Innovate UK

Results of Competition: SBRI Stratified Medicine: Connecting the UK Infrastructure
Competition Code: 1509_SBRI_HEAL_SMIP6

Total available funding for this competition was £10M from Innovate UK

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
Affymetrix UK Ltd	Non-invasive genomic profiling of bladder cancer using urinary cfDNA	£149,010	£149,010

Project description - provided by applicants

Abstract: Urothelial bladder cancer (UBC) is the 7th most common cancer in Western societies with a rising global incidence. Disease management currently poses numerous challenges because of the variable risk of progression to Muscle Invasive Bladder Cancer (MIBC) and the propensity of Non-Muscle-Invasive Bladder Cancer (NMIBC) to recur, necessitating long-term surveillance at high cost to the NHS. UBCs are thus highly heterogenous in their clinical characteristics and this is mirrored in their genomics, features of which traverse conventional grade and stage groupings. Current detection and monitoring of bladder cancer is by cystoscopy, which is both expensive for the NHS and also burdensome for the patient. Following any subsequent biopsy or resection procedure, tumours are typically characterised by conventional histopathology using formalin-fixed paraffin-embedded (FFPE) tumour tissue to allow grading and staging of the tumour. Despite the genomic heterogeneity of UBCs and uncertainties in management across NMIBC risk categories, the potentially informative data from genomic characterisation is not routinely utilised outside of the research setting. Within our current IUK-funded project 'Developing a Robust, Reliable Multiplex Clinical Tool for Guiding Tumour Therapy' we have reported utilisation of the Affymetrix OncoScan® FFPE Assay Kit for genomic profiling of UBC using cell-free DNA (cfDNA) from urine. Further, we have demonstrated that the informative genomic aberrations evident in FFPE tumour material are echoed in urinary cfDNA, even for very early stage NMIBCs down to 0.5cm in diameter. Identifying such genomic complexity in a non-invasive fashion would likely be highly advantageous for facilitation of the diagnosis, management and surveillance of patients with NMIBC or MIBC, with significant cost-savings for the NHS. This proposal, in response to Part I of the IUK competition 'Stratified Medicine: connecting the UK infrastructure', is to collaborate with a network of specialists and infrastructure available in the UK to report on specific health and economic benefits of applying the OncoScan assay to non-invasive detection, characterisation and monitoring of UBC as compared to current procedures and workflows. Within this project phase we also plan to generate further evidence of the value of genomic grading of UBC with OncoScan. We will also work with the NIHR and bladder cancer CIs/PIs to generate a detailed plan for Phase II of the competition where we would trial this platform within the NHS to assess the utility and health-economic benefit compared to current practices.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Randox Laboratories Ltd	Diagnostic classifier for risk stratification of haematuria patients (DCRSHP)	£150,000	£150,000

Project description - provided by applicants
Abstract: In 2012, 5242 people in the UK lost their life to bladder cancer. The most common symptom of bladder cancer is blood in the urine (haematuria), which is usually painless. Haematuria can be frank (macroscopic), visible to the patient, or invisible (microscopic), which is normally detected during a routine urine dipstick test. Haematuria in its visible and invisible forms can represent a disease process within the urinary tract. Patients presenting with haematuria require investigations, including cystoscopy (endoscopy of the urinary baldder), cytology (which examines the appearance of cells in voided urine), and imaging of their urinary tracts, to identify the source of bleeding. Cystoscopy (the gold standard for bladder cancer detection) allows direct observation of the bladder, but is invasive and uncomfortable for the patient. If a suspicious region is observed a biopsy is needed. Cystoscopy does not allow for upper track visualisation, does not always detect small areas of carcinoma in situ, can give false positive results, is embarrassing for the patient and can be biased by the risk category of the patient. Cytology, has high specificity but poor sensitivity, and hence, cannot act alone for the diagnosis of urothelial cancer. Less than 20% of patients with macroscopic, and <5% with microscopic haematuria have bladder cancer. As such, it has been estimated that in the UK the total cost of managing patients with haematuria who are found not to have bladder cancer is >£33.5 million. Consequently, haematuria is a significant healthcare burden, which is only set to increase because of the aging population. Therefore, there is a strong clinical need for tests which can at least stratify haematuria patients and if possible, be diagnostic. Randox in collaboration with Queens University Belfast (QUB) and The Belfast Trust have identified a diagnostic classifier for risk stratification of haematuria patients (DCRSHP). The DCRSHP is a urine-based diagnostic test that is non-invasive, rapid, easy to use and interpret results, has high sensitivity and specificity, is unbiased, and allows high-throughput screening for hundreds of haematuria patient samples. Use of the DCRSHP at the GP surgery or the haematuria clinic will significantly reduce the number of 'low-risk' patients that are currently 'red flagged' for cystoscopy and improve waiting times for haematuria patients who do require diagnostic services i.e. those patients deemed at 'high risk'. The SBRI grant funding will allow us to engage with Health Economists/Diagnostic Evidence Cooperative to establish the validity and value of our test in a clinical setting.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ImmunID	TCR diversity evaluation as a predictive biomarker of response to immunotherapy	£149,994	£149,994

