

HEALTHY LONGEVITY GLOBAL COMPETITION

2022 Catalyst Awardees

Sponsor: UK Research and Innovation

A Brand New Sense

Principal Investigator	Maria Kapsali, PhD
PI Primary Affiliation	University of Leeds
Co-Investigator(s)	Antonios Stavropoulos-Kalinoglou, PhD; Nikos Stavropoulos, PhD.

PROJECT DESCRIPTION

A Brand New Sense (BraNeS) aims to test and develop further echome, a movement sonification prototype, for use by older adults in intergenerational settings. Movement sonification is the real-time production of sound through the user's movement. It is an emergent cultural practice with applications in the medical domain as well as in popular entertainment. BraNeS capitalises on the growth of movement sonification and seeks to combine the creative and health benefits of the practice by designing a sustainable product that is aligned with the needs and preferences of older adults.

Just like anyone else, when they exercise, older people experience important health benefits. However, a major challenge is to make physical activity an integral and enjoyable part of daily life. Research has shown that a combination of movement and music makes physical activity fun, and people are more likely to adhere to exercise programmes that involve music. Studies have also shown that the social dimension of physical activity is an important factor of enjoyment.

BraNeS explores the use of movement sonification as a form of physical activity that combines creative expression and social interaction. The larger vision is to harness the technology that has developed out of the team's existing research in order to create a new form of cultural practice that hybridises the kinesthetic and the sonic sense; operates in domestic environments and through simple controls; increases physical activity; invites interaction with others; and encourages creativity and playfulness. The project will follow an iterative design process involving end-users and stakeholders in a series of workshops, interviews and focus groups.

A novel programme: Agentive here-and-now interaction in persons with dementia

Principal Investigator	Simon Williams, PhD
PI Primary Affiliation	University of Sussex
Co-Investigator(s)	Alison Ward, PhD; Kate Howland, PhD

PROJECT DESCRIPTION

We plan to develop a group story-telling activity for people living with dementia. Our motivation lies in observing the contrasting linguistic behaviour of speakers when reminiscing about their earlier life and when reacting to events in-the-moment. In-the-moment speech appears to be more fluent, supported by shorter turns and shared conversational roles; and more agentive, as evidenced in the presence of linguistic directives, first-person declaratives and other deontic expressions of intent, or taking the first turn in an agency pair, such as when asking a question. The proposed activity will achieve a balance between the two conditions, represented by the

natural tendency of people to talk about themselves and the less predictable interaction enabled in social contexts.

To further our key objective, we propose four other initiatives running alongside the development of the activity: ongoing stakeholder involvement in the trialling and development of the activity; a bespoke training course for facilitators interested in running the activity; an interactive website to support the facilitators; and the creation of a Community Interest Company to ensure the activity, training course, and website are self-sustaining.

Along with a report of well-being measurements completed by participants before and after each workshop, the more conventional research output will be a linguistic analysis of participants' speech. It is hypothesised that speech in the second, group interaction part of the workshop will be more fluent and agentive than the first more person-centred part. In common with other arts-based activities in this domain, associated improvements in well-being are expected.

Creating digital, interactive, smart home exercise environments for older adults with stroke

Principal Investigator	Mohsen Shafizadeh, PhD
PI Primary Affiliation	Sheffield Hallam University, College of Health, Wellbeing and Life Sciences
Co-Investigator(s)	Khalid Ali, PhD; Nasrin Nasr, PhD; Tom Balchin, PhD; Jonh Hart, PhD; John Kelley, PhD

