissue donated by consenting patients with diseases of the pancreas undergoing biopsy or surgery at partner hospitals in London, Southampton, Oxford, Leicester and Swansea.

Uniquely, the PCRF Tissue Bank will not only house samples of patients’ pancreatic tumours and other pancreatic diseases, but will also store blood, saliva and urine samples. Each donation will be logged with detailed medical and, where possible, genetic information so that researchers can request exactly the right type of sample for their research. Data generated by all research projects using Tissue Bank samples will be fed back into a bespoke database, and will be made freely available to the global research community, to inform and underpin their own research.

“In collaboration with Swansea University, we set up a research unit to undertake research into pancreatic disease and this has now been strengthened by joining with another four national centres to develop this national tissue bank. This provides a great opportunity to undertake research in this field and develop better understanding, new treatments and ultimately better outcomes for this group of patients.”

Bilal Al-Sarireh
Consultant Hepato Pancreato Biliary Surgeon
Morriston Hospital

Example of Keynote Speakers

- REGINA HOOTIS, General Partner, Wellington Partners
  “Update About The Investment Status In The Medtech Industry”
- JANKE DITTMER, Partner, Gide Healthcare
  “The Digital Health Investment Landscape”
- HAKAN GOKER, Investment Director, MS Ventures
  “Latest News on European Funding”
- MYSH UNALAT, Head of Technology Transfer and Equity Investments, European Investment Fund - Panel
- JIM VAN HEUVELEN, GEL, Karolinska Development - Panel

www.pcrf.org.uk/pages/tissue-bank

The Anglonordic Life Science Conference moves into a new prestigious venue 2016

Entering its thirteenth year the Anglonordic Life Science Conference XIII, continues to grow and gives you the opportunity to meet 450 decision makers representing leading and upcoming R&D companies, international pharmaceuticals and investment firms.

By invitation only, participants are restricted to decision makers representing drug discovery, medtech, pharmaceuti- cals and investment firms. Service suppliers can only attend as sponsors or exhibitors.

This year the conference moves into a prestigious new venue, 8 Northumberland Avenue, in Central London. The Conference starts with a drinks reception the evening before (14th of May) at Australia House, hosted by the Government of South Australia. This evening networking event with drinks and canapes is open to all delegates.
Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.

Mathematical diagnostics hits US market

Abcodia specialises in the early detection and screening of cancer. Founded in 2010, the company has developed capability in longitudinal blood profiling to identify changes that may lead to earlier detection of cancer.

The company’s first product is the Risk of Ovarian Cancer Algorithm (ROCA), co-invented by Professor Ian Jacobs, Co-founder of Abcodia, and Dr Steven States from the Massachusetts General Hospital in the US. The team is developing a pipeline of other early detection tests and has an on-going collaboration with Cancer Research UK to develop screening for up to four other cancers.

Against this backdrop, the company has secured financing from Scottish Equity Partners and Cambridge Innovation Capital, as well as existing investors, totalling £5.25m to commercialise the ROCA® Test in both the UK and US markets. The test was CE marked early 2016 and the test launched in the UK in July.
Dubai unveiling for carbon fibre wheelchair

A Scottish business recently demonstrated a revolutionary new wheelchair at Arab Health in Dubai that it hopes will drive its exports in a key international health market.

Nairn-based Carbon Black Systems exhibited the eponymous Carbon Black chair – made almost entirely of carbon fibre – the lightweight material that shaves seconds from motor racing star Lewis Hamilton’s lap times – at Arab Health, the Middle East’s biggest healthcare expo.

The business, which employs seven at its headquarters in Nairn and nine at its manufacturing base and showroom in Bicester, Oxfordshire, has financial backing from Highland Venture Capital and Scottish Enterprise.

Three times the strength of steel, Carbon Black’s fibre is moulded into an ergonomically designed form that is stylish, lightweight and minimal in appearance. The chair has a compact, rigid frame that is lightweight and disassembles in seconds into easy to transport parts, none heavier than 3.5kg.

The wheelchairs are bespoke creations for customers, so each wheelchair can be custom-built to the users’ requirements, style and colour as well as other enhancements, including LED lighting so that hidden handbrakes and other obstacles are visible to users at night.

The aesthetic form of Carbon Black is the result of a chair built to make life as a wheelchair user easier. The ease of use principles in the design were then combined with the engineering requirements of carbon fibre. The result is a beautiful monocoque based design that can be built to bespoke measurements and accessorised with a range of unique options.

The group’s engineers also make carbon fibre components for the leading F1 racing teams, and say that the carbon fibre for the wheelchair is a smooth material that won’t hurt the user’s hands, leave black marks around their home or scratch their car, and absorbs bumps for a smoother ride.