Project description - provided by applicants

TCR diversity evaluation as a predictive biomarker of response to immunotherapy After decades of disappointing results, the recent success of immunotherapy in clinical oncology confirms the relevance of the immune system activation in the defence against the tumour. For the first time in metastatic melanoma, Ipilimumab (BMS, Yervoy®), a monoclonal antibody stimulating T cells, increased the life expectancy of patients. Furthermore, the FDA recently approved other monoclonal antibodies with similar mechanisms of action in metastatic melanoma and other solid tumours, confirming that targeting the immune system could promote the development of an effective anti-tumour adaptive immune response, sometimes leading to a complete remission of the patients and long survival. The emerging checkpoint inhibitors are without doubt an exciting development for patients with metastatic melanoma. Nevertheless response rates amongst unselected patients are low ' sadly the majority of treated patients do not benefit from these treatments. By contrast the rate of adverse events is high, and can be life-threatening or life-altering. Additionally the drug cost (£75k for a course of Ipilimumab) for all the checkpoint inhibitors is very high, as are the fiscal- and opportunity-costs of the adverse events when they occur. Consequently, the study of the mechanisms of action and especially the validation of relevant biomarkers are key urgent requirements in order to help identify patients' likelihood to respond, and to prevent non-responders from being exposed to such toxic drugs. ImmunID's ImmunTraCkeR test is a molecular diagnostics test, performed on the blood of the patient, to evaluate his/her immune status. ImmunTraCkeR analyzes combinatorial diversity of T lymphocytes receptors, i.e. the cell population targeted by immune checkpoint inhibitors, which is why the test will help determine whether the patient is immunologically fitted for a specific immunotherapy. This project follows the results obtained by ImmunID in 40 metastatic melanoma patients treated by ipilimumab using ImmunTraCkeR to demonstrate a significant correlation between the patient immune diversity profile at baseline and response to immunotherapy (Fisher test p-value= 0.016). Most importantly, the ImmunTraCkeR assay could be used to predict absence of response to ipilimumab with a 100% specificity (Negative Predictive Value = 100%). In line with these results, the project's clinical trial will include a further 40 patients from centres in the UK. As a predictive test, ImmunTraCkeR will help physicians and patients make informed clinical decisions by identifying people likely to benefit from immunotherapies. A health economics study , to model the impact that a successful test would have on the NHS, will be conducted to evaluate the benefits for the healthcare system and prioritise further research.By identifying non-responders before commencing treatment we estimate immediate cost savings for the NHS of ~£19M/year in melanoma alone, from unnecessary drug costs and toxicities. Furthermore, we anticipate QALY gains in untreated patients, through harm spared and earlier more appropriate treatment. Considering the wider applications of checkpoint inhibitors in multiple cancers, ImmunTraCkeR therefore has huge potential socioeconomic benefits for the UK and globally.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Randox Laboratories Ltd	Stratification of cytarabine treatment for patients with Acute Myeloid Leukemia	£149,928	£149,928
Project description - provided by applicants			
For the 2,900 patients per year in the UK diagnosed with Acute Myeloid Leukemia (AML), aggressive cytarabine based chemotherapy is given at diagnosis, yet, up to 40% of patients do not respond to this treatment. The majority of AML patients are >60 years old and, with the rise in the elderly population, increased prevalence of the disease is predicted. Currently, patients in this age range who are deemed fit for treatment are prescribed cytarabine, where outcome to the drug regimen is uninformed and is based on a trial-and-error approach. A rapid and highly accurate stratification-based approach would enable patients with drug responsive cancer to be treated with lower drug doses, reducing acute and long-term side-effects, including the need for antimicrobials and blood product support and future risk of secondary cancers. In order to add economic value and provide a stratified based treatment regimen, clinicians need assistance in selecting the best treatment and care for patients as early as possible. We provide a solution to this clinical problem by offering a rapid, in vitro assay, using a bioluminescent bacterial biosensor, determining patient response to cytarabine with a AUROC value of 0.8. The technology is reliable, robust and enables stratification to identify patients who will benefit from chemotherapeutic treatment, particularly at diagnosis. The aim of this project is to enable engagement with a Diagnostic Evidence Cooperative to provide an economic analysis of this test providing evidence to demonstrate its value for inclusion in routine practice and to work toward best methods of introducing the test into the clinical pathway.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
University of Edinburgh	CINck – a laboratory triage test for disease stratification to prevent cervical cancer.	£132,679	£132,679