PROJECT DESCRIPTION

Stroke has debilitating effects on the body and can hinder physical and cognitive function. Recovery after stroke depends on participating in a structured exercise program of meaningful activities. However, older adults with stroke find it challenging to maintain an optimal level of physical activity for brain recovery due to physical and cognitive impairments, lack of motivation and age-related factors such as frailty, losing muscle mass and depression. To encourage participation in physical activity, the exercise programme should be structured, home/community-based, simple, efficient, patient-led and with minimum supervision to increase exercise adherence, especially for the patients with severe limb impairments. In this study, we aim to co-design an interactive and digital resistance exercise solution for community-dwelling older stroke survivors with moderate to severe impairments in upper limbs. We will co-design it by testing accessible and affordable fitness equipment such as rubber bands and barbells and will involve older adults (>65 years) with chronic stroke (6 months after stroke) to take part in this process throughout the study period to share their viewpoints. First, we will co-develop a multimedia exercise package to use with fitness equipment for upper limbs, lower limbs and trunk that would be feasible even for people with upper limb paralysis to perform at home with maximum safety and minimum mental efforts and supervision, then we will co-design the solutions (app and hardware design) that make the fitness equipment interactive, digital and patient-centred to increase physical activity and limbs mobility.

Developing a toolkit to support health professionals in building community-based group exercise programmes for older people with chronic conditions

Principal Investigator	Tim Rees, PhD
PI Primary Affiliation	UK Research and Innovation
Co-Investigator(s)	Tom Wainwright, PhD; Mark Beauchamp, PhD; Mark Stevens, PhD

PROJECT DESCRIPTION

As the United Kingdom's National Health Service (NHS) waiting list soars above six million people, with treatment wait times over two years, older people with chronic conditions face worsening symptoms, increased

use of medications, more complicated surgeries with slower recovery, reduced quality of life, and loss of independence. As part of its plans to tackle this crisis, the NHS promotes exercise as a “miracle cure” for arresting the progress of disease and helping disease management and recovery. However, current plans promoting individual, home-based exercise, as well as on-site hospital-based programs of delivery, have met with only limited success, and face problems of decreased space, capacity, clinician time, as well as lack of knowledge and expertise with regard to effective behavior change. I am proposing to develop and promote a suite of materials and online resources—a toolkit or blueprint—to support health professionals in their development and scaling of non-hospital- (community-) based group exercise programs for older people with chronic conditions. Key benefits for older people include arresting disease, delaying disease onset, reducing pain and need for medication, avoiding surgery, and leading a normal life. My long-term ambition is to develop a go-to resource for health professionals to use to manage a range of conditions associated with older people, for which building sustainable physical activity is an aim. If successful, our innovation has potential for substantial reach and impact, changing the way we manage (and improve the lives of older people living with) chronic conditions, creating cost savings for health systems world-wide.

Digital Nutritional Assessment tool – DNA-tool

Principal Investigator	Jenni Connelly, PhD
PI Primary Affiliation	Jenni Connelly, University of Stirling
Co-Investigator(s)	Anna Whittaker, PhD; Nidia Rodriguez-Sanchez, PhD; Kevin Swingle, PhD

PROJECT DESCRIPTION

Malnutrition (or insufficient nutrient intake) is a significant issue for older people in the UK, and is strongly associated with poorer quality of life, functional decline and deteriorating health. Over 35% of people in care homes are affected by malnutrition with risk increasing the longer someone lives in care with it taking as little as 2 days to become malnourished. This project will develop a tool to identify malnutrition and its risk through taking photographs to identify nutritional intake. Previous studies have highlighted that malnutrition is not recorded accurately in older people in health and social care with extreme inaccuracies in diet diaries and problems including lack of staff time, difficulty remembering foods eaten, or needing a dietician to interpret the results. Linking food photos to existing food information means that it is possible to store detailed nutrient intake. We will use computer learning to link photographs of food to important measures such as food preference, physical symptoms, and malnutrition risk. The food classification tool will be delivered through a mobile phone app which will also consider portion size and eating frequency. Through this we will be able to link food intake to preferences and/or symptoms and identify foods hazardous or not preferred to decrease malnutrition risk among older people. We will develop the prototype tool and test how acceptable and usable it is in older adults for delivery in care homes, including people living with dementia.

