

Competition Code: 2005_EUREKA_CRD_MED_TECH_ AGEING_SOCIETY

Total available funding is £2,000,000

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
TOPMD PRECISION MEDICINE LTD	Diagnostic biomarkers of gut microbiome- associated phenotypes predictive of healthy ageing	£649,620	£454,734
The BioArte Limited		£0	£0

Different bacterial populations of gut are associated with longevity and healthy ageing and specific bacteria have been identified which cause immune responses. This project will define combined microbiome and human gene expression biomarker signatures diagnostic of healthy ageing gut phenotypes and associated inflammatory bowel disease (IBD) and/or neurodegenerative disease.

We will apply cutting edge measurement of microbiomes and gene expression profiles of gut samples from people aged 50 - 80 with and without inflammatory bowel disease (IBD) and/or neurodegenerative disease. Gene expression biomarkers will be identified using TopMD AI-enhanced technology, developed at the University of Southampton. By applying mathematical topology, TopMD innovatively uses known biological pathways as coordinates for measuring the 'shape' of global gene expression, accurately representing the molecular phenotype as a robust 'pathway biomarker'. In this project, we are working with partner The BioArte Ltd to combined predictive power of microbiome and gene expression signatures. The BioArte Ltd is developing personalised remedies for diseases by identifying molecules obtained from human and animal microbiota. They have led the discovery of immune-regulating bacteria and microbiome signatures predictive of longevity.

The combined microbiome- host gene expression biomarker signatures of healthy ageing will be developed into a first of its kind diagnostic point of care test for gut microbiome-associated IBD and neurodegenerative disease in people aged 50-80\.

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EMTEQ LIMITED	Virtual Reality rehabilitation tailored to older brain injury patients	£566,112	£396,278
Queen Victoria Hospital NHS Foundation Trust		£25,653	£25,653

As EU populations age, their risk of disease that impacts brain function leading to difficulties in everyday life and care requirements increases. Dementia (10M EU sufferers projected to double by 2030) and stroke (1.1M EU events each year) affect older members of society and significantly impact the individual who may then need additional help rehabilitation to retain and improve their ability to lead a healthy and fulfilling life. Currently, brain rehabilitation is conducted via pen and paper exercises that stimulate capabilities such as memory, attention and speech. However, there is minimal training geared towards everyday tasks e.g. shopping, public transport, that can often be stressful for those with brain functionality issues.

We propose to undertake a EUREKA! collaborative research project to develop brain rehabilitation that utilises virtual reality environments akin to real life scenarios e.g. museums and shops, to help individuals build up skills they can use every day. The system will use virtual reality hardware that is enabled with sensors that track user attention, motion and emotional state to enable tailoring of the experience to provide the best rehabilitation training for users. Bioinformation will be used to tailor the difficulty and experience to the particular user to ensure they derive the most benefit from the training.

Our overall aims will be to develop virtual reality training that reduce the time that stroke survivors spend in rehabilitation by two weeks on average and slows deterioration of dementia patients by six weeks.

The proposed project will help us to understand the needs to users (human centred design) and build on existing technical capability to develop engaging and interactive environments that improve brain rehabilitation processes for users. Our ultimate ambition to roll this out to EU healthcare and care settings to improve patient outcomes.



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BIRDIE CARE SERVICES LIMITED	Personalised care through technology - augmenting social care delivery with wearables	£460,741	£276,445
Co-assist sas		£270,274	£175,678

UK digital social care startup Birdie is partnering with French remote monitoring company Co-Assist to use technology to make domiciliary care more comprehensive and personalised.

During the collaboration, Co-Assist's wearable trackers will sense activity levels, location, need for assistance and falls among service users. This data will be fully integrated into Birdie's social care management platform so that care managers are able to see abnormalities as and when they occur, and respond quickly to their customers' needs.

Throughout a two year development project, Birdie and Co-Assist will work towards adapting the existing technology to perform even more sophisticated, world-first functionality, achieving cutting-edge innovation that will prove vital in the mission to keep elderly people happier, healthier and at home for longer.

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VISION TECHNOLOGIES LTD	SightPlus Diagnostic	£316,112	£208,634
HMD TECH sarl		£160,500	£1,605

Globally, some 217 million people are affected by sight impediments. These conditions have a negative impact on su?erers' well-being in terms of social inclusion, independence, ability to carry out activities of daily living, quality of life, and health and expose groups suffering them that include the elderly to even more vulnerability in their daily lives. These diseases require on-going assessment for optimal management, burdening patients, and their families whilst proving to be costly for health care systems. Challenges that have been compounded and exposed further during the Covid-19 pandemic which resulted in patients not being able to access the care needed as a result of the need for them to remain self-isolated whilst direct access to Doctors became limited.

Building on the success of our first device (SightPlus) that has won critical acclaim, and which has demonstrated clinical excellence, we plan to develop a platform for home-based sight loss management that transforms eye health care and delivers value for patients, clinicians and health care providers.

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FABRX LIMITED	Smart medication management service based on additive manufacturing for elderly patients - (SmartDose)	£354,362	£248,053
Brunel University London		£139,715	£139,715

Age-UK found that 2 million people over the age of 65 are taking at least seven prescribed medicines per day. The number of prescribed medications taken increases as people age. Consistent managing and consumption of medications is important for successful recovery or continued management of a chronic illness and disease.

This project will develop SmartDose, an integrated solution that allows doctors to prescribe custom medication to patients, allows pharmacies to manufacture this medication and patients to conveniently collect and take this medication in a smart pill dispenser device. SmartDose will use a 3D pharmaceutical printer to print the custom medication, with the doctor specifying the shapes, colours, sizes, and doses based on an individual patient's need.

The consortium is led by FabRx, a specialist biotech company, focused on developing 3D printing technology for fabricating pharmaceuticals and medical devices. They are joined by Brunel University London (BUL), who have developed ultrasonic and imaging technology that can improve the printing process. Our Eureka partner, Yongatek, are a research and development company who have developed products for the healthcare sector and will develop the prototype system.

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