Project description - provided by applicants

CINck ' a laboratory triage test to prevent cervical cancer. Our vision is to produce a laboratory based triage test for cervical screening to improve stratification of women, infected with HPV, who are at very low risk of developing either cervical pre-cancerous disease or cancer from those who need clinical treatment. Cervical cancer is a devastating disease caused by certain types (High Risk types) of Human Papilloma Virus (HR-HPV). HR-HPV types are common and over 70% of sexually active men and women will be infected at some time. Unfortunately for women, if infection persists in cells of the cervix this can lead to cancer if untreated. However, nearly all infections are cleared naturally and cause no significant disease. Cervical screening prevents cancer by checking for pre-cancerous disease which can be treated in the clinic. Women in the UK are fortunate to have access to a nationally organised cervical screening programme and to vaccination against the two most common HR-HPV types. However, anyone over 27 has not been vaccinated and as cervical cancer can take decades to develop against all types that can cause cancer, there is a clear need to continue screening. Additionally, as the vaccine only protects against 2 out of 15 HR-HPV types it is unclear whether other types will in future expand within the population to cause more cervical cancers. Currently, UK cervical screening is done by 'cytology' which means looking at cells taken during a cervical screening test under a microscope. Cytology is time consuming, costly, subjective and sensitivity varies dramatically between laboratories. As HR-HPV infection is necessary for cancer development it makes sense to switch from cytology to testing for HR-HPV which is done by a high-throughput, rapid, objective laboratory test. This type of screening, called HPV-First, has a sensitivity of >95% for detecting infection. It is the clear direction of travel for cervical screening and is being trialled in England, Italy , Sweden, Denmark, Norway and in Holland which will switch completely to HPV-First in 2016. The American Society for Colposcopy and Cervical Pathoogy also supports HPV first in women over 30. A negative HR-HPV result means a woman is at a <0.5% risk of cancer. The problem for the NHS is that HR-HPV infection will be detected in hundreds of thousands more women than are picked up by cytology. The majority of infected women have no cervical disease and the challenge is to stratify infected women into those who require clinical examination and those at extremely low risk of cancer who can be managed more conservatively. Our work shows certain protein markers are associated with clinically concerning infection and can be detected in the same samples used for cytology and HR-HPV testing. We have identified combinations of these proteins with high sensitivity and specificity for detecting cervical disease in infected women. Detection can be done as a high-throughput, rapid laboratory triage assay on a platform currently used in NHS laboratories. Our aims are to:- i) develop plans for trial of our triage test in NHS Lothian, and a spin-out company to exploit trial results; ii) evaluate impact of adoption of our test to identify how to progress through evaluation and adoption stages; and, iii) to generate commercially viable evidence for test performance and to refine the clinical care algorithm for risk stratification of HR-HPV infected women.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Edinburgh Molecular Imaging Ltd	Enhanced in-vivo screening and molecular analysis for colorectal cancer	£149,997	£149,997