Encouraging accessible conversations using sound scene monitoring and IoT-based nudging

Principal Investigator	Alastair H. Moore, PhD
PI Primary Affiliation	Imperial College London
Co-Investigator(s)	None

PROJECT DESCRIPTION

The impact of hearing loss can be devastating, both for the individual and their family and friends. Hearing aids can help by amplifying quiet sounds enough to be heard, which works well for watching TV and having a one-to-one conversation in a quiet place. However, many everyday environments are inherently noisy. Hearing aid technology is advancing all the time, but it is not yet sufficient to solve the “speech-in-noise” problem. Struggling

to follow a group conversation in a café or restaurant is frustrating and leads to a sense of social exclusion. This can often result in an individual opting out of social situations altogether, causing isolation, loneliness and even accelerating the onset of dementia.

The project aims to develop technology-assisted strategies which will help hearing impaired people to fully participate in group conversations. The difficulty of hearing well in a listening situation is affected by several factors, including the acoustics of the room, the locations of noise sources, the spatial configuration of the conversation participants and their group dynamics. The project will create easy-to-use tools which enable anyone to choose a good venue, sit in the best seat and provide real-time assistance to the group to help them talk in a manner which is accessible to the hearing-impaired person.

The project will exploit recent advances in machine learning and readily-available Internet-of-Things devices to understand sound scenes. Through user engagement and rapid design iterations it will develop appropriate "nudge" interventions which subtly guide the conversation participants to adopt more inclusive behaviour.

Enhancing Mobility of Elderly Stroke Patients using sustainable solution

Principal Investigator	Urvashi Fowdar Gunpath, PhD
PI Primary Affiliation	University of Derby
Co-Investigator(s)	Ruth Sims, PhD Professor Paul Wood Gavin Williams, PhD Rania Edris, PhD

PROJECT DESCRIPTION

About 60% of UK stroke survivors are aged ≥ 65 years and have lower limb weakness with reduced mobility. A custom-made ankle-foot orthotic (AFO) helps increasing their mobility. Currently the NHS uses a labour-intensive manufacturing process for the AFO with a turnaround time of 4-12 weeks. The proposed solution targets to reduce the turnaround time to < 5 days using a digitised workflow. A clinical trial aims to assess the efficacy of the proposed manufacturing process.

Green Walks

Principal Investigator	Kirk Woolford, PhD
PI Primary Affiliation	Anglia Ruskin University
Co-Investigator(s)	None

PROJECT DESCRIPTION

During and post Covid-19 lockdowns, the importance of access to green spaces for mental health has been highlighted. However, in the UK, we have deeply entrenched disparities in access to green spaces. A majority of people over 64 and/or from non-white backgrounds do not believe they have greenspaces within easy walking distance.

Green Walks will aid the UK population in finding greenspaces within easy walking distance of their homes. The project will also help provide incentives to get out of the house by encouraging users to engage with changing natural elements of these greenspaces (such plants coming into bloom or seasonal bird migrations).

The project will generate a green view database, using AI tools to extract images from existing mapping platforms to calculate the amount of visible green space along roads. The team will co-design a web-based AI search interface and mobile app to generate personalised walks to and from home, through areas with the highest green views.

The app will use spatialised audio to guide the user along the walk, as well as providing social accompaniment, and quick access to help and/or companionship. It will monitor the user's progress through GPS, motion data, and quick self-reported mental health cues.

The project contains a citizen-science element allowing stakeholders to contribute data from their walks, add areas of interest, areas to be avoided, and community information

about use of the green spaces.

Healthy cognitive ageing: Empowering older adults through self-testing

Principal Investigator	Sarah Gunn, DCLinPsy
PI Primary Affiliation	University of Leicester
Co-Investigator(s)	Kevin Paterson, PhD; John Maltby, PhD

PROJECT DESCRIPTION

From around age 50, people experience increasing cognitive difficulties with memory, concentration, and multitasking. As our population ages, this affects day-to-day life for millions of people. Further, as average retirement age rises, it also prevents older adults from maintaining skilled work. This affects individuals' activity and wellbeing, and employers lose critical skills and experience from their workforce.

Accordingly, identifying these cognitive problems in older adults is crucial to helping them access support, continue working, and fully enjoy life. However, the NHS lacks resources to assess all older adults for potential cognitive changes. In our project, we seek to develop a new approach to identifying cognitive problems, while minimising reliance on stretched healthcare resources.