"The Middle East is an interesting and unique market – a juxtaposition of the conservative and the innovative. Arab Health 2016 is the largest convergence of technologies in healthcare in the region so a great place to showcase the wheelchair. The world is our market and whilst we continue to be focused on our UK business, we can clearly see great opportunities that exist for our products in the large export markets."

Steve Ryan
Group Managing Director
Carbon Black Systems

Steve remarked that the business saw the Carbon Black chair not just as a mobility and independence aide, but as a product that can change the wider public’s perception of wheelchairs and their users. He added that in international markets there was an increasing appetite for innovation with healthcare. He said the group’s wider vision was to offer enhanced mobility and help change the everyday perception of chair users across the globe by tapping into new markets.

www.carbonblacksystem.com

Randox Laboratories improving lives around the globe

For over 30 years, Randox Laboratories has developed diagnostic products and services for customers in more than 145 countries worldwide. With 1,300 people, Randox manufactures in the region of 3.5 billion assays per year, which could provide a standard diagnostic profile on 5% of the world’s population.

The company’s range of assays include classic capabilities in lipid, kidney and liver profiles, comprehensive GC and EQA programs, highly innovative multiplex assays for conditions such as cardiovascular risk, FH stroke, respiratory disease and STIs. The multiplex assays can screen for over 500 compounds and can be used for niche markets including food safety (drug residue) and toxicology.

Founded in 1962 by Peter FitzGerald GBE in an out-building at the back of his parent’s home, Randox has grown over three decades to be one of the most innovative diagnostics companies in the world, routinely returning around 16% of turnover to R&D. The 300 staff committed to life sciences and engineering innovation currently have over 400 new assays under development.

Randox has invested over a decade of research, and around $300 million into a patented BioChip Array Technology, which has the ability to undertake multiple tests simultaneously in order to make rapid and comprehensive diagnoses in the most efficient and timely manner for the patient.

"The company’s prime manufacturing site, our commitment to R&D very seriously – we must innovate if we are to exploit the explosion of new knowledge that becomes available to us – to the benefit of mankind. Hence our commitment to high quality multiplexing arrays, which are highly adaptable with both proteomic and genomic capabilities. At Randox, our vision is revolutionising healthcare through improving diagnostics and we look forward to exciting times ahead."

Not content with focusing upon laboratory professionals, Randox has recently launched two new direct to consumer operations. Randox Health exploits the company’s expanding diagnostic portfolio by providing the complete range of assays, with full analysis and clinical assessment, directly to the public from a number of bespoke clinics. These comprehensive screening programmes are at the cutting edge of preventative care.

www.randox.com
The value of Horizon 2020 funding to SME innovation

In his article for Issue 10 of UK Lifescience Industry magazine, Gwyn Tudor, CEO of MediWales, lays out the facts and figures behind Europe’s life science industry. He suggests there is much for those in the industry to consider in the run-up to the EU referendum on 23 June, not least the future of public-private financed pan-European partnerships which bridge the funding gap in the commercialisation of research. There is sufficient evidence to indicate that programmes such as the Horizon 2020 SME Instrument are a vital catalyst for med tech, drug development and biotech innovation. Here, Matt Symonds, Director of TBAT Innovation explores how to make a strong case for your medical technology project in Horizon 2020.

What is the Horizon 2020 SME Instrument?

A single SME company, or SME lead in a collaboration, with a product, process or system ready for demonstration and market exploitation (Technology Readiness Level 6 or above), can apply for significant levels of H2020 project funding up to £1.8 million. Although competition is extremely high, a successful bid is a strong indication that the innovation will fly and be of interest to investors. The programme is not for start-ups, but for SMEs who’s R&D has been proven to work and even exploited in a different application. In the medical and health technology sectors, the SME Instrument topics cover ‘Boosting Biotechnology-based Industrial Processes’ and ‘Validation of Biomarkers and/or Medical Devices: What makes a good Horizon 2020 application? Assuming your project addresses one of the funding topics, the application must then explain the innovation and how it meets new needs. Evidence of technical risk and global commercial opportunity must be explained alongside a realistic assessment that you can deliver the project. Don’t underestimate the cost of the project. If you are able to quantify business growth and continued commitment to future research and associated investment, your bid has a strong chance of success. TBAT has worked with a wide variety of SME clients operating in the medical technology sector across the UK and projects can vary enormously. They include new designs for surgical instruments and tools, resuscitation and emergency responder equipment, diagnostic assays, pressure-relieving mattresses, implantable medical devices, remote patient monitoring systems and software, and novel pharmacological agents. TBAT ensures that the project fits the requirements of the Horizon 2020 application and that the client projects meet all relevant regulatory standards required throughout development and commercialisation.

What next? Applying for such high levels of European funding can be complex and time consuming, and you need to be prepared for the level of monitoring paperwork too. However, sound project management together with planning time to get your partners and subcontractors in place will significantly help your chances of success. Once submitted and the application scores, which will help address any points in future applications.

www.tbat.co.uk

Routes to market for natural compounds

The Natural Compounds Special Interest Group aims to support development of natural products for health, wellbeing and disease management.