Project description - provided by applicants

Abstract: Colorectal Cancer (CRC), also known as bowel cancer, is the third most common cancer diagnosed in men and second most common cancer in women, affecting 1,361,000 people worldwide each year. It is also the second most common cause of cancer related deaths, contributing to 737,000 deaths every year (Globocan, 2012). CRC is a slow growing tumour that develops over a period of 10-15 years, but symptoms are not obvious until the more advanced stages of the disease. Screening, which aims to identify and remove polyps earlier whilst they are still in a precancerous state, has been shown to be effective in reducing the mortality from CRC (American Cancer Society, 2011). Screening guidelines vary by geography, but generally comprise a mix of fecal occult blood testing (FOBT) and colonoscopy, from a starting age in the range 50-60 years (Brit.Soc.Gastro guidelines, 2012; NCCN Clin.Prac. guidelines, 2015). Typically, an FOBT primary screening test is first administered. Patients with positive results are considered a high risk population and referred for colonoscopy. In routine clinical practice, white light (WL) colonoscopy is widely used for detecting polyps in the colon, but has a detection "miss-rate" of up to 26% (van Rijn et.al., 2008) for small (<10mm) and approximately 11% (van Doom et al, 2015) for flat adenomatous lesions and frequently also misses flat neoplastic lesions (Burgraaff, 2015). This high miss rate is partly a result of technology limitations and partly reflective of the fact that GI endoscopists are challenged to effectively administer the associated clinical workflow within their constrained schedules. Further, the current colonoscopy workflow is associated with a high degree of patient inconvenience and is widely seen as a non-optimal diagnostic modality (because of the miss rates), to be deployed as infrequently as possible. Since patient risk prognostication and subsequent management paradigm are based substantially on size, number and location of polyps detected during WL colonoscopy, there is therefore a substantial unmet clinical need associated with an enhanced clinical workflow yielding more sensitive diagnosis and more precise patient stratification. Accurate prognosis and diagnosis in turn dictate the subsequent surveillance and broader intervention path. Further, missed flat neoplastic lesions (false negative results) may result in patients being detected at later stages, when management has high cost and morbidity and may no longer be curative. Notably, early CRC detection is associated with a management cost and 5 year survival of £12,455 and 70% respectively, while late detection is associated with a management cost and 5 year survival of £25,703 and 12% respectively. Applicant (Edinbugh Molecular Imaging, or EMI) is developing an imaging agent (EMI-137) with demonstrated potential to enhance the sensitivity of colonoscopy, thereby more accurately diagnosing and prognosing patients and assigning appropriate management strategy. This application describes how EMI plans to partner across the UK infrastructure to demonstrate the validity and utility of this technology, delivering on its potential to better stratify patients at risk for CRC.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Sarissa Biomedical Ltd	PoC stroke IVD for Paramedic use	£149,500	£149,500

Project description - provided by applicants
Stroke affects 150,000 in the UK each year. It is the 3rd largest contributor towards premature death and the single biggest cause of acquired adult disability. The NHS currently spends £4.4bn on treating stroke patients with a further £5bn lost from the economy because one third of survivors need frequent assistance for personal care. Stroke is caused by blockage (ischaemic; 85%) or bleeding (haemorrhagic; 15%) within the brain's blood supply. Ischemic stroke is a treatable neuro-emergency, patient outcome is directly related to the speed at which clot busting drugs (thrombolytics) are administered or the clot is directly extracted (intra-arterial thrombecotmy). Both of these are time-critical treatments & patients are more likely to avoid significant disability if treated as soon as possible. More than 80% of stroke patients arrive in hospital by emergency ambulance. Minimising the time to intervention (scene to needle time) requires paramedics to very rapidly identify a potential stroke and transport them directly to the nearest Hyper Acute Stroke Unit (HASU) where dedicated stroke experts and brain imaging facilities are available. Time is critical, every minute delay in thrombolysis results in ~2 days lost healthy life. Stroke is a complex condition requiring clinical experts to make the final diagnosis after brain imaging. 40% of patients where paramedics suspect stroke have a 'stroke mimic' which can look identical during initial assessment by the Face Arm Speech Test (FAST). Directing these patients to HASU for administration of stroke treatments is wasteful on resources and potentially hazardous due to treatment side effects. Likewise, paramedics typically do not identify 25% of genuine stroke patients, leading to delays in treatment. Unlike heart attacks (where ECGs can be used to check patients) there is no affordable rapid means of diagnosis stroke and it would be significant benefits for stroke and stroke mimic patients, and healthcare resources if a simple, portable test was available to paramedics. The NHS is working with Sarissa Biomedical to develop a simple Point of Care (PoC) blood test to help identify stroke victim. It relies on measuring blood purine levels as these are an extremely effective indicator of acute ischemia including stroke and are released from the earliest moments of pathology. Putting this technology in the hands of paramedics will enable them to more accurately stratify stroke victims and ensure they entry the correct clinical pathway more rapidly thereby shortening the'scene to needle' time and improving the chance of a good outcome. Avoiding mislabelling of stroke mimic patients will free up existing resources within the HASUs resulting in a more effective and efficient uses of expensive NHS resources. This project proposes to adapt technology already developed for A&E use so that it can be carried and applied by paramedics at the point of initial patient assessment. To achieve this we will need to work with the Hospitals, the Ambulance services to understanding their needs to make sure the equipment is suitable for their environment. We will and draw on the expertise Oxford AHSN, the Ambulance service and HASUs to determine how the equipment would be used and integrated operationally and the health economic case to prove the value for money business case. The project will then plan a clinical trial within NHS ambulance services.

