Results of Competition: ICURe Follow On Funding Round 7

Competition Code: 2001_CRD_CO_ICURE_FOLLOW_ON_FUNDING_R7

Total available funding is £2m.

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
GENOME DIAGNOSTICS LTD	Novel Blood Test for Early Diagnosis of Ovarian Cancer	£302,286	£208,577

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
Almost 300,000 women a year are diagnosed with Ovarian cancer across the world, with the number of cases are predicted to rise by 15% over the coming decades due to a plateau in research developments and therapeutic advancements. Unfortunately, due to non-specific symptoms of this disease and the sub-optimal diagnostic test for Ovarian cancer, it is often only diagnosed in the later stages of the disease when it has already spread. More than 60% of the women with Ovarian cancer in the UK are faced with the fact that their disease is incurable at diagnosis. The current blood test for diagnosis of Ovarian cancer is unreliable, often not raised at all in women with Ovarian cancer, raised in benign unrelated conditions, or does not detect the cancer until late in the disease progression. Furthermore, there is currently no screening tool for women who are at high risk of developing Ovarian cancer. GenoME has developed a simple blood test which detects specific modifications of DNA (DNA methylation) which are present in the early stages of Ovarian cancer. This test exhibits far superior statistical power and reliability than the current Ovarian cancer test and can detect the cancer in its earliest stages, enabling women to be treated faster, improving the survival and quality of life of those affected. GenoME also aims for this test to be trialled as the world's first screening tool for women at risk of developing Ovarian cancer. This OvaME Ovarian cancer test is the first product for the company, and GenoME will not stop at just this test. We are able to apply this same technology to develop tests for not just other cancer types but also a multitude of various other diseases which have classically lacked in research and diagnostic improvements or knowledge.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Rheality	Rheality - Listen to your process!	£299,959	£209,971

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Project description - provided by applicants
The manufacture of a vast range of consumer products involve the flow of materials through pipelines, often in large volumes and at high speeds. Monitoring the state of the materials (rheology) during manufacture is critical to ensure product quality and consistency, but is currently difficult to perform in situ. In most cases, samples are taken every few hours and tested in a remote laboratory. Thus, a failed test requires disposal of material produced prior to the detected failure, and often leads to long delays in re-starting the manufacturing line, resulting in significant waste and environmental impact. **Rheality Ltd** have developed a system that can measure the state of materials whilst still in the pipeline, providing real-time information that should lead to reduced wastage and more efficient, and hence environmentally friendly, manufacturing. It is relatively simple and inexpensive to install but requires our proprietary software that uses machine learning and Big Data to interpret the signals and determine the rheological state, flow dynamics. The technology can also detect developing leaks or blockages before they become critical, which is critical for water supply systems. With low-cost components, simple installation and high value software, we expect our system to become the standard monitoring tool across a wide range of industries. To give an example of rheological issues relating to everyday life are for example paint or ketchup. When using paint we expect certain flow properties. When dunking the brush into the paint we expect it to stick to it and not to drip when lifting. When painting the wall we expect the paint to stick easily and evenly to the wall. When having ketchup we do not look for a product that is runny or will sit forever in the bottle. All these products may look simple, however, are sophisticated in the way how they are produced. And to ensure that these formulations behave the way we expect them to is subject to the science of **rheology - the study of flow and deformation of matter.**

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
MetaGuideX	Developing MetaGuideX, a rapid test for determining metastatic status in breast cancer.	£299,989	£209,992

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
Use the Competition Code given above to search for this competition's results

Project description - provided by applicants
The management of breast cancer, which affects \>2 million new patients globally each year, is inadequate. In particular, we need better ways to: -detect whether metastasis (deadly spread of cancer to other parts of the body) has occurred -predict whether metastasis will occur in future -assess whether therapy is working well -detect the return of the tumour more quickly If we could do these better, doctors could decide on the best therapy for a given patient more quickly. The therapy is more likely to work and the patient is more likely to survive. Healthcare providers, such as the NHS, would save money by avoiding ineffective treatment, and a healthier population improves the national and global economy. Through our research into breast cancer metastasis we have discovered a protein present only in tumours with metastatic ability. This innovative biological marker could be used to tell doctors about the metastatic status of a tumour. Our innovative step is to turn this discovery into a diagnostic test, which we call MetaGuideX. Our test can be performed on the tumour itself, or on fragments of the cancer cells released into the bloodstream. The test meets an unmet clinical need, and can be used at the point of diagnosis, during treatment (to see if the therapy is effective) and during remission (to see if the tumour has returned). Our vision is to fundamentally change the way that breast cancer is managed, by introducing our test to hospitals and clinics, and setting up a 'service lab' to run the test for those who don't have the facilities to run it themselves. There are three important objectives we will achieve in order to lay down the foundations for our long-term ambition. We will: 1.Develop a prototype diagnostic and test it on a panel of breast cancers to establish its performance and potential to impact breast cancer management 2.Establish the proper regulatory systems and protocols needed for a diagnostics company. These complex regulations are enforced by UK and global agencies and we must implement them from the outset to prevent delay in getting the test into the clinic 3.Engage with stakeholders to facilitate the uptake of an optimal test in the clinic. Achieving these objectives will allow us to gain further funding and expand the company, initially benefiting the NHS and then healthcare providers across the world, delivering social and economic impact as we grow.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Smytec	FINDER: Forensic Identification via Non-Destructive Evidence Retrieval	£299,966	£209,976