We will develop an online-access cognitive test for older adults, which can be self-administered at home to test and track cognitive changes. The test will use simple computer-based tasks which are already individually proven to detect changes in memory, concentration, and multi-tasking. This will allow older adults to independently self-test their cognition, as people with diabetes check their blood sugar, without attending specialist clinics.

The test will produce results meaningful to the older person, healthcare professionals, and workplace support systems like occupational health. It will provide results-based recommendations, such as signposting to support services, or using practical, brain-training and social strategies to help manage cognitive changes. We aim to empower older adults to monitor their own cognitive wellbeing, and to identify those needing support to reduce avoidable impact on their wellbeing and work.

Monitoring symptoms of Parkinson's disease to improve quality of life

Principal Investigator	Tina Smith, PhD
PI Primary Affiliation	University of Wolverhampton
Co-Investigator(s)	None

PROJECT DESCRIPTION

Parkinson's disease affects 1% of adults over 60 years old, and due to an ageing population, its prevalence is increasing. The disease is characterised by movement symptoms and as there is currently no cure, living well with these symptoms is a priority. Movement symptoms vary during the course of a day and over the long-term, and being able to monitor these symptoms accurately and precisely has various benefits. These include informing current health status to help plan daily activities, and recording changes over time to enable optimization of treatment. We have a prototype device which accurately and precisely measures key features of

upper limb movement relevant to symptoms of Parkinson's disease, while performing a short task. This project will use co-design to develop our current prototype into a simple and easy to use home monitoring tool for people with the disease. People with Parkinson's disease, their family members, and other key stakeholders, will be involved in the project and product design processes. Their input will drive re-designing the prototype including its digital interface, to produce a user-friendly product and digital output that allows easy interpretation of individual results. At the end of the project, we will evaluate the final product and identify early adopters ready to trial the product for home monitoring.

My Day: Digital Dementia Toolkit

Principal Investigator	Arlene Astell, PhD
PI Primary Affiliation	University of Reading
Co-Investigator(s)	None

PROJECT DESCRIPTION

Dementia is a disease that attacks the brain. It mostly happens when people get older but can start when they are working age. People who develop dementia often have problems remembering things or get confused easily. There are currently no medicines to cure dementia and it gets worse over time. Most people with dementia live at home managing as best they can. Unlike illnesses such as cancer or diabetes, people who develop dementia are not given specific tools to help them cope. The My Day project will provide resources for people who are diagnosed with dementia to help them live day to day and plan for the future. Specifically, My Day digital toolkit will provide information about dementia to help people understand what is happening to them. My Day will also provide practical strategies, and digital tools to manage their daily lives. The toolkit will run on a phone or tablet and training will be provided on how to use it. My Day is intended to help people learn about dementia and what to expect as time goes by. The toolkit will help people keep track of they are doing and share this with trusted family or friends. Collecting information over time can also help to spot early signs of change. This means more help can be put in place.

Nurolight

Principal Investigator	Lesley Palmer, MSc
PI Primary Affiliation	RIBA, RIAS, National Academy of Social Sciences
Co-Investigator(s)	Dr Junjie Huang

PROJECT DESCRIPTION

One of the many physiological processes affected by AD is the circadian system with 45% of people with Alzheimer's experiencing sleep disturbances. Poor sleep exacerbates symptoms of memory loss, worsen cognitive decline and behavioural issues such as agitation and aggression. There is also a high prevalence of sleep disturbance in care givers. This is an important consideration because where the sleep of both the person with dementia and their caregiver is affected, supporting the person to remain at home becomes more challenging.

An opportunity exists to build-upon a growing body of evidence which has demonstrated the benefits of bright light therapy on the behaviours of people with mild to moderate Alzheimer's disease (AD). In addition, we intend to build upon advancements in bioadaptive or circadian lighting, that is lighting which mimics the natural colour temperature of daylight to support better sleep quality. The innovation we intend to develop is a light therapy treatment to entrain circadian rhythms in people living with dementia. We will do this by developing a piece of software which connects and controls off-the shelf smart lamps fitted. Ambient lighting will be controlled and optimised according to the time of day, season and geolocation. Nurolight will be brought to market through Iridis Digital Ltd. a Stirling University joint venture.

