

Strategic Promotion of Ageing Research Capacity

SPARC is a unique initiative supported by the Engineering and Physical Sciences Research Council and the Biotechnology and Biological Sciences Research Council to encourage the greater involvement of academics and researchers in the many issues faced by an ageing population and encountered by older people in their daily lives. SPARC is directed, managed and informed by the broader community of researchers, practitioners, policy makers and older people for the ultimate benefit of older people, their carers and those who provide services to older people.



EQUAL Hospital Portal project, University of Reading. Photo courtesy of Dr Rachel McCrindle

Workshops

SPARC involves all interested stakeholders in design, engineering, physical science, biology and biotechnology ageing-related research (including academic researchers, professionals from health, social services, housing, industry, local and central government, representatives of charities and voluntary bodies, and older and disabled people). Building on the experience gained from the EPSRC EQUAL Network it organises research workshops which are accessible to this wide range of stakeholders. These workshops also involve those newcomers supported by SPARC awards as well as experienced researchers funded through other research council and research charity programmes.

Advocacy

SPARC also represents the interests of ageing researchers and those who can use their findings to key policy makers and the media. At every opportunity it makes the case that the type of ageing-related research supported by SPARC, EQUAL and ERA is able to make a major contribution to improving the quality of life of older people. It operates regionally, nationally and internationally.

Pump-Priming Awards

EPSRC and BBSRC is providing funding to build national capacity for ageing research through small awards to newcomers, selected through peer-review of short individual applications submitted in response to calls for proposals. The deadlines for the two SPARC award calls: 1st June 2005 & 1st March 2006.

SPARC pursues three main activities: Workshops to bring together all stakeholders interested in improving the quality of lives and independence of older people. Advocacy of the need for and benefits to individual older people and to society of ageing-related research. SPARC is inclusive and warmly welcomes everyone's interest and involvement in its activities. Small awards to newcomers to ageing research, across all areas of design, engineering and biology and at the interfaces relevant to an ageing population and older people.

Eligibility for Awards

SPARC awards are ideally suited to newly and about-to-be appointed academic staff and research fellows who have yet to secure a research council grant as Principal Investigator, for example former research assistants and research students, and to experienced university-based staff moving into ageing research. A specific objective is to enable access to research funding for a larger range of researchers than is normally possible.

Topics

All topics related to ageing which normally fall within the missions of EPSRC and BBSRC and those which combine elements to these missions are admissible. But not those projects which could be funded through existing EPSRC and BBSRC instruments.

Requirements

Proposals must articulate:

- the expected contribution of the research to improving the quality of life of older people
- how by supporting the proposal the national capacity for ageing research will be enhanced in the longer term
- the nature of support from the applicant's institution for both the proposed study and the applicant in the longer term.

Desirable Features

Stimulation of cross-disciplinary working either through the research or through the SPARC network, involving intermediate organisations, such as service providers and practitioners, engaging with end users, laying ground for larger applications.

Basic Support

Generally up to £25,000 but exceptionally up to £60,000 (£40,000 for Call 2) to cover: research staff, consumables, equipment, and travel. For Call 2 there will be a contribution towards Full Economic Costs. Projects which can be partly funded from other sources are encouraged. It is intended that up to 30 projects will be funded.

Special Support and Benefits

Access to a prestigious platform for dissemination, professional editorial assistance, and eligibility for international activities.

SPARC Projects Supported from Call 1

By 1st June 2005 85 proposals had been received of which 66 were subsequently peer reviewed, an exercise involving over 250 referees and generating typically four or five reviews for each proposal. Of the 24 projects of a quality suitable for support, thirteen were selected for SPARC Awards. They range in value from £17,000 to £59,000 and from 6 to 18 months duration. Host institutions, partners and collaborators are contributing significant amounts of advice, time and money to support these newcomers to ageing research. These range from new academics, some have recently completed their doctorates, through to very experienced senior academics who have been attracted from other fields into ageing-related research. The [second call](#) for proposals has a submission deadline of 1st March 2006. It is intended that all projects from both calls shall be completed by November 2007 to enable extensive discussion and dissemination of their findings.

