

Innovate UK

Results of Competition: Biomedical Catalyst 2016 - Feasibility Studies

Competition Code: 1607_FS_HEAL_BMC

Total available funding for this competition is £3.5M from Innovate UK and £195K from Scottish Enterprise

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Peptinnovate Ltd	Generation of Small Molecule Asthma Disease Modifying Agents from a TB Derived Peptide Lead	£198,941	£139,259
Project description - provided by applicants			
<p>Peptinnovate is a drug discovery and development company based in the Stevenage Bioscience Catalyst on the GSK site. The company's core research is based on molecules derived from Mycobacterium tuberculosis proteins as innovative immunomodulatory agents for the treatment of chronic inflammatory diseases. The lead molecule PIN201104 is an extremely safe, low molecular weight peptide identified by phenotypic drug discovery in collaboration with a number of leading UK academic groups. PIN201104 is being progressed into the clinic as a first in class disease modifying agent for the treatment of asthma and other chronic inflammatory conditions. Peptinnovate through this grant will exploit the disease modifying approach it has identified for PIN201104 to generate small molecule analogues. Further modification of these analogues subsequent to this project will allow the generation of orally active disease modifying agents for the treatment of mild to moderate asthmatics. There are currently no disease modifying agents available for the treatment of asthma. Peptinnovate is pioneering the discovery of agents with the potential to change the underlying disease of chronic inflammatory asthma and lead to potential curative therapies.</p>			

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CellCentric Ltd	A new application for a novel drug candidate - in lung cancer	£180,000	£126,000
Project description - provided by applicants			
<p>1 in 4 cancer deaths in men and women are a result of lung cancer. Despite significant advances in recent years, both in terms of early detection and novel therapies, there remains a significant unmet need for cost-effective drugs that offer long term benefits. CellCentric has developed a novel, highly potent potential drug for the aggressive form of prostate cancer, that is expected to be taken orally 1-2 times a day. This is advancing to clinical trials. Recent studies reported in the literature by others (Jan-Mar 2016) have unexpectedly, indicated that CellCentric's drug could have specific application for 10-15% of patients who have non-small cell and small cell lung cancers. These tumours are readily identifiable with existing bioassays. The patients, particularly in the advanced stages, have few alternatives. This project will use tests involving cells and human tumour tissues to seek to extend some of the findings reported by others, and confirm whether CellCentric's easy to administer drug could be used beyond prostate cancer, for lung cancer too. Even a 10-15% lung cancer opportunity represents a significant patient population, that would derive meaningful clinical benefit from such an approach.</p>			

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Defenition Ltd	Development of inhibitors of bacterial flap endonucleases for use as antimicrobial agents	£200,000	£140,000
Project description - provided by applicants			
<p>The development and spread of antimicrobial resistance is a complex issue to which the costs of inaction are huge. Today, 700,000 people die of resistant infections every year and it is estimated that by 2050, 10 million lives a year are at risk due to the rise of drug-resistant infections. Additionally, it has been shown that the antibiotics that have been recently approved, and those at various stages of development, show a mismatch between what the world needs, given emerging levels of drug resistance, and the size and quality of the pipeline to address this growing challenge. In particular, there is a critical need for new classes of antibiotics, acting via novel biological pathways. Bacterial flap endonucleases (FENs) are highly conserved enzymes that are essential for DNA replication and repair and the maintenance of genomic stability in pathogenic bacteria. Since loss of FEN activity is fatal to the target organism, they represent a new class of target for the development of novel, high-value antibiotics with a low resistance profile. This project, undertaken by DeFENition Ltd, a newly formed biotech, in partnership with the Sheffield University, is aiming at identifying and developing bacterial FENs inhibitors for use as antibiotic agents.</p>			