Remembering Yesterday

Principal Investigator	Catherine Loveday
PI Primary Affiliation	University of Westminster
Co-Investigator(s)	None

PROJECT DESCRIPTION

We grow up in a world where forgetfulness is seen as an inevitable consequence of ageing. Research shows that although this needn't be a foregone conclusion, it is something that is experienced by many older people. Memory loss is widely feared, which is hardly surprising given that our memories make us who we are. Being able to recall conversations or shared experiences is what cements our friendships. Remembering what has happened in the past guides us to make decisions about the future.

There are numerous reminiscence activities, apps and interventions available to support older people in recollecting the distant past, but memory for recent events ("short-term memory") has largely been neglected. When people struggle to recall recent events it can severely disrupt social connections even with close family, and may discourage people from having conversations or meeting up, as well as impacting on important decisions.

My research has shown that active consolidation (for example diary-writing, photo-logging) can significantly improve memory for recent past, and that this in turn significantly impacts on quality of life. However, this is time consuming and impractical for many people, especially older people who typically have less technical know-how.

This project proposes the development of a user-friendly system that supports active consolidation of recent memories. My vision is that this will become like a pair of spectacles – something that people use as a matter of course, without fear, embarrassment or extensive effort, and because it significantly improves their day-to-day life.

Revolutionising lymphoedema treatment -Developing a wearable MedTech device to improve the quality of life in lymphoedema patients

Principal Investigator	Katherine Wang, PhD
PI Primary Affiliation	University College London
Co-Investigator(s)	None

PROJECT DESCRIPTION

Lymphoedema is a chronic, debilitating, and incurable disease, caused by damage to the lymphatic system (the "plumbing" of the body), resulting in excessive swelling from fluid build-up to the affected area. This causes huge lifelong physical, psychological, and socioeconomic burdens that significantly lowers the patient's quality of life. Lymphoedema patients face a lifelong struggle to manage their symptoms.

Current treatment of lymphoedema rely heavily on compression therapy to reduce swelling, delivered by certified therapists, or compression devices at specialised clinics, several times a week. There is a severe lack of resources both in the UK and globally to deliver lymphoedema treatment, despite affecting over 250 million people worldwide. These existing approaches are costly and non-portable; meaning access to effective, affordable, and sustainable treatment is a significant burden for patients. Long waiting lists and overstretched NHS services cause delays in patients receiving the critical treatment they require, and the patients' needs are often overlooked and neglected, causing disease progression.

The aim of this project – "LymphMotion" is to develop a proof-of-concept prototype of a portable and lightweight compression garment, using a co-creation process with lymphoedema patients. The end goal is to 1) provide a

sustainable, safe, effective, affordable, and convenient at home/away treatment, which 2) alleviates pain and prevent disease progression, and 3) improve quality of life by allowing the patient to self-manage their condition, whenever and wherever they need, giving patients a higher sense of self-autonomy over their disease.

Self-management support training for carers of older adults with osteoarthritis and additional conditions living in care homes

Principal Investigator	Kate Button, PhD
PI Primary Affiliation	School of Healthcare Sciences, Cardiff University
Co-Investigator(s)	Monica Busse, PhD; Victoria Shepherd, PhD; Fiona Jones, PhD

PROJECT DESCRIPTION

Social care receives over 1.3M new requests for support each year from older adults. One of the most common problems experienced by older adults is joint pain from osteoarthritis (OA), affecting over 50% of individuals aged over 65, and 70% experiencing additional health conditions. This will contribute to loss of independence and wellbeing. Working with Bridges Self-management, our aim is to develop a training programme in personalised self-management support, for carers working in domiciliary and care home settings with older adults with OA and family and friends of people living in these settings. Older adults with higher care needs are the group most in need of support to help manage their OA and additional conditions but are currently the least likely to be able to access support. Many older adults with OA living within these settings have different degrees of cognitive impairment and this is often seen as a barrier to self-manage without considerable support from carers. The training developed in this project will aim to increase carers understanding of a model of personalised self-management support that becomes a 'way of working'. Carers will develop their knowledge and skills to empower them to make key changes in the way they support individuals to make decisions and be involved in their care. We want to achieve this so that older adults with joint pain and high and complex health needs feel confident and skilled to make the choices about everyday activities and create more opportunities for meaningful activity.