As a forum it will be used to discuss new developments in the sector, provide opportunities to share advice on clinical trials, develop routes to market and ensure that findings from research environments develop into products.

For further information please contact Heather Graz

01495 292 700 / heathergraz@neembiotech.com

We innovate healthcare

At Roche our aim is to improve the health, quality of life and well-being of people around the world by providing an innovative range of diagnostic solutions and medicines. Roche is a global, research-focused healthcare company with Group Headquarters in Basel, Switzerland.

Our strategy is clear - the patient lies at the heart of everything we do and our focus is fitting the treatment to the patient through prescription pharmaceuticals and in-vitro diagnostics.

What makes Roche distinctive is our pursuit of excellence in science as we deliver the best solutions for healthcare professionals and improve patient outcomes; this is achieved through our unique combination of Pharmaceuticals and Diagnostics.

Everyday, our products help patients and the healthcare professionals who care for them by detecting, preventing, diagnosing, treating and monitoring diseases.

We are proud to have played a pioneering role in UK healthcare since 1906. Today, we are the leading in-vitro diagnostics company in the UK and the leading provider of pharmaceutical treatments for cancer and viral diseases. We are also a major supplier of medicines for the treatment of transplantation, oncology, bone and rheumatology and renal anaemia. In total, our UK pharmaceutical and diagnostics businesses employ nearly 2,000 people.

Roche focuses on developing medicines and diagnostics that will help patients live longer, better lives.

Tel: +44 (0)1444 256000 / www.roche.co.uk

At Roche we focus on developing medicines and diagnostics that will help patients live longer, better lives.
Device for rapid detection of heart conditions

Quantum VitalScan is an innovative portable medical device that can scan a patient presenting chest pain in less than 5 minutes, helping doctors to rule out acute cardiac conditions such as a heart attack or other serious heart problems.

The product can be used in hospital A&E departments and at patients’ bedside, placing it at the front line of medical care. It produces highly accurate 2D imaging maps of the heart, enabling healthcare professionals to confidently identify non-cardiac patients early in the triage process without waiting for invasive lab results.

This process could cut patients’ waiting time to a matter of minutes and free up valuable hospital resources. The device can be used with very little additional training to that needed to perform a routine ECG and supports existing diagnostic tools to give an accurate and complete picture of a patient’s cardiac health.

Originally developed with the University of Leeds, the technology was created in response to an urgent clinical need to save time and money in A&E by more efficiently triaging patients with chest pain. Quantum Imaging Ltd was established to further the evolution of this device that can save time, cost and lives, and bring it to realisation for the benefit of hospitals, healthcare professionals and patients alike.

The company has recently announced completion of a new £4.6m investment with participation from existing and new investors to drive product commercialisation and allow for further development of the unique imaging technology.

Steve Parker, CEO of Quantum Imaging said: “The timing and size of this investment is important to the company as it allows us to fully commit to an aggressive product and platform development and clinical research strategy whilst building a high quality team and facilities.”

CEO Simon Grandorge, Director of Healthcare at IP Group commented: “IP Group has been involved with Quantum Imaging from the very beginning and we have been delighted with the progress achieved to date and the existing early clinical results that this world-class science is demonstrating.”

The company hopes to revolutionise cardiology and the way abnormalities are detected. Formal clinical trials of 1,000 patients across five hospitals in the UK and US are due to take place this summer, providing preliminary findings by October 2016.

In the future, the technology will undergo further research and development and could be applied to other fields of medicine to accurately rule out other conditions.

www.quantumimaging.eu

Wireless body sensors monitor patients’ vital signs

With hospitals now busier than ever, the demands for improved and more efficient patient monitoring have also increased. The number of patients per nurse continues to grow and healthcare organisations globally need to focus on improving efficiency and utilisation of resources in order to maintain a high level of service.

Effective use of digital and ICT technologies, together with the process improvements enabled by these technologies, are key ways to tackle the increasing challenges facing healthcare providers. Among these are devices for directly observing the patient to provide continuous and real-time physiological and associated data, and wireless technologies that provide accurate monitoring.

Isansys Lifecare Ltd has taken these latest technologies and reworked them to create a new medical system, which allows a child or adult to be monitored wirelessly and continuously in real-time, ensuring deterioration is identified more quickly and timely treatment is given. The system, called the Patient Status Engine (PSE), uses wireless body-worn sensors to collect and analyse heart rate plus variability, respiration rate, temperature, oxygen saturation and blood pressure as required. This allows doctors and nurses to monitor patients more closely, efficiently and continuously.