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Overmould Ltd University College London	Flow-through Plasma circuit pathogen reduction device for patients with sepsis and/or liver failure	£198,501	£167,111
Project description - provided by applicants			
<p>Sepsis, overwhelming microbial infection of the bloodstream, is a potentially fatal condition. Antibiotics are the mainstay of treatment, but cannot cope with overwhelming sepsis, and as resistant bacteria develop, antibiotics will become progressively less effective. Sepsis is also one of the key reasons for patient demise in liver failure. Today, with ever increasing antibiotic resistance, new approaches are urgently required to combat sepsis from any aetiology. A flow-through pathogen reduction module (PRT) for use in intensive care units would be a major breakthrough for intensive care medicine. A meaningful reduction of plasma microbes would enable conventional antimicrobial treatments to be effective once more, and would deliver benefit to patients worldwide. The project will address this need. Building on a well-developed, innovative concept developed by UCL it will design, manufacture, demonstrate and test (using in vitro models) a human scale prototype. The work will generate new protectable IP for the partners, and enable them to develop and derisk business plans for the development and roll-out of a commercial grade device, building on input from relevant clinical and commercial stakeholders.</p>			

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Arcis Biotechnology Holdings Ltd	RNA biomarker stability in urine-technical feasibility	£156,134	£109,294
Project description - provided by applicants			
DNA is a code for RNA, which is the template for proteins. Within the same organism, all cells have the same DNA sequence but use different bits of DNA as codes for RNA (that is, selective DNA expression), so make different proteins. Thus, a human liver cell and a human skin cell are identical in DNA sequence, but very different to each other as they express different proteins. Diseases, including cancer, cause cells to alter the bits of DNA they make into RNA expressing altered proteins and these alterations are potentially useful diagnostic markers. Molecular biologists use a technique called quantitative reverse transcriptase polymerase chain reaction (qRT-PCR) to quantify how much of a particular piece of RNA there is in a sample, and hence how this might indicate a person is suffering from a particular disease. However, qRT-PCR has not been used outside of research labs to diagnose disease, mainly because RNA is inherently susceptible to degradation, making sample collection and storage near impossible. Arcis have developed a procedure to simplify RNA extraction and stabilise the RNA pool for up to 26 days. This project seeks to explore feasibility of adapting this to extract and stabilise RNA from urine, potentially allowing the validation of game-changing biomarkers for prostate and bladder cancers, amongst other conditions.			

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MOFgen Ltd	Nitric Oxide Releasing Coatings to Prevent Catheter Related Healthcare Associated Infections	£146,559	£102,591
Project description - provided by applicants			
This project aims to explore the feasibility of using a new class of chemical compound called Metal Organic Frameworks (MOFs) to deliver the bio-active gas nitric oxide (NO) from within coatings on catheters. The purpose is to prevent catheter related blood stream and urinary tract infections, which contribute to the millions of incidences of Healthcare Associated Infection each year. If successful, the technology will improve patients' quality of care, reduce infection and mortality rates and reduce the financial burden on Health Care Providers associated with prolonged hospitalisation and after care as a result of these infections.			

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CYP Design Ltd	Designing stable disposable Vitamin D biosensors for home or POC	£112,350	£78,645
Project description - provided by applicants			
<p>The project proposes to design and test biosensors for vitamin D based on cytochrome P450 enzymes. Due to the widespread insufficiency of this essential vitamin in the general public (with over 1 billion reported as deficient around the world) and in the elderly leading to a variety of health concerns including cardiovascular disease, cancer and mental disorders, media reports have incorrectly suggested its supplementation for everyone. Studies have shown that for some, even a low dose could be toxic. Although the 25(O)D form of vit D is routinely measured, poor correlation has been reported with the other two forms, hence necessitating the measurement of all three forms. CDL, with its expertise in CYP450 enzyme stabilisation technology will integrate this onto disposable electrochemical transducers to produce stable, reliable and accurate vit D biosensors, which could become a tri-sensor platform for home and point-of-care (POC) use downstream. This project will allow CDL to tap into the multi billion dollar POC biosensor market, besides being able to increase the portfolio of stabilised enzyme offerings currently available from CDL.</p>			