The SPARC Advisory Committee

Mrs Elizabeth Mills, OBE, Eminence Grise (Chair)
Professor Janet Askham, Picker Institute/Department of Health
Dr Lorna Layward, Research into Ageing/Help the Aged
Dr Elizabeth White, British Association of Occupational Therapists
Dr Deborah Dunn-Walters, Kings College London/Guy's Hospital
Dr Sian Henson, University College London
Dr Bernie Conway, Strathclyde University
Professor David Kipling, Cardiff University

Dr Constantinos Maganaris, Manchester Metropolitan University
Professor Kevin Morgan, Loughborough University
Mr Marcus Ormerod, Salford University
Dr Colin Miles, BBSRC
Dr Kedar Pandya, EPSRC
Special Advisers
Professor Helen Petrie, York University
Professor Roger Anderson, Ulster University



Life in the Home



Integrating the technological and social model of later life in the maintenance and adaptation of private housing *Philip Astley, South Bank University* Many people want to remain in their own homes despite quite disabling conditions. Often to achieve this their homes have to be altered, bathrooms enlarged, and ramps, rails and other equipment, such as stairlifts, installed. The experience of alteration work can be very traumatic and can lead to irredeemable changes to the "home". In anticipation of much distress many older people decline the opportunity to improve their living conditions. This study will consider the use of modern information and visualisation technologies for improving the design and implementation of adaptations. Older people will be able to obtain a realistic view of a range of intended alterations and the impact on their homes, discuss these with designers and occupational therapists, and make certain that their priorities and preferences are fully understood.

Multimodal augmented reality to support ageing in place *Dr Shaun Lawson, University of Lincoln* Maintaining an independent life style is an integral social need of many older people and has direct cost benefits for the formal health care sector. Autonomous assistive systems which support decision-making for healthier and safer living have the potential for huge impacts on the lives of older people and their carers. This study will consider the prospect of exploiting the emerging and powerful interface technologies of augmented reality. These provide new ways of bringing together electronic devices and pervasive systems to support longer term, safer ageing in place.



The "inclusive engineering" approach: enhanced data gathering for an optimum diameter for ease of opening *Dr Alistair Yoxall, Sheffield University* In nearly all actions in which we use our hands there is some form of grip used in order to hold an object before manipulating it. Thus the decline in our strength and dexterity as we age has serious consequences. The lives of many older people are made a misery by the challenges of everyday packaging, restricting their choice as consumers and in some cases compromising their nutrition and general health. Despite much work on torque and grip strength of older people, only recently has a realistic test jar been developed – a glass container with a metal closure and with robust measurement equipment inside. Further development work will be undertaken to make the device more portable and capable of gathering the extensive data required by food manufacturers if they are to be persuaded to provide packaging which is more friendly towards people of all abilities.



irregular heart rate and heart attack.

Ageing, excise and gender *Dr Matthew Lancaster, Leeds University* Throughout the lifespan exercise is encouraged to promote cardiac, respiratory and musculo-skeletal health but the precise interactions of ageing, gender and different exercise protocols remain poorly understood. The development of a new model of the effects of ageing on muscular function will enable future study of critical issues relating to, for example, aerobic capacity, healthy circulation, strength in skeletal muscle, cardiac capacity and resistance to

Chemical tool for ageing research *Dr Mark Bagley, Cardiff University* Much evidence suggests that normal human cells are capable of only a finite number of divisions after which a senescent state is triggered and thus there is a strong link between senescence and tissue degeneration – cell ageing. A priority has to be placed on understanding the underlying mechanisms, which presently are not clear, and then developing ways of intervening in these processes so as to benefit older people. This study will develop new chemical tools to help identify some of the mechanisms of human ageing, with the ultimate aim of understanding the biochemical basis of this complex process.



age. The study will develop new techniques using EPR spectroscopy for detecting radicals at the sites where they cause most damage.

EPR, oxidative stress and ageing *Dr Richard Hartley, Glasgow University* Cells age for many reasons. They can be damaged by radicals, particularly oxygen-centred radicals causing pathologies such as arteriosclerosis, neoplasma and cataracts and play a role in stroke, neurodegeneration and autoimmune diseases. Understanding the biological sources of radicals, their behaviour in different environments and the cellular responses to them is a key to understanding the ageing process and ameliorating the diseases of old

Evaluating the role of p38 MAP kinase in accelerated ageing *Dr Fiona Wylie, Cardiff University* Because the science of normal human ageing is complex and very long term, some scientists study particular subsets of the population which exhibit certain special characteristics. Werner's Syndrome is a very dramatic premature ageing syndrome that is often used as a model system for human ageing. The *in vitro* treatment of certain types of Werner's Syndrome tissue cells with a particular drug has shown that accelerated ageing can be prevented. However the underlying mechanisms are unclear. The study will determine the most plausible explanation and delineate a path to the next step towards developing possible treatments for those who suffer from the syndrome. It will also offer insights into the development of inhibitors of those enzymes which trigger accelerated ageing in normal individuals as a result of stress, infection or chronic wounds.