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Owlstone Ltd	STRATA - Stratification of Asthma Treatment by Breath Analysis	£148,722	£148,722
Project description - provided by applicants			
Too many asthma patients are currently on the wrong medication. As a result there are 54,000 emergency hospital admission and 1,167 deaths every year. In STRATA, Owlstone will adapt our existing disease breathalyzer technology to stratify asthma patients to match them to the correct existing treatments first time. In doing so we will reduce emergency hospital admissions by 30%, save the NHS £81M over 5 years and most importantly save lives.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Mologic Ltd	COPD Exacerbation Alert for patient stratification	£150,000	£150,000

Project description - provided by applicants
Our target is to develop a simple, easy to use, diagnostic system for use in the home by COPD patients to gain early warning of acute exacerbation (AECOPD) and stratify them to the most suitable and effective therapy. This will determine the use of antibiotic, anti-inflammatory or bronchodilator medication (combinations of some of these might be required). COPD is a troublesome worldwide disease with no cure, causing substantial debilitation through breathlessness that gets worse each time there is an exacerbation. Typically, the course of the disease follows periods of stability interspersed with damaging AECOPD episodes from which patients usually do not make a full recovery. Medication is needed when an exacerbation starts, rather than during the stable disease state. COPD is a large and growing world-wide problem. It is a progressively heavy burden for individual patients, carers and health services. But, despite its prevalence and impact, it is not managed well. Delays in diagnosis cause patients to miss out on prompt appropriate medication, while the lack of diagnostically guided AECOPD treatment exposes some patients to inappropriate antibiotic and/or corticosteroid therapy. Inappropriate antibiotic use should be avoided in order to minimise development of antibiotic resistance, as well as damaging side effects. There are substantial side effects of corticosteroids which also should be avoided. In July 2015, the NIHR Horizon Scanning Research & Intelligence Centre published a report on new and emerging technologies for the diagnosis and monitoring of COPD, which specifically highlighted the need for better ways to identify the cause of AECOPD, in order to guide steroid versus antibiotic treatment. The report recommended that promising technologies should be the focus of translational and clinical research funding. Moreover, the NICE Database of Uncertainties about the Effects of Treatments (DUET) highlights the use of corticosteroids and antibiotics for AECOPD as important treatment uncertainties. There is therefore a clear need for a rapid, easy and early stratification test to both identify AECOPD and to stratify sufferers into groups for treatment with antibiotics or steroids. The outcome from this project will be the development of a multiplexed, urinary biomarker diagnostic test system with integrated, personalised biomarker level interpretation algorithm for monitoring the inflammatory status of patients suffering from chronic inflammatory disease at home, with a practical simplicity and diagnostic accuracy never previously possible. This project is bold and ambitious. If successful it will have a significant positive impact on patients' quality of life, as well as reducing health care costs, whilst representing a major business opportunity for Mologic and the UK medical diagnostics sector.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Renishaw Diagnostics Ltd	A Stratified Approach to Carbapenem Resistance Management	£149,973	£149,973