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Physiomics PLC	Decision Support Systems for stratified cancer treatment	£189,354	£132,548
Project description - provided by applicants			
<p>Stratified medicine is a medical model in which patient group data are taken into account to tailor treatment. Various data, including pharmacogenomic data, are used to customise the treatment plan for these patient groups. In oncology, this treatment plan can involve chemotherapy, radiation and surgery. Deciding which treatments to use, and when to apply them in an optimal way, can be challenging, and no global approaches are available to optimise treatment path in a customised way. Focusing on esophageal cancer, with the collaboration of University of Oxford in this feasibility study, our goal is to develop a demonstrator of a model-based Decision Support System (DSS) for stratified clinical oncology. It will integrate a diverse range of drug, tumour and patient data in order to better design clinical treatment, optimise patient care path, and ultimately deliver improved cancer care. To achieve our goal we will integrate existing and new tools (preclinical and clinical PK/PD platforms plus statistical models) to build this novel predictive platform. Also in collaboration with the Oxford AHSN we will build a business plan for implementation within the NHS ("Route to Market"). This will serve as a basis of a development plan to take forward the proposed DSS demonstrator into a fully commercial version.</p>			

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Iceni Diagnostics Ltd	A Carbohydrate Diagnostic for the Detection of Norovirus [CADDNOR]	£137,989	£96,592
Project description - provided by applicants			
<p>ICENI Diagnostics provides point of care (POC) diagnostics and carbohydrate-based therapeutics, with a focus in infectious disease. A single device, dual assay for norovirus and rotavirus, the subject of this proposal, has its basis in synthetic biology and is dependent on the assembly of recognition ligands using novel enzymatic processes, such that norovirus and rotavirus specificity can be introduced, as the company has been previously demonstrated for influenza virus. The developed assay uses glyconanoparticle technology with potential for replacing molecular technologies and immunodiagnostics a major shift in analytical approach. It has potential applications in clinical and non-clinical settings. The use of carbohydrates instead of antibodies as the recognition mechanism has several advantages including their production using industrial scale, cost-effective chemoenzymatic synthesis which addresses the call topic. The company has research underpinning its developments and the technology has been demonstrated in lab and working environments. We now require investment to expedite the developmental process and introduce a paradigm shift in analysis by bridging the valley of death for SMEs, such as ours, as quickly as possible.</p>			

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Emerge Biotech Ltd	Generation of therapeutic antibody leads against the breast cancer target Her2	£189,339	£132,579
Project description - provided by applicants			
<p>Breast cancer is the leading cancer killer among women worldwide. Although the use of antibody therapy has achieved considerable success in treating cancer in recent years, most antibody drugs lack absolute specificity as their target is also expressed in healthy tissues, albeit at lower levels. It is therefore pivotal to find better treatments. A growing body of evidence suggests that some cancer proteins change their shape by presenting parts, so-called epitopes that are usually hidden within the protein. Emerge Biotech has developed a screening platform that aims to identify such epitopes by use of antibodies. By changing the shape of proteins experimentally, this procedure selects all antibodies that recognise hidden epitopes. These antibodies are then tested for their cancer-specific binding in tissues of cancer patients and healthy controls. In this project we examine the cell surface protein Her2, a common drug target for breast cancer treatment for the presentation of hidden epitopes in cancers. Identification of antibodies against disease-specific binding sites in this work may greatly spur the quest for such changes in other cancers and lead to more effective cancer treatment.</p>			

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Oxford Heartbeat Ltd	Precise Stenting	£200,000	£140,000
Project description - provided by applicants			
Our goal is to make cardiovascular surgeries more efficient and safe. We propose to develop technology that helps clinicians to accurately plan and rehearse stent placements inside blood vessels. Using cutting-edge computational modelling, we make maximum use of available patient data and device mechanics to accurately predict the behaviour of devices inside each patient's vessel configuration. This allows clinicians to optimise the device selection, thereby reducing complications and associated cost of stenting surgeries for hospitals and society.			