“Continuous, real-time monitoring has an important role to play in a patient-focused healthcare system. At Isansys, we have developed the PSE to provide clinicians with robust, accurate and relevant data which will give them new insights into their patients’ health, provide them with timely early warning indicators both in hospital and at home, and enable them to spend more time caring for their patients.”

Keith Errey
CEO
Isansys

Isansys launched the product in 2013, and introduced a second generation platform in November 2016. The system’s hardware comprises wireless body-worn sensors, including the Isansys Lifetouch, which provides continuous heart rate, respiration rate, heart rate variability, and on-demand EGG, and the Isansys Lifetemp, which measures continuous body temperature. The PSE currently uses third-party devices to collect data on oxygen saturation, PPG and blood pressure.

The data collected from the sensors is transmitted via Bluetooth to a device called the Patient Gateway, which also acts as a data entry interface for the healthcare provider or the patient. The Lifeguard Server is the PSE’s back-end IT system that collects the data from multiple Patient Gateways, installed in and outside of hospitals, and then delivers the data directly to the care teams or to the patient on any browser enabled device including; smart phones and tablets.

Isansys is currently working with a number of health organisations in the UK and globally to help provide better care for patients; in hospital and those recovering at home. One study with the Royal Free Hospital, London, demonstrated the PSE’s ability to replace lab-based tests with a new score calculated from the data captured by the Lifetouch. This newly developed data driven biomarker provides real-time information on the level of deterioration of patients with advanced liver disease.

In another study, with the Queen Elizabeth Hospital, Birmingham, Isansys is working with the clinical team to use data from the PSE to develop an early warning score for patients who have undergone chemotherapy and are at high risk of sepsis. This ensures a more accurate prediction of a patient’s deterioration, which is expected to lead to faster and more targeted responses that can save lives and shorten hospital stays.

The company sees this technology as the future of patient monitoring and digital transfer of information, which can be used for a range of analytical techniques and methods to understand much more about diseases and human physiology.

www.isansys.com
Digital Health quarter for Serendip® Smart Cities Incubator

Tech or digital start-up businesses are being encouraged to accelerate their growth by applying to Innovation Birmingham’s Serendip® Smart Cities Incubator programme.

The application process has been launched as the Serendip® Incubator’s new home at the £8 million Centrum® building rapidly nears completion. The Serendip® Smart Cities Incubator will cover almost 12,000 square feet on the first floor of the building and will co-locate promising start-up businesses with large commercial partners.

Within these challenge-led incubators, the commercial partners will help to mentor qualifying early-stage tech companies and may, in turn, become customers or distribution channels for the start-ups. There will be at least four sector-specific Serendip® ‘quarters’: Digital Health, Internet of Things, Intelligent Mobility, and Healthy Living.

Successful applicants for the Serendip® Smart Cities Incubator will be supported by Innovation Birmingham’s mentorship programmes, enabling them to work directly with commercial partners to market test and refine products and services. These businesses will also benefit from free high-tech office space, mentoring from experienced entrepreneurs, a 160-seat presentation auditorium and access to more than 100 evening networking events and workshops. The Serendip® Smart Cities Incubator is open to UK wide start-ups, but they will need to relocate to the Centrum building in the West Midlands in order to be supported by the corporate partners.

In 2015, the UK had a podium place in the Global Innovation Index, finishing 2nd to Switzerland. Organisations such as Rolls-Royce, Arm Holdings and Reckitt Benckiser continue to grab the headlines, but much of the UK’s innovation happens in diverse range of SMEs throughout the country.

SureScreen – Application of Innovation

“With access to all the innovation challenges that healthcare practitioners and managers identify, start-ups will be able to market test their product or service and gain access to big data and exclusive insight into innovation in the healthcare industry. The West Midlands Academic Health Science Network will be a fantastic asset to our Serendip® Smart Cities Incubator and we look forward to collaborating with them to deliver our common mission of encouraging innovation across the region by linking the digital expertise in the region to personal healthcare needs and healthy living interests.”

Dr David Hardman MBE
CEO
Innovation Birmingham

In 2015, the UK had a podium place in the Global Innovation Index, finishing 2nd to Switzerland. Organisations such as Rolls-Royce, Arm Holdings and Reckitt Benckiser continue to grab the headlines, but much of the UK’s innovation happens in diverse range of SMEs throughout the country.

SureScreen, based in Derby, utilises its innovative nature to create a range of products and services that bring rapid screening from the laboratory to the bench. In the late 1990s, SureScreen Diagnostics was the first company to introduce rapid immuno-assay drug tests into the UK. With rapid testing came huge increases in efficiencies relating to time and cost, allowing more screening to take place to deter and monitor drug abuse. Before rapid tests, all samples were sent back to a laboratory for analysis.

Today, customers all over the UK make use of the products, from companies with safety critical environments, such as manufacturing, shipping and haulage firms, to the GPS, surgery, NHS and supermarkets. Indeed, our expertise in developing cutting edge technologies for new challenges in diagnostics, the company finds solutions using a logical and scientific approach.