Project description - provided by applicants
Multi-drug resistant bacteria are a global threat to public health. In order to improve patient management and to provide information for infection control and prevention there is a pressing need for tools that rapidly stratify patients as colonised or infected by drug resistant bacteria in order to minimise the risk of transfer and outbreak. Carbapenemase-producing Enterobacteriaceae (CPE) present an urgent public health risk. These organisms are resistant to the carbapenem class of antibiotics, often considered the 'last resort' in the treatment of many bacterial infections. CPEs restrict treatment options and are associated with increased morbidity and mortality. They are readily transmissible in healthcare settings and countries such as Greece and Italy are already considered endemic for some classes of CPE. Public Health England (PHE) guidelines recommend that high risk patients (those previously admitted to hospital within specific geographical areas both inside and outside the UK, or who have been previously identified as CPE-positive) should be immediately isolated from the general patient population upon hospital admission. These patients should undergo screening for CPE, typically via culture on a commercially-produced chromogenic agar designed for isolation of CPE. These tests can take up to 72 hours to produce a result, with testing recommended on days 0, 2 and 4 after admission, meaning that patients can often be isolated for over a week upon admission, in most cases unnecessarily. This project seeks to improve the stratification of the 'at risk' cohort of patients by the introduction of a rapid test for the detection of the major carbapenemase gene families. In the UK, 5 carbapenemase gene families account for > 99 % of all carbapenamases found in Enterobacteriaceae referred to as KPC, NDM, IMP, VIM and OXA-48. From a single sample, the test will stratify patients according to the presence or absence of any of the 5 key carbapenemases in a few hours rather than days. Such a test offers the potential to aid earlier diagnosis, facilitating appropriate patient management while allowing prompt deployment of infection prevention and control measures. Phase 1 of the proposed project will focus on the final development of a polymerase chain reaction (PCR) based test for CPE, including testing of simulated samples in collaboration with the Newcastle Freeman hospital. An economic model will also be developed to confirm the cost effectiveness of using a PCR based diagnostic test to identify CPE carriers upon admission to UK hospitals. Phase 2 would address full commercialisation of the product including clinical evaluation towards appropriate regulatory approval, and further clinical utility studies to generate sufficient diagnostic evidence for inclusion within routine testing in healthcare settings.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Atlas Genetics Ltd	A Rapid Stratified Medicine Diagnostic Test To Direct Treatment For Symptomatic Patients Presenting In Sexual Health Clinics	£149,915	£149,915

Project description - provided by applicants

A Rapid Stratified Medicine Diagnostic Test To Direct Treatment For Symptomatic Patients Presenting In Sexual Health Clinics Atlas Genetics will develop a rapid point-of-care (PoC) stratified medicine diagnostic (SMD) for patients presenting to Sexual Health Clinics with genital discharge syndrome, to allow immediate and accurate selection of appropriate and effective antibiotic treatment. The development and design of the diagnostic will be supported by validated cost-effectiveness modelling of introducing this multi-pathogen PoC-SMD test as well as a study on its potential patient impact. This supporting work will be carried out by the Applied Diagnostic Research and Evaluation Unit (ADREU) at St George's, University of London (SGUL) in collaboration with Aquarius Population Health. In addition, preliminary work will build on the experience established at Atlas in the implementation of multiplex assays on the io Point Of Care platform to assess the challenges involved in expanding multiplexing to include at least four pathogens on a single rapid testing cartridge required for implementation of the proposed stratified medicine diagnostics. At the end of Phase 1, the value to the NHS of a SMD in sexual health will become apparent and the technical path will be established for development and evaluation in Phase 2.

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Highland Biosciences Ltd	Biosensor for the stratification of patients at risk of Venous Thromboembolism	£149,198	£149,198
Project description - provided by applicants			
Handheld Biosensor for the stratification of patients at risk of Venous Thromboembolism (VTE) This project will demonstrate the capability of a new diagnostic biosensor that provides for the first time viscoelastomeric coagulation data to stratify patients by risk of blood clot formation. The project will pilot the technology which can be applied to improve outcomes in many high mortality conditions, particularly common amongst the ageing population. Thrombotic disorders are top causes for death, either as disease states ' myocardial infarction or ischemic stroke, or as potential complications to most in-hospital treatments, including childbirth and routine surgery. This collaborative project with the NIHR Diagnostic Evidence Co-operative London (DEC) will gather evidence, and generate potential new pathways alongside economic cost modelling. Managed by Highland Biosciences Ltd (HBL), the project will focus on delivering new clinical approaches to the NHS whilst generating the evidence for a highly commercially attractive value proposition for a new diagnostic business.			

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