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Small Pharma Ltd	SPL-801 Rapid Acting Antidepressant	£199,441	£139,609
Project description - provided by applicants			
<p>This project is to conduct preclinical research into a promising new rapid-acting antidepressant. The standard of care in treating depression are selective serotonin reuptake inhibitors (SSRIs). A major drawback of SSRIs is that they are rarely effective in reducing suicidal ideation and suicidal behaviour during early treatment, particularly in young patients. Suicide is the leading cause of death in 20-34 year olds in the UK, and over 6000 suicides are registered in the UK each year. As many as 75% of suicide cases are associated with depression. This project builds on academic research which identifies a rapid-acting antidepressant which shows promise as a therapy to reduce suicidality in major depression patients. Very little is known about the physical form of the drug, or its suitability to pharmaceutical formulation. The outcome of this project is to understand the technical avenues available to prepare suitable dosage forms to investigate this drug in humans, paving the way for clinical trials.</p>			

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Revivocell Ltd Lancaster University	Combined Novel 3-D Cell Culture and Biospectroscopy; personalising Osteoporosis therapeutics	£188,233	£158,857
Project description - provided by applicants			
<p>Osteoporosis is an incredibly debilitating disease. More than 3 million people in the UK are estimated to suffer and it effects 1 in 2 women and 1 in 5 men over the age of 50. It leads to increased risk of bone fractures, reduced quality of life and increased morbidity and mortality. More that 40% of people who experience fractures live with long-term pain. The cost of osteoporosis to the NHS is around £1.5 billion, and up to 69,000 people are admitted as a result of hip fracture accidents each year. There is a clear need to improve predicting those who are at risk of developing osteoporsis and growing evidence that prescribing the appropriate treatment based on an individual's condition can lead to better management of osteoporosis, reduced risk of fracture and delay acute disease onset. Revivocell and Lancaster University plan to collaborate to develop a new method of early diagnosis that will not only assist clinicians to prescribe more effective therapeutics, but also inform at risk patients. The emerging techology is based on advances in combining cell culture technologies and spectrometry, to develop new techniques for improved diagnosis.</p>			

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Ubiquigent Ltd	Novel chemical libraries to unlock the potential of deubiquitylase enzyme drug discovery	£190,352	£133,246
Project description - provided by applicants			
Despite advancements in the pharmaceutical industry there remains a significant need for new therapies to address unmet clinical needs. The ubiquitin system defines a cascade of proteins that control regulated protein turnover amongst other functions. Its key role in the regulation of probably the majority if not all cellular proteins and processes means that it presents a deep array of potential drug targets - currently largely untapped by the pharma industry - addressing multiple therapeutic areas including many currently proving challenging such as dementia, cancer and metabolic diseases. Ubiquigent is a world leading provider of biological assay services in this newly emerging ubiquitin system drug discovery space. The main rate limiting factor in ubiquitin system targeted drug discovery is the availability of small molecule chemistry that may provide the starting points for developing drugs against this family of targets. With the help of this grant Ubiquigent will develop first in class ubiquitin system (focussing on the deubiquitylase enzyme sub family) targeted small molecule libraries to unlock ubiquitin system drug discovery across the pharmaceutical industry to enable the development of critical future medicines.			