Chemical analysis of ageing tissue *Dr Elizabeth Ostler, Brighton University* Advanced Glycation Endproducts (AGEs) are the result of ubiquitous unwanted reactions between reducing sugars and amino acids that form adducts on proteins. These adducts accumulate with age, at an increased rate in diabetic patients, with particular implications for long lived structures such as the eye lens because they can interfere with the biological functions of proteins. Levels of AGEs correlate with an increased rate of morbidity, probably by causing tissue dysfunction. The work will provide a better molecular understanding of ageing with a view to finding out whether AGEs are really a cause or just a result of ageing processes.



A proteomics approach to understanding age-related changes in neuronal function *Dr Katrin Jennert-Burston, Brighton University* As cells age so there is a change in the number of connections a neuron makes with a target cell, and this may contribute to neurodegeneration. It is clear that ageing is associated with significant changes in relatively few proteins but this is an area which has been hardly examined. So, this study will provide new information concerning the role of changes in protein expression in neuronal ageing.



Transport and older people: integrating transport planning tools with users needs

Dr Gregory Marsden, Leeds University & Dr Mima Cattan, Leeds Metropolitan University

The lack of good transport options can be a significant barrier to social inclusion and independence. The majority of pensioners do not have access to a car, and suffer more than most from poor public transport and badly maintained transport infrastructure. The study will develop new tools for understanding the transport needs and aspirations of older people particularly with a view to helping local authorities develop their accessibility planning for key services such as healthcare, supermarkets and employment sites. It will identify ways in which older people can have a stronger voice in transport planning.

Promoting safe driving behaviour through technology: attitudes of older drivers

Dr Charles Musslewhite, Bournemouth University Owning and being able to use a motor vehicle ensures that some older people can maintain their mobility and accessibility to local amenities and participate fully in society. This in turn affords them with important feelings of self confidence, independence, self-esteem, and protection. However many older people become anxious and give up driving. This is for a host of reasons often related to physiological and cognitive functioning which have at their roots issues relating to working memory and information processing. The study will look at the extent to which new technologies accommodate the needs of older people and help or hinder older drivers, so as to aid safe car driving.



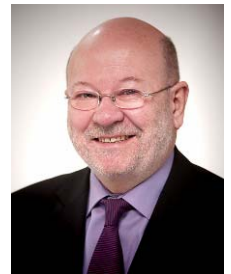
Advanced technology desires, needs and requirements of older drivers *Mike Bradley, Middlesex University*

New technologies can be made more user friendly through involving users in their development from the outset and adopting the philosophy of inclusive design. However designers, often working under time and financial pressures, have little experience of designing for all abilities and they do not have the data or methodologies for investigating the needs of the broader population, especially older and disabled people. This work will develop methods of synchronising older driver requirements with the development of specifications for older driver-friendly new vehicles and vehicle components.



Design and community regeneration: investigating personal safety concerns in socio-economically deprived communities *Professor Richard Neale, Glamorgan University*

Older people, especially in socio-economically deprived areas, have considerable concerns about crime and personal safety. Understanding these fears and how they can be reduced is a priority if older people are to enjoy their later years and remain integrated into society. Using virtual reality technology to explore users' perceptions about environments, the project will encourage community participation and user-led solutions to the design of urban environments. The ultimate aim is positive social change which leads to safer and more accessible communities.



Maintaining Independence in Later Life, February 2005, Brunel University

Integrating Research on Ageing: bridging the gap between biology, engineering, design and older people, March 2005, Strathclyde University

Pharmacology and Ageing, April 2005, Royal Pharmaceutical Society

Living with Stroke, June 2005, Sheffield Hallam University

Towards the Integrative Biology of Premature Ageing, (International Workshop), October 2005, Brighton University

The Business Case for Ageing Research, November 2005, Unilever, Bedford

The Biology and Business of Stroke, December 2005, TVLSN, Reading

Strategic Promotion of Ageing Research Capacity

The EPSRC EQUAL Initiative and BBSRC SAGE and ERA Programmes have encouraged a strong research focus on the needs of older people. In turn this has led to a fruitful rapport between researchers and older people, their carers and intermediate organisations and a better understanding of the issues faced by an ageing population and encountered by older people and disabled people in their daily lives. Interdisciplinary user-focused research with an engineering, design and physical science foundation, is coupled with a determined concern to understand the biology of ageing. This has enabled EPSRC and BBSRC to lay the foundations of a radically new community of ageing researchers and stakeholders in research. The community is small; but, it has already provided significant contributions to enhancing the lives of older people in the United Kingdom.

In order to develop the community further and to encourage strong links with those who can benefit most from ageing research, EPSRC and BBSRC are supporting SPARC, an initiative which