The team at SureScreen work with health professionals to research nutrition and the role of diet in assisting recovery from illness. After studying some supplements, it was found that off-the-shelf tablet products typically yield just 7% - 10% of their active ingredient due to breakdown on exposure to gastric acid, and the inability of the body to sufficiently absorb the nutritional value.

“Dr Christopher Parke, Managing Director of the West Midlands Academic Health Science Network, said: “We are very excited to be the corporate partner in the Digital Health quarter of the Serendip® Smart Cities Incubator. As an AHSN, we seek out digital innovations that have the potential to improve the health of the population and create wealth within the region, and it is our ambition to make the West Midlands the UK’s first truly digital health economy. "However, while many industries have embraced digital working, healthcare has yet to fully capitalise on these opportunities. Furthermore, the most important challenge facing start-up is proving that there is a market for their product or service. We will be working closely with the successful start-up companies from day one to maximise their chance of success, supporting them to develop products for which there is a real demand and need from the healthcare sector. This will help the start-ups unlock investment, create the best version of the product and ultimately, bring that product to market for the benefit of patients.”

www.wmahsn.org

SureScreen – Application of Innovation

“In 2015, the UK had a podium place in the Global Innovation Index, finishing 2nd to Switzerland. Organisations such as Rolls-Royce, Arm Holdings and Reckitt Benckiser continue to grab the headlines, but much of the UK’s innovation happens in diverse range of SMEs throughout the country.

SureScreen, based in Derby, utilises its innovative nature to create a range of products and services that bring rapid screening from the laboratory to the bench. In the late 1990s, SureScreen Diagnostics was the first company to introduce rapid immuno-assay drug tests into the UK. With rapid testing came huge increases in efficiencies relating to time and cost, allowing more screening to take place to deter and monitor drug abuse. Before rapid tests, all samples were sent back to a laboratory for analysis.

Today, customers all over the UK make use of the products, from companies with safety critical environments, such as manufacturing, shipping and haulage firms, to the GPS, surgery, NHS and supermarkets. Indeed, our expertise in developing cutting edge technologies for new challenges in diagnostics, the company finds solutions using a logical and scientific approach.

The team at SureScreen work with health professionals to research nutrition and the role of diet in assisting recovery from illness. After studying some supplements, it was found that off-the-shelf tablet products typically yield just 7% - 10% of their active ingredient due to breakdown on exposure to gastric acid, and the inability of the body to sufficiently absorb the nutritional value.

“Dr Christopher Parke, Managing Director of the West Midlands Academic Health Science Network, said: “We are very excited to be the corporate partner in the Digital Health quarter of the Serendip® Smart Cities Incubator. As an AHSN, we seek out digital innovations that have the potential to improve the health of the population and create wealth within the region, and it is our ambition to make the West Midlands the UK’s first truly digital health economy. "However, while many industries have embraced digital working, healthcare has yet to fully capitalise on these opportunities. Furthermore, the most important challenge facing start-up is proving that there is a market for their product or service. We will be working closely with the successful start-up companies from day one to maximise their chance of success, supporting them to develop products for which there is a real demand and need from the healthcare sector. This will help the start-ups unlock investment, create the best version of the product and ultimately, bring that product to market for the benefit of patients.”

www.wmahsn.org
The 5D Health Protection Group has proficiency across a range of industry sectors, with specialist knowledge of the healthcare market and infection control. The expert team has gained extensive skills and knowledge in medical device innovation, product development, R&D, antimicrobials, biofilms, biomaterials and education.

The company has recently been awarded a grant from Innovate UK to fund a project developing new, innovative, smart anti-biofilm technologies, which is being undertaken in collaboration with Professor John Hunt from the University of Liverpool.

Specifically, the researchers will explore the development of anti-biofilm technologies that can be incorporated into medical devices, such as those used in skin and wound care, catheters and other medical products where infection prevention and control innovations are urgently required.

With the ever-increasing concerns of healthcare-associated infections and the accompanying rise in costs to healthcare budgets, new anti-biofilm solutions are now a high priority.

In conjunction with the growing concerns of antibiotic resistant bacteria, as highlighted by the Chief Medical Officer for England, Dame Sally Davies, the importance of biofilms also warrants a heightened visibility due to their reported association with 65% of all healthcare-associated infections and 80% of all known human infections.

The company’s next generation anti-biofilm frameworks in development will provide numerous functions that current technologies fail to offer. Most antimicrobials that have been developed to date are specifically focused on killing microorganisms in the planktonic or free-floating state. However, the next generation of anti-biofilm technologies will look to prevent, disrupt and eradicate a biofilm, whilst treating the conditions they cause; which is the outcome 5D Health Protection Group is aiming for with the innovative technologies it is developing. Having made significant progress, the team will be incorporating the anti-biofilm technologies into various medical devices within the next 6-12 months.