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DiagNodus Ltd	Colorectal cancer detection by quantifying biomarkers in non-invasively collected colorectal mucus.	£200,000	£140,000
Project description - provided by applicants			
Colorectal cancer (CRC) is a severe disease causing about 10% of all cancer deaths in the UK. Many CRC cases are diagnosed too late to be successfully treated, and early detection of CRC remains an urgent healthcare problem. This project aims to evaluate the feasibility of our recently invented technique of non-invasive sample collection and analysis as a new approach to CRC detection. This technique has already been successfully tested by DiagNodus for detecting inflammatory bowel disease, and its application to the problem of CRC is a logical extension of our research. We plan to non-invasively obtain colorectal mucus samples from 50 CRC patients and 50 patients without tumours (controls) at the Department of Gastroenterology of St George's Hospital (London). A range of cancer-specific biomarkers will be quantified in the collected samples. We expect that the outcome of the project will allow comparatively assessing biomarker performance for CRC detection. The best performing biomarker(s) will be used for the development of a new rapid test for CRC early detection and screening.			

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N4 Pharma Ltd	NUVEC a platform technology for the vaccine delivery	£169,298	£118,509
Project description - provided by applicants			
Nanotechnology platforms, including N4's propriety NUVEC, are being investigated as vaccine carriers, adjuvants, and drug delivery systems. DNA vaccination indicates great potential for combating a variety of diseases including cancer. Safe and efficient delivery of plasmid DNA to initiate immune responses remains a major barrier in bringing DNA vaccination into human medicine. N4's NUVEC is a novel platform capable of delivering a range of therapeutic biomolecules whilst simultaneously stimulating the immune system.			

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Ludger Ltd	GlycanDx-MODY - a glycomics precision diagnostic assay for MODY diabetes	£150,370	£105,259
Project description - provided by applicants			
<p>GlycanDx-MODY is a test to identify patients with HNF1A-type Maturity Onset Diabetes of the Young (MODY). This is a type of diabetes affecting up to 4% of diabetics (40K-160K cases in the UK) that can be treated with inexpensive oral drugs. Most MODY patients are misdiagnosed and prescribed insulin, which does not treat their disease, is inconvenient and expensive. In the long term, patients have a higher risk of blindness, kidney disease and heart disease. There are genetic tests available, but they are not widely used by GPs because they are too expensive and the results are difficult to interpret. This is a collaborative project led by Ludger, an Oxford based bioscience company, along with non-funded partners Genos (European SME) and OCDEM (Oxford diabetes research group). In a study of 200 diabetes patients the test positively identified those with HNF1A-MODY. The test is affordable (quarter of the price of genetic tests), quick (~ 3 days turnaround) and the results are easy to interpret. We would like to further develop this assay for routine clinical use as a diagnostic or screening tool. This Feasibility Study is to plan the next stage in development and commercialisation of the test which will result in a blueprint to progress the project efficiently for the benefit of patients.</p>			

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Medicen Devise Ltd	SteriDress: Preventing Infections through Active Dressing	£100,000	£70,000
Project description - provided by applicants			
<p>Going to hospital carries an increasing risk of catching dangerous infections, especially for patients who undergo surgery or receive permanent catheters. Through broken skin, germs that we might otherwise fight off can directly enter our body, where they cause local pain and swelling, sepsis or even death by organ failure. Globally, so-called hospital-acquired infections are on the rise (200,000 cases per year in the UK) and kill up to 12% of patients affected with each extra day in the intensive care unit costing the NHS an additional £1000 per day. Infections can be prevented by keeping wound areas sterilised. Our technology is designed to ensure that the wound area is always sterile. We are creating an active wound dressing, "SteriDress", that is used with a catheter, to keep the catheter entry point disinfected. This is achieved by applying precise doses of disinfectant from within the dressing itself at pre-programmed times. Not only will this dressing save lives by preventing infections, the dressing can remain in place longer than conventional wound dressings, so patients will be spared the discomfort of dressing changes and nurses will be freed up for other activities. Drawing on our experience with disinfectant dispensing devices, we will select the best materials and designs for SteriDress.</p>			