Smart Wearable Sensor for Early Diagnosis of Diabetic Foot Ulcers

Principal Investigator	Nasim Mahmoodi, PhD
PI Primary Affiliation	University of Birmingham
Co-Investigator(s)	None

PROJECT DESCRIPTION

Diabetes is a fast-growing public health issue, and the International Diabetes Federation estimated that 642 million will be affected by it by 2040 globally. Diabetic foot ulcers (DFUs) are known as major and common complications of diabetes, which can lead to a prolonged hospital stay. DFUs are a prevalent and serious global health issue that require significant use of health resources, including staff and treatment costs. The risk of DFUs and associated complications such as amputation is greater for older people, where half of the amputations are reported to be performed for people aged 65 and older.

DFUs are preventable if they are diagnosed or treated at early stages. Plantar temperature and pressure are believed to play an important role in DFUs development and monitoring these physical parameters can facilitate the early diagnosis of DFUs and reduce health-related complications and treatment costs. This project aims to develop a novel integrated insole device to monitor the plantar pressure and temperature simultaneously. This research has the potential to diagnose DFUs at an early stage by monitoring the patient's data related to the temperature and pressure to avoid or delay foot ulcers and associated complications.

Social exergaming

Principal Investigator	Rebecca Atkinson
PI Primary Affiliation	University of Sussex
Co-Investigator(s)	Naji Tabet, PhD; Alon Stoerman

PROJECT DESCRIPTION

Co-developing a social exergaming platform to help older adults with mild memory problems maintain functional independence.

Translation of an innovative microgel technology for improving swallowing in the elderly

Principal Investigator	Olivia Pabois, PhD
PI Primary Affiliation	University of Leeds, UK
Co-Investigator(s)	Prof Anwesha Sarkar, PhD; Dr Sarah Jarmin, PhD

PROJECT DESCRIPTION

Dry mouth, due to a reduction/absence of salivary flow/lubricity, affects at least 10 million people in the UK, predominantly elders. Largely driven by age-related chronic/neurodegenerative diseases and polypharmacy, oral dryness significantly increases the risk of dental caries, periodontal diseases, candidiasis, oral ulceration, and dysphagia - all of which adversely impact the nutritional status and quality of life of elderly people. Numerous salivary replacers are commercially available, but none offers long-lasting relief due to their poor lubrication properties, thus forcing sufferers to use mouth spray repeatedly all day long to be able to eat. Subsequent malnutrition, which affects 1.3 million over-65s, results in a £7.3 billion annual loss.

We have recently patented an innovative, highly lubricating saliva substitute for dry mouth sufferers, which offers 95% more effective lubrication and a 50% longer relief period than both currently marketed saliva-replacing products and the naturally lubricating human saliva. Our technology forms a viscous fluid film that moistens/lubricates the mouth (lubricity-improving hydration thanks to the water-encapsulating biopolymeric hydrogel) and stays adsorbed onto the human tongue/palate following ingestion (long-lasting hydration thanks to the efficiently adsorbing proteinaceous microgel). Besides technical development, we have demonstrated up-scaling feasibility and regulatory compliance.

Our novel lubricant will overcome the bottleneck of the sub-optimal performance of marketed aqueous lubricants, and will surely contribute to addressing the long-standing swallowing issues faced by elders. This award will allow conducting further proof-of-principle work, including manufacturing a safety/regulatory-complying, patient requirements-meeting medical device, in a range of packaging formats.

