

# Innovate UK

**Results of Competition: Technology Inspired Innovation Feasibility Studies 2015 -**  
**Competition Code: 1505\_FS\_BIOS\_TII**

**Total available funding for this competition was £2.7M from Innovate UK (over all strands)**

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

<b>Participant organisation names</b>	<b>Project title</b>	<b>Proposed project costs</b>	<b>Proposed project grant</b>
<b>Absynth Biologics Ltd</b> Prokarium Ltd	A Novel Prophylactic Vaccine and Delivery Platform to Prevent Clostridium Difficile Infections	£149,981	£104,986
<b>Project description - provided by applicants</b>			
Awaiting PC. difficile infection (CDI) causes severe diarrhoea in hospital patients after treatment with broad-spectrum antibiotics. CDI can be successfully treated with specific antibiotics, but infection and diarrhoea re-occurs in upto 3 out of 10 patients and on average 2 of these will die. A vaccine could prevent CDI but none is currently available. The vaccines currently in clinical trials use inactive C. difficile toxins to generate an immune response but not all patients respond. Two UK companies, Absynth and Prokarium, are collaborating to create the first oral vaccine against CDI. The vaccine is based on combining a safe living bacterium already tested in clinical trials, with novel vaccine antigens that offer a non-toxin based approach with potentially broader protection against disease. The vaccine delivered to the site of infection, will target the colonising bacteria, so infection could be prevented and those vaccinated are unlikely to become asymptomatic carriers. After this Innovate UK supported project, the companies hope to gain additional investment to progress the vaccine into clinical trials.ublic Project Summary			

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<b>Elasmogen Ltd</b> Queen's University Belfast	soloMER™ coated Nanoparticles or sNaPs™ - The development of optimised “escort” molecules for the targeted delivery of nanomedicine, anti-cancer therapeutics	£140,650	£111,094
<b>Project description - provided by applicants</b>			
<p>Even though there has been a marked improvement in the outcomes for cancer patients, 35% will still eventually succumb to the disease. Treatments still require clinicians to balance the administration of anti-cancer toxins with extreme patient side-effects. Therefore, there remains a significant need for more specific cancer therapies, providing opportunities for innovative drug development. This proposal combines the power of proteins called soloMERs (produced by the lead organisation Elasmogen Ltd), that can bind specifically to tumours, with microscopic drug-filled (nano)particles (produced by Queen's University Belfast), to target toxic payloads directly into cancerous cells, minimising the insult to surrounding healthy tissue. soloMERs' small size and robust nature makes them ideal 'escort' proteins suitable for joining to and decoration of the surface of nanoparticles. It is hoped that this approach could deliver 1000 times more drug than competing technologies with these first sNaPs having the potential to be a new platform approach to the treatment of solid cancer masses.</p> <p>ject Summary</p>			

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<b>Demuris Ltd</b> Dundee Cell Products Ltd	Opening the highway from genome sequencing to antibiotic discovery	£149,860	£104,902
<b>Project description - provided by applicants</b>			
Awaiting PubliNew antibiotics are urgently needed to replace those that are lost to increasing antibiotic resistance. Our techniques focus on using Synthetic Biology to transfer the biosynthetic gene clusters for antibiotics from poorly- and un-characterised environmental species into optimised SuperHosts. Traditional approaches for this focus on constructing bacterial or phage-derived artificial chromosomes; our approach provides a step-change to the protracted traditional methods. We propose new methods that will also accelerate discovery and exploitation of previously unseen antibiotics from existing libraries. Project Summary			

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<b>Demuris Ltd</b> The Genome Analysis Centre	Integrating omics technologies for natural product antibiotic discovery	£149,873	£117,843
<b>Project description - provided by applicants</b>			
Antibiotic discovery from natural sources is beset by the re-isolation of known compounds and the difficulties in working with wild-type strains. Demuris and TGAC will transform this approach and use genome sequencing to identify and dereplicate known antibiotic gene clusters from a set of high value actinomycete strains that produce broad-spectrum antibiotics though presently unknown. Known and novel gene clusters will be identified bioinformatically and software developed to allow the integration data facilitating cluster prioritisation. To confirm the bioinformatic predictions the masses of the most promising novel antibiotics will be identified and the gene clusters cloned and heterologously expressed using an optimised host. This "datafirst" based approach promises to reinvigorate the natural products sector, and this is desperately needed if new and novel antibiotics are to be developed.			

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Cytosight Ltd Speckle Technologies Ltd	Digital Holographic Microscopy for Morphology-based Enrichment of Circulating Tumour Cells	£104,342	£73,039
<b>Project description - provided by applicants</b>			
In the UK, cancer is the second most common cause of death and is the cause of death that is most costly to the economy. Over 90% of deaths follow metastasis, where secondary tumours are established in the body. Unfortunately, symptoms are usually experienced after metastasis, by which time treatments are often ineffective. We have designed a technology to identify and enrich ultra-rare tumour cells from a blood sample, before secondary tumours are established. This will enable earlier and better-informed clinical decisions, and research into more effective treatments. Our novel design is distributable and affordable such that the benefits will be accessible to a large proportion of society.			

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<b>BioDivide Ltd</b> Genesis Manufacturing Ltd	VESCO-R®: Peripheral Blood Derived Mesenchymal Stem Cell Therapy for Regenerative Medicine	£149,137	£104,395
<b>Project description - provided by applicants</b>			
<p>Cell therapies offer the opportunity to treat and cure serious unmet medical needs. BioDivide has discovered an innovative manufacturing technology to develop VESCO-R® - a suspension of autologous Mesenchymal Stem Cells (MSCs) derived from a limited peripheral blood sample. Current state-of-the-art processes to isolate MSCs from peripheral blood are highly inefficient and variable. The Company screened &gt;500 conditions to develop the underpinning science for this break-through technology. Current autologous stem cell biopsy techniques require invasive surgical procedures (e.g. bone marrow and adipose tissue harvesting under general anaesthetic). Peripheral blood donation is minimally invasive and would overcome significant barriers to the industry. BioDivide, in collaboration with Genesis, is seeking Innovate UK Funding to enable the translation of this technology from the bench to a market-ready manufacturing process and the therapeutic product, VESCO-R®. BioDivide envisions transforming regenerative medicine by initially validating VESCO-R® for musculoskeletal disorders in veterinary medicine with the ultimate aim to translate this technology to human health.</p> <p>blic Project Summary</p>			

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