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Synergation Ltd	Diagnosis, Monitoring and MANagement of Dyslexia using digital technologies (DIMMAND)	£89,214	£62,450
Project description - provided by applicants			
<p>Dyslexia, a learning difficulty and a disability as defined in the Equality Act 2010, has serious short and long-term effects from the start of education of a child. It is estimated that between 5% to 10% of children in the UK may be suffering from dyslexia. It is generally agreed that the earlier dyslexic difficulties are identified the more effective treatment will be. Our project will significantly improve the early diagnosis, monitoring and management of dyslexia by assessing a user's reading ability across the spectrum, and a range of other non-linguistic skills such as visual perception, visio-spatial attention and fine auditory perception. This will be delivered using a game-based mobile app aimed at young children (years 4 to 8), parents and teachers to firstly assess, and then monitor and manage the progress in a convenient, cost-effective and private environment. The purpose of this feasibility project is to define the digital dyslexia health app and its underlying components with all its variants and characteristics. The specific objectives are: (1) to design interactive reading, visual and auditory games, (2) to design the user-interface and present mock-up screens, (3) to outline the complete specifications and architecture of the mobile app, (4) to finalise the business case.</p>			

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PharmNovo UK Ltd Liverpool John Moores University	Development of small peptide CGRP antagonists for migraine therapy	£195,020	£165,761
Project description - provided by applicants			
<p>Migraine is an extremely common, disabling condition which ruins the lives of millions of patients worldwide and is hard to treat effectively. The most commonly used anti-migraine medicines cannot be given safely to patients with heart disease. The causes of migraine are not yet fully understood but a hormone called calcitonin gene-related peptide (CGRP) is now thought to be intimately involved. Attempts have been made to block CGRP with synthetic chemicals which have shown some benefits in clinical trials but have been dropped due to toxicity risks. We have developed some novel peptides (very small proteins) which are effective blockers of CGRP but cannot be given by mouth as they would be digested in the gut. Our aim, therefore, is to develop, using cutting edge formulation technology, a preparation of our peptides which can be delivered as a nasal spray to provide rapid, safe and effective therapy to all categories of migraine patients.</p>			