Upskilling informal carers

Principal Investigator	Caroline Emmer De Albuquerque Green, PHD
PI Primary Affiliation	King's College London, UK
Co-Investigator(s)	Naomi Soneye-Thomas, Rachel Barber

PROJECT DESCRIPTION

In the United Kingdom, there are currently around 13.6 million unpaid family carers looking after older, ill and/or disabled adults. This number increases by 6000 people daily and over 2 million people yearly. People aged 55 years and over make up 46% of all unpaid carers and 23% of them are older than 65. Being an unpaid carer means that people must acquire a whole new skill set, which can include challenging tasks like avoiding pressure sores, administering medication and supporting someone through distress. Several studies in the past two years have shown that many unpaid carers suffer from poorer mental and physical health resulting from the pressure and stress associated with being a carer. Often they feel unsupported, lonely and not experienced enough to tackle care tasks. A lack of easily accessible information and support on practical care tasks makes the situation even worse. In this project we will seek a solution to provide unpaid carers with the right high-quality information and guidance that they require whenever and wherever they require it. We will work with unpaid carers to find the best channels for them and connect with various stakeholders to bring together expert knowledge with need and demand.

Wearable biosensors to support vaginal health in post-menopausal women

Principal Investigator	Tommaso Busolo, PhD
PI Primary Affiliation	University of Cambridge
Co-Investigator(s)	Ryo Mizuta, PhD; Giulia Tomasello; Isabel Farina

PROJECT DESCRIPTION

Vaginal health has been systematically overlooked due to a combination of taboo, inadequate policy, and funding, contributing to continued poor health outcomes for females. In particular, vaginal infections such as bacterial vaginosis impact over 25% of post-menopausal females, causing pain, poor mental health and doubling the risk of UTIs and endometriosis. Social stigma and lack of rapid and convenient access to healthcare providers are the key barriers for females to seek help when needed.

A crucial factor in vaginal health is the vaginal microbiota as it enables the prevention of vaginal conditions ranging from bacterial vaginosis to UTIs. However, keeping a healthy microbiota state is challenging because its composition can vary daily, influenced by factors such as hygiene products, sexual activity and medications. This is even more challenging for post-menopausal females due to the declining oestrogen levels.

Currently, there are no options that provide both affordable at home vaginal microbiome and complementary educational support. Our solution is a smart pad with integrated wearable biosensors that makes at-home vaginal microbiome testing accessible. After wearing the pad for a few hours, the user will be able to visualise their microbiota information on an app and tailored educational support will be provided. This solution will enable preventing infections, supporting any self-treatment course or facilitating seeking medical advice.

Wise Connections: Co-design places to support creative ageing

Principal Investigator	Theo Zamenopoulos, PhD
PI Primary Affiliation	The Open University
Co-Investigator(s)	Katerina Alexiou, PhD; Tot Foster, PhD; Ruth Myers, Ms; Pete Insole, Mr; Farrell Renowden, Ms; Isobel Jones, Ms; Georgina Densley, Ms

PROJECT DESCRIPTION

As we grow older, our opportunities to re-imagine, develop, and integrate our own capabilities to participate in social, cultural and economic life are reduced. Being able to grow our 'creative capabilities' as we grow older, to produce something of value for us and others, is fundamental for our independent living and wellbeing but also the society at large. Our research over the past 10 years suggests that our creative capabilities are progressively

reduced because there are limited 'places', namely environments within our private and public life that can foster relations of trust, inspiration, and empowerment to enable us to grow. To the end, the project aims to devise and cascade 'provocations' for socio-cultural interactions, referred to as 'seeds', across networks of people and/or organisations, referred to as 'allotments'. 'Seeds' are physical or digital materials that would help people to explore, discover and exchange skills and resources (for instance a 'travelling' box that contains resources and materials for creation passed on between people physically or digitally). Seeds aim to grow 'places' within homes, public or professional spaces where people feel empowered to discover, integrate and develop what they value to do or be in life. Overall, the ambition is to create a valuable but also viable and scalable 'habitat' of seeds and allotments for growing such places across our private, social, and professional life. The project is a collaboration with Local Learning, Alive, AgeUK Oxfordshire and the Age of Creativity network.