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Smytec Ltd has created a ground-breaking Forensic Imaging technology, removing the need for old fashioned fingerprint retrieval methods and replacing these with a high-tech solution. Smytec aims to bring fingerprint evidence retrieval into the 21st Century with its technology: FINDER. At crime scenes, CSIs must first search for "invisible" fingerprint evidence, enhance any potential fingerprints found using techniques such as powdering, recover with a form of adhesive lift, store and transport them to the lab. The recovered lifts must then be digitally imaged to compare to known fingerprints in a database. At the scene the sequential process of 9-10 steps can be painstaking, making fingerprint recovery slow and repetitive. Using destructive methods, any tiny error by a CSI can destroy evidence and make it unrecoverable. FINDER cuts this sequence down to two steps: search the scene for fingerprints and when found recover them, all at the click of a button, without any contact. This not only speeds up scene recovery from potentially hours to minutes; it also reduces potential human error and reduces the number of consumables required for CSIs to take to every scene -- with over 50 fingerprint methods recommended by the Home Office the majority only applicable to be used on a single surface type. FINDER can be used on many surfaces, including various metals, plastics, glass and paper. On top of this, the quality of fingerprints retrieved is improved, with FINDER outperforming fingerprint powdering techniques by almost 50%. Due to being non-contact-non-destructive, FINDER is also applicable for Security and Defence, being a unique tool for fingerprint recovery for covert operations teams. Currently fingerprint powders are too messy and technical for Special Ops teams to use, not only being slow in application, but requiring a lengthy clean-up process. With FINDER teams can be in and out in minutes, without a trace, and with identification evidence recovered in the process. FINDER can also recover fingerprints from post-blast fragments and debris. Fingerprints are believed to be destroyed during bomb blasts, so DNA analysis is prioritised, with current fingerprint techniques having very poor success rates of 2%. From testing performed with the FBI, FINDER has a success rate of 64% in successfully retrieving fingerprints from post-blast fragments and debris. No longer does easily transferred DNA need to be relied on; fingerprints can now be retrieved to identify the suspect bomber and also any network of individuals involved in such atrocities.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Aqualo	Aqualo - Clean water for everyone	£299,378	£209,565

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
By 2050, 40% of the world's population will be living in water scarce conditions. One of the essential technologies in tackling this problem is reverse osmosis desalination. Its largest disadvantage is the astronomical operational costs which are mainly due to the high electricity consumption and cost of the specialised membranes. Aqualo, a spin-out from University of Birmingham, offers a patented method of desalination. Aqualo's proprietary technology not only reduces the power consumption required for reverse osmosis by up to 70-90% but also maintains a high recovery of water and extends the lifetime of the high cost membranes. Aqualo's electricity consumption is so low that the technology is perfectly suited to run solar-powered, making it ideal for the off-grid desalination solutions. Aqualo's desalination machines are designed to operate in harsh environments and can be powered by renewable energy in rural areas, as demonstrated in pilot studies in the West Bank of the Jordan River. There, one of early Aqualo's prototypes is currently supplying a farmer with irrigation water. Aqualo offers a unique technology with numerous key advantages. There is currently no direct competition and Aqualo is well placed to become the leading player in the emerging worldwide off-grid desalination market. Successful completion of this Innovate UK project will launch Aqualo on the path to commercial customer engagement and sales. This will prove extremely beneficial for both the national and regional economy through creation of jobs, external investment and export growth, not to mention the global impact on the environment.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
NATIVEWARE LTD	SmartScroll (I-D-11 North by North West ICURe)	£299,552	£209,686

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Project description - provided by applicants
Text is presented on screen in much the same way it is presented on paper, despite the potential of dynamic, interactive displays. Static paragraphs of text are not optimal for reading and particularly disadvantage the partially sighted. With impaired vision it is easier to keep the eyes still and move the text across the steady gaze. But there is currently no tool to achieve this. SmartScroll is a tool that predicts how the eyes would move whilst reading any given text, and presents the text to the reader with these movements. It removes the burden of making one's own eye movements and is more comfortable and efficient. This project aims to build this technology into a software solution capable of meeting the demands of reading in the real world.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Radical Fibres Ltd	ICURe Follow-on: Radical Fibres Ltd	£230,339	£161,237