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Innovate UK

Results of Competition: Biomedical Catalyst 2016 - Feasibility Studies

Competition Code: 1607_FS_HEAL_BMC

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Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Anglo Biopharma Ltd University of Reading	Evaluation of the technical & commercial viability of developing an accelerated MERS vaccine through a new rapid antigen identification platform	£198,704	£168,704
Project description - provided by applicants			
Anglo Biopharma Ltd, a UK based british biotech startup, will assess both the commercial and technical potential of a Middle Eastern Respiratory Syndrome (MERS) vaccine. An evaluation of the commercial viability of a novel MERS vaccine towards MERS will be performed. MERS is a disease described by the director of the World Health Organisation (WHO) as a "a threat to the entire world". Anglo Biopharma in collaboration with the University of Reading will assess the potential of University's baculovirus platform's potential to generate novel vaccine antigen candidates.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Sannox Therapeutics Ltd	Novel Therapy for Idiopathic Pulmonary Fibrosis	£112,414	£70,000
Project description - provided by applicants			
Sannox Therapeutics has an exclusive license from the University of Glasgow to compounds that disrupt fibrotic disease progression through modulation of a novel target. This project aims to validate these compounds as candidates for pre-clinical development. The target fibrotic disease for Sannox is Idiopathic pulmonary fibrosis (IPF). This is a progressive fibrotic lung disease of unknown etiology with an average age presentation of 66 years. It leads to respiratory failure and death usually within 3 to 5 years of diagnosis making the condition more deadly than many common cancers. IPF affects ~ 5 million people worldwide and its presence rises dramatically with age. There is currently no cure for IPF and recently approved drugs only slow its progression.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Cadscan Ltd Staffordshire University	ViscoTurf - Treatment of Diabetic Foot Ulceration	£195,608	£166,082
Project description - provided by applicants			
<p>Diabetic foot ulcers are a major source of morbidity and resource use for patients with diabetes. According to NHS England, 3.2m people in the UK have diabetes and the worldwide diabetic population was 422m in 2014. The lifetime risk of a diabetic foot ulcer is 25%, with 15% of these leading to amputation, 85% of all lower-limb amputations. In the UK an estimated 169,000 people had a diabetic foot ulcer in 2012/13, 5% of adult patients. Management of DFU is time-consuming and expensive, with 45% of ulcers taking more than six months to heal. An analysis estimated that total expenditure in England is £580 million per year and a mean cost of £3,715 per patient. We propose a system that will cut the link between ulceration and amputation through effective, low-cost orthoses designed to treat foot ulceration. This is made possible by, ViscoTurf, an innovative orthotic design concept that emulates the function of natural turf to provide cushioning, and optimised offloading leading to improved blood circulation. The objectives of this project are to generate evidence that the ViscoTurf technology effectively improves perfusion and promotes healing, and that the design process for the orthoses can be automated in a scalable manner.</p>			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Arquer Diagnostics Ltd	An innovative PROstate cancer Screening Test based on the MCM5 ELISA Test (iPROSTMET)	£99,734	£69,814
Project description - provided by applicants			
<p>Every year 47,000 men are diagnosed with prostate cancer in the UK. Currently, diagnosis requires an invasive biopsy to be taken. This is painful for the patient, burdensome to the NHS and carries the risk of infection requiring further treatment. Arquer have a simple test, optimised for bladder cancer, capable of detecting cancerous cells in urine. As prostate tumours shed cancerous cells into urine and semen, Arquer intend to adapt the test for use as a screening and diagnostic tool for prostate cancer. In order to successfully adapt the test from bladder to prostate cancer, Arquer need to execute studies to fully understand the pathways for prostate cancer diagnosis, where the Arquer test would fit in to the clinical pathway and identify any potential issues which may affect utility or attractiveness of the test. Arquer will then address these issues so that the test can be easily adopted by the NHS. Work will be carried out to ensure that the optimal performance parameters for the test are identified and implemented, allowing the design of a full clinical trial to be carried out following these studies. The final product will be a test which can accurately diagnose prostate cancer without the need for biopsy, benefiting patients and clinicians alike, whilst simultaneously providing large cost savings to the NHS.</p>			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
OR Productivity PLC	Endoscopic capsule novel drive mechanism	£131,878	£92,000
Project description - provided by applicants			
<p>Capsule endoscopy is a medical technique where a patient swallows a small capsule containing a video camera that takes images of the inside of the intestines until it is passed out in the faeces. Doctors can analyse the video images afterwards to see if further treatment or intervention is required. However the capsule passes through the intestines at the same rate as food and cannot be controlled to look carefully at any particular part. [A different way to examine the intestines involves passing a flexible telescope (endoscope) through the mouth and down the oesophagus (food-pipe) or into the rectum. However this does not always allow all parts of the intestines to be seen and is unpleasant for the patient. So the capsule method is better in several respects.] This project is to develop a new version of the capsule device that can be controlled externally by the doctor so that all parts of the intestines can be looked at by steering it to a point of particular interest. The project will create a new driving and steering mechanism that will work in the intestines without harming the patient. If successful this could in future lead to capsules that can sample tissue (known as a biopsy) or even perform operations such as cutting out a tumour.</p>			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
IF Sensing Ltd	Development of a Novel Diagnostic Device for Monitoring Kidney Function Outside the Clinic	£139,037	£97,000
Project description - provided by applicants			
<p>Chronic kidney disease (CKD) is characterised by a gradual loss of kidney function that can ultimately lead to kidney failure. It is a global healthcare problem, and in the last decade, is estimated to have cost the worldwide economies approximately US \$1 Trillion. Most of the costs of CKD therapy come late in the patient pathway in providing renal replacement therapy, such as kidney transplant and dialysis, which can be delayed or avoided if kidney deterioration is detected early. However, in a large majority of people, kidney dysfunction and injury can resolve and repair fully if detected early, with simple and low cost interventions. IF Sensing is developing a simple, cost effective, rapid and minimally invasive biosensor device to screen and monitor kidney function by individuals/patients outside the hospital environment, in home and community settings in both established and undeveloped healthcare systems. In the UK, the NHS has recently launched the Think Kidneys campaign, and this product provides an ideal solution, enabling individuals to monitor kidney function outside the hospital setting, alerting them early to the need for clinical intervention, thus improving patient outcomes while reducing the costs of disease management.</p>			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
C4X Discovery Ltd	Oral Agonists of GPR142, an Innovative New Target for the Treatment of Type 2 Diabetes	£199,485	£139,640
Project description - provided by applicants			
Type-2 diabetes (T2D) affects over 420 million people worldwide, creating an enormous healthcare and socio-economic burden. The GPR142 receptor has been recently reported to be an exciting new target for the treatment of T2D with several advantages. Firstly, its activation results in insulin secretion but only in the presence of high blood sugar levels, avoiding the life-threatening side effect of low blood sugar associated with insulin-based therapies. Secondly, GPR142-based medicines would be orally administered, avoiding compliance issues caused by injectable therapies. Additionally, activating GPR142 leads to the release of GLP-1 - a clinically validated mechanism for the treatment of T2D. By applying its proprietary NMR-based approach to drug discovery, C4X Discovery has identified hit molecules for GPR142. This project is scoped to characterise and develop these hits to enable a chemical optimisation programme aiming to ultimately lead to a new, convenient, safe and effective class of T2D medicine that would have an enormous positive impact on long-term patient health and reduce the economic burden associated with the disease.			