5D already has expertise in antimicrobial and biofilm testing, and has total license rights to a new anti-biofilm formulation, AsepticateTM, which can be incorporated into an array of different platforms for use in many different industrial and healthcare sectors. The anti-biofilm formulation can be used as an adjunct to antimicrobial agents and products, or utilised as a stand-alone anti-biofilm and antimicrobial technology.

5D also offers a testing service in microbiology, biofilms, biochemistry, biomaterials, clinical engineering, biologics and also offers a clinical trials service. The company also offers a quality and regulatory auditing service to companies presently initiating or employing ISO 9001 and ISO 13485.

www.5dhpg.com
www.liverpool.ac.uk

“Being awarded this prestigious Innovate UK grant will help 5D to significantly speed up the delivery of novel anti-biofilm innovations, which will have a major impact on reducing biofilm associated infections, a major burden to both patients and hospitals globally. The direct and indirect cost of biofilms to environmental health, public health and medicine presently runs into the tens of billions of pounds annually.”

Professor Steven Percival
CEO
5D Health Protection Group

5D HealthTech Conference 2016 is a valuable day of briefings and networking for those within the life science and health technology communities, and research clinicians from the NHS.

Over 300 delegates come together to understand critical strategic trends that will impact on their businesses. The event offers the latest insights from key opinion leaders and the unique opportunity to engage with industry colleagues to network and develop your business relationships.

CARDIFF 6 DECEMBER 2016
**Clinical innovation booming for Wales NHS**

Thinking prudently gets you to a good place for clinical innovation. Thinking prudently makes you ask, how can we do things very well, but without wasting the important resources that must serve us? From all of this careful thought, there have been exciting developments in Wales, leading to a huge increase in clinical innovations, industry, businesses, designers, Welsh Government support, and all sorts of NHS clinicians are working together to improve processes, products, devices and drugs for patients in Wales and the UK.

It is easy to get involved, with initiatives and groups such as Swansea University’s ARCH, Cardiff University’s Clinical Innovation System and South East Wales’ SCHWARTZ Judith Hall, a Welsh Consultant Anaesthetist has developed a Clinical Innovation Wales series of events as part of the Bill Mapleson Centre, a medical innovation social enterprise run by clinical academics from Cardiff University’s School of Medicine.

Last year the Bill Mapleson Centre ran five free Clinical Innovation Wales events, inviting delegates to come along with an idea to explore confidentiality. Delegates were offered support from a range of experts, for those who needed a designer, a manufacturer, or someone to help with a grant or finance; there were specialists providing advice for free, helping each other to help patients.

Professor Judith Hall, Bill Mapleson Centre said: “As a practicing doctor I want the best for my patients. I want quality care, just right for the needs of each and every patient. Wales has developed a patient, healthcare concept, and it’s a good one: the right care, no more, no less.”

At recent Bill Mapleson Centre meetings, delegates have heard from key Welsh opinion leaders, including Adam Cairns, NHS Innovation Champion for Wales & Chief Executive Cardiff & Vale University Health Board and Sue Bale, Director of Research and Development in Aneurin Bevan Health Board.

The events also include group work. Recently, supported by Cardiff University’s Phoenix project, teams were challenged to solve five African problems. The aim of the workshop was to take people out of their comfort zone to find solutions that can work in Africa, cost effectively, which could also be applied to Wales and the UK.

The workshops involved collaborative thinking to develop new ideas and prudent solutions that can be taken forward. Innovative concepts included improved trauma care, new training devices for doctors, a completely new way of giving anaesthesia and a way of diagnosing and treating septicaemia in rural situations.

Andy Ware, Cardiff and Vale UHB said: “It’s a rare thing to have such a mix of people in one room, with sixth form students talking to lawyers and local business talking to senior clinicians. What inspired me most was that even with such a diverse group, there was a real feeling of inclusiveness and a real sense that things will be achieved within this growing team.”

**Innovative interactive data exploration tools**

Combining the skills of statisticians, health economists and computer scientists, Digital Health Labs is passionate about accelerating data driven research in life sciences.

The company has extensive experience in pharmacoeconomics and health economics research and has undertaken a number of projects with global pharmaceutical companies. This expertise is complemented by software development skills allowing Digital Health Labs to continually improve research efficiency and develop innovative research techniques. The company is also able to incorporate research outputs into apps and software tools.

Created two years ago, Digital Health Labs is enjoying rapid growth. With Welsh Government support through the High Performance Startup scheme initially and now the Accelerated Growth Programme, the company has employed 5 new people in the last 12 months, with more planned.

The combination of health economics researchers, data scientists, talented engineers and its HealthIRIS platform allows the company to complete projects rigorously and efficiently producing robust results, and the team have expertise in Health Resource Utilisation, Budget Impact Modelling, Network Meta-analysis and Cost Effectiveness Modelling.