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Electrospinning turns plastic materials into nanofibers that have a huge range of uses including flexible sensors, filters of nano-sized pollutant particles, and next-generation composites, all used in a wide variety of markets, including aerospace, architecture, automotive, energy, infrastructure, marine, military, and sports/recreation. Our nanotechnology will enable stronger, lighter vehicles resulting in fewer emissions and cheaper travel via a reduction of fuel and CO2 emissions. In addition, the nanofibres are able to carry within the fibre "web" additional so-called "functional materials" such as viral or bacterial killing agents, creating lightweight particulate filter masks that not only block but also kill the virus, for example. Our aim is to create a core business exploiting our state-of-the-art patented electrospinning system, which creates or substantially improves nanofibres for industrial applications via bespoke customisation. To achieve this, we must first build up the existing innovation into an industrial research-capable electrospinning rig and then use this industrial rig to develop a pipeline of new products, together with the new industrial processes by which to manufacture these products. Ultimately, we will build on our innovation to become a world leader for the UK in nanofibre technology. Through listening to the challenges voiced by industry, we redesigned electrospinning from its fundamental electrostatic physics, resulting in an innovative solution which delivers tight control of the structural organisation and morphology of the nanofibres, delivering consistent and reproducible performance. Furthermore, we can use recycled polymers which are more sustainable and negate the need to use environmentally harmful alternatives. This places us in the advantageous position of being able to offer a high-value product with a low production cost, based in the UK. With public funding, we will get to market much quicker, eventually disrupting the current materials paradigms while simultaneously creating a brand-new industry for the UK with worldwide export potential. We plan to develop a wide variety of applications using nanofibre technologies. Utilising our technology, the first confirmed customer-led project is the development of a smart textile or "wearable" sensor which can be incorporated into clothing and worn on the body. This will be used as a foetal monitoring device to help prevent the 3,400 tragic stillbirths in the UK, improving quality of life and significantly reduces the costs to the NHS.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Esitu Solutions	Development, Validation and Delivery of 360-Degree Hazard Prediction Assessment and Training	£238,038	£166,627

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Everyone who wants to gain a driving license must sit the UK hazard perception test. Learners watch a series of driving videos and press a button as soon as they see a hazard. While the evidence suggests the introduction of this test has reduced UK collisions, there are many problems with it. The main issue is that you must press within a certain (subjectively-derived) time window to score points. Many complain however that they see the hazard so early that they press too soon -before the scoring window has opened- and score zero points. This problem carries-over into hazard training -- there are several mobile apps and online providers that purport to train you in hazard perception skills, but most often they are training drivers in when to press the button (i.e. how to beat the test) rather than training real hazard awareness. Other problems include the fact that motorcyclists, HGV drivers and bus drivers all must do this same test -- with clips displaying the view as if _driving a car._ But driving a car is very different to an HGV and a motorcycle! Is it fair or effective to measure the hazard skills of professional drivers in this way? We argue that these problems render hazard perception training and testing inappropriate for the UK commercial fleet market. Instead we have developed an alternative test and training format that we call _hazard prediction._ Our published evidence has demonstrated that our _hazard prediction_ tests outperform traditional _hazard perception_ tests in differentiating safe from less-safe drivers. It is also viewed as more transparent and fairer by people who undertake it. We currently have over 200 clips that we have developed for a variety of vehicles and jobs, and recently we have expanded into creating 360-degree hazard tests that are presented in VR headsets. We want to expand our range of 360 clips targeting the fleet market (HGV and van drivers) and create a software suite that will allow customers to access a turn-key system for hazard prediction assessment and training via computer and through VR-headsets. The additional content, plus dedicated software delivery system, will allow us to supply a variety of customers including fleet managers, training providers and insurance companies. The revenue received will support the continual development and expansion of assessment and training materials, with the aim of providing effective, evidence-based tools to improve commercial road safety in the UK.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
SPOTLIGHT PATHOLOGY LTD	Spotlight Pathology: Augmenting Pathology with Artificial Intelligence to Deliver Faster and Safer Cancer Diagnosis (ICURe Cohort D ID-12)	£300,000	£210,000

Note: you can see all Innovate UK-funded projects here: https://www.gov.uk/government/publications/innovate-uk-funded-projects
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Project description - provided by applicants
Pathologists play a crucial role in diagnosis for cancer by analysing biopsy samples to provide diagnosis and prognostic information which allow clinical teams to identify the best treatment for each patient. Pathology services in the UK and overseas are under increasing pressure due to rising demand and a shortage of qualified staff, many of whom are due to retire with too few trainees to replace them. Spotlight Pathology are developing artificial intelligence software that will help make pathology labs deal with these challenges by making them more efficient through automating workflow, triaging urgent cases and providing accurate data for pathologists to analyse when making their diagnosis. Our aim is to make products that help pathologists give their patients a faster and more accurate diagnosis.

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