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ProAxis Ltd	Feasibility Study for an activity-based Immunoassay for the detection of pancreatic elastase	£133,279	£79,967
Project description - provided by applicants			
<p>Pancreatic Insufficiency (PI) is a condition that occurs in a range of diseases including chronic pancreatitis, pancreatic cancer, diabetes, cystic fibrosis and inflammatory bowel disorders. Often, diagnosis is delayed as symptoms don't appear until almost all of the pancreatic function is lost. Pancreatic Elastase (PE), one of the enzymes normally released by the pancreas, has been identified as a biomarker of pancreatic insufficiency. Measuring the active form of PE can provide information about pancreatic function and help in the prognosis of a range of PI-related diseases. Low faecal PE levels are shown to be related to poor survival in patients with pancreatic cancer, meaning that PE levels could be used to help predict survival in those diagnosed with pancreatic cancer. Diagnosis of PI before a patient shows symptoms involves invasive tests, some of these requiring hospitalisation. Other tests for PI are indirect, non-specific, unpleasant and limited. This project aims to use our technology to develop a quick and easy test to measure only the active form of PE. We plan to develop special molecules called ProteaseTags® and use them to create an activity-based immunoassay (ABI) for the detection of active PE in clinical samples with a precision that is not possible with current tests.</p>			

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Inova Design Solutions Ltd	Detecting Patient Deterioration using Bodytrak®	£199,476	£139,633
Project description - provided by applicants			
<p>Ensuring patient safety is challenging since patient deterioration can happen rapidly and go un-noticed. Consequently, the NHS makes use of the National Early Warning System (NEWS) - a vital signs monitoring framework, in order to monitor patients and facilitate early intervention. Currently, the vital signs are obtained manually by staff, which is an error prone and time consuming task. We believe that automating vital signs acquisition for NEWS score calculation is the way forward for the improvement of reliability and efficiency of the care pathway. While some of vital signs can be reliably detected using established sensor platforms, it is more difficult to automate the acquisition of other vital signs reliably. Therefore, the primary objective of this project is to conduct a feasibility study on the acquisition of the more challenging vital signs by means of Bodytrak®, an unobtrusive vital signs monitor, designed by Inova Design Solution Ltd, in a post-operative environment. A secondary objective is to carry out carry out a preliminary study/evaluation for the integration of Bodytrak® into the NEWS framework.</p>			

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