Digital Health Labs uses interactive data exploration tools to collaborate with clients during projects, resulting in higher quality, reusable results. As well as traditional reports, slide decks and papers, the technology incorporates interactive dashboards allowing its clients to explore the results, gaining additional value from their research investment.

HealthIRIS, the secure web-based platform allows researchers and business users to collaboratively explore and analyse project and population health datasets. The system provides simple but powerful dashboards and visualisations for non-technical users as well as access to advanced industry-standard statistical modelling for researchers.

The platform allows algorithms and knowledge created during research projects to be captured. This knowledge can be peer-reviewed, shared and reused within the platform leading to improved consistency and efficiency in future projects.

Speeding up the often time-consuming data cleansing stage for research projects, the system can also automate some of the analysis work. This means that a client can approach Digital Health Labs with a particular research question in mind, wanting a feasibility study done, before investing large budgets into a full-blown study. If the answer is satisfactory to their requirements, they can then start their study, if not, they can amend their criteria until they find a suitable study group.

The technology can provide answers in a matter of hours, combining access to various datasets with HealthIRIS technology. The same questions would usually take weeks to be answered using traditional methods only.

Digital Health Labs recently won the Dragon’s Den style competition at BeCymru 2016 with their new Metalyst platform. Through innovative collaboration features and integrated analysis tools, this online platform will accelerate meta-analysis of clinical trial results, creating valuable information on the relative effectiveness of therapies in development. This will allow global companies to make sound research decisions, ultimately leading to a more efficient product pipeline and effective treatments coming to market faster.

With the concept gathering a lot of interest, the company aims to raise the £100k to bring this new project to life within the next 18 months. The team will also continue to develop their HealthIRIS platform to support their research work, and keep exploring new ways of making health economics research faster, easier and more accurate. This in turn will help patients around the world get access to better treatments, at reduced cost.

[www.digitalhealthlabs.com](http://www.digitalhealthlabs.com)
Moving forward with AGILE

A Knowledge Transfer Partnership (KTP) between the University of Strathclyde, Glasgow Caledonian University and PAL Technologies Ltd is developing patientcentred training tools for use at home and in the community to improve walking abilities. The wireless-based technology will also offer cloud-based data management and visualization to allow both the patient and their therapist to share on-going progress and goal attainment, thereby increasing the chances of a more successful rehabilitation.

Traditionally, the rehabilitation of those with reduced mobility as a result of stroke or amputation, which is a common complication of diabetes, has been challenging for patients and their support team of healthcare professionals. Current interventions designed to assist often prove difficult for patients to follow and, particularly if they also have other associated health problems, can lead to disenchantment with the process which results in failure to maintain the rehabilitation programme.

In contrast, new technology being developed by the AGILE (Ambulatory Guidance for Interactive Locomotion Enhancement) project team will fully and personally engage the patient in their own rehabilitation throughout the entire process. The novel technology solution will enable real-time measurement and data analysis with direct feedback on progress being provided to both patient and healthcare professionals. An additional benefit of this more direct involvement in the rehabilitation programme by all parties is that any modifications or adjustments required to aid the patient in making a quicker and more effective recovery can be easily agreed upon and swiftly implemented.

AGILE’s industrial partner, Glasgow based PAL Technologies, has a track record in providing clinical measurement tools for researchers worldwide who quantify physical behaviours (sitting, standing, stopping) and link sedentary behaviours with chronic disease risk. CEO Douglas Maxwell said: “Our current activity PALTM devices are required to be worn for a period of time with data subsequently being downloaded and analysed but the device which the AGILE project team is developing will incorporate wireless technology and real time feedback. Involvement in this project will allow us not only to offer an improved product to our existing core market of clinical researchers but also to build on the relationship we already have with a major prosthetic manufacturer, and engage more fully in the rehabilitation sector.”

There are approximately 50 thousand UK and 20 million US individuals currently living with amputation, mainly lower limb.

Nicholas Smith, based within PAL Technologies, was appointed to the key role of Software Engineer and KTP Associate, bringing significant technical expertise to the project team thanks to his background in programming, system design skills and in medical devices.

AGILE’s academic partners contribute valuable sensors, orthotics and human movement expertise, as well as state-of-the-art human performance laboratories.

“Delivering rehabilitation by measuring movement within controlled laboratory conditions is something which we have extensive experience of. However, a device which will provide real-time targeted feedback on the patient’s walking abilities outside the laboratory during their normal day-to-day life will be of immense assistance in motivating and encouraging the patient and will provide valuable information to their healthcare team.”

Dr Andrew Kerr
Knowledge Based Supervisor
Centre for Excellence for Rehabilitation Research (CERR)
University of Strathclyde

Advances in photonics have stimulated significant progress in medicine, with many techniques now in routine clinical use. However, the finite depth of light penetration in tissue is a serious constraint to clinical utility.

A new technique which carries light further into human tissue than was previously possible has been developed by researchers from the University of St Andrews, and the Harvard Medical School. The new ‘healing light’ could help to heal wounds faster as well as treat tumours more efficiently. Through a process known as photochemical tissue bonding, light is applied to a wound to encourage it to heal quicker. Until now, this technique has been limited to treating only superficial wounds, but researchers from both Scottish and American universities attempted to develop a technology for tissue repair that could be used within the human body.

The international team of researchers explored the use of implantable light delivery devices made of bio-derived or biocompatible, and biodegradable polymers. In contrast to conventional optical fibres, which must be removed from the body soon after use, the bio-adhesive and biocompatible waveguides may be used for long-term light delivery and need not be removed as the tissue gradually reforms them. The results point to a new direction in photomedicine for using light in deep tissues.

“‘A variety of optical techniques, such as photothermal tissue bonding and photodynamic therapy, require efficient delivery of light deep into tissues, but the current limited penetration of light in tissue constitutes a serious constraint in clinical use. Having biocompatible and bioabsorbable optical components may transform photomedicine from a discipline where light is predominantly applied externally, to a new paradigm based on tissue-integrated and precisely controlled delivery and collection of light.”

Professor Malte Gather
School of Physics and Astronomy
University of St Andrews

The research could also find application in a variety of other areas, such as long-term photodynamic therapy (PDT) for cancer treatment, as well as implant endoscopy after surgery for repeated imaging and monitoring of the healing process.

www.st-andrews.ac.uk

Traditionally, fibre-optic devices or catheters have been fabricated from glass or plastic and remain in the body permanently or until removed through further surgical intervention. However, the St Andrews-Harvard research team shows how fibres can be made from materials that will be resorbed into the body, eliminating the need for removal and the risk of damaging the newly-repaired tissue. This advancement will give doctors the power to heal from within without scarring.

www.paltechnologies.com

The research team shows how fibres can be made from materials that will be resorbed into the body, eliminating the need for removal and the risk of damaging the newly-repaired tissue. This advancement will give doctors the power to heal from within without scarring.温暖而舒适，使其成为理想的工作环境。
Olberon Ltd is a Nottingham-based company that specialises in medical device design, research, development and commercialisation. The company’s new product is Vacuderm, a tourniquet designed to aid vein inflation for cannulation.

Vacuderm makes cannulation safe and successful

A tourniquet is placed around the arm of a patient to help make veins easier to see for a healthcare practitioner to attempt cannulation. The Vacuderm tourniquet is designed to aid procedures by amplifying the effect of venous occlusion through a pumping mechanism, which can be used in difficult circumstances and for phlebotomy procedures.

The product can be used above or below the elbow for cannulation of the antecubital fossa, forearm, wrist and hand, and is designed to improve this venous success rate using a pumping mechanism that improves the filling of vein. The technology uses a vacuum pump that amplifies the tourniquet effect. With pumping, the vein will be inflated, more tense and turgid, and easier to cannulate, improving success rates.

Infection control is a recurrent issue in terms of reusing tourniquets. Any object, including a cannula, that punctures the skin has a risk of letting infection into the body. Vacuderm is a single use sterile product that is packaged individually, which will assist in reducing infections. The product helps save time for professionals and reduces pain and discomfort for the patients, as well as reducing infection transmission from patient to patient.

Olberon has also developed a device for ENT diagnostics called Otorhinoscope, a patented dual purpose medical scope allowing the doctor to examine both the ear and the nose using a single device. It incorporates a unique expandable speculum, which is disposable for infection control.

In the short term, the company aims to promote and appoint European and international distributors for its portfolio of differentiating aids for improving venous access success. For the future, Olberon is seeking corporate partners from the cannulation and laparoscopy trocar sectors for the development and licensing of its disruptive pipeline technology ‘Intelligent Cannula’ with patented auto retractable needle.

www.olberon.com

Invented by Dr Arash Bakhtyari, the Vacuderm is designed to facilitate higher success in cannulation, significantly decrease patient discomfort and assist medical professionals to master their technique.

Currently, between 15-25% of first attempt cannulations performed in the traditional way fail. It is a very ubiquitous medical practice and a sizeable proportion of times a healthcare professional will face difficulty. When there are poor veins, such as with chemotherapy patients, this can be even more problematic with higher failure rate.

MEDICAL DEVICE
PRODUCT DESIGN & VALUE ENGINEERING

By combining science with practical design we help turn brilliant ideas into commercial reality.

At GX we take an innovative approach to medical and pharmaceutical product design and value engineering. We understand how to harness life science and biotechnology in order to develop practical, commercial products.

www.gxgroup.com
+44(0)1291 673437

UK Lifescience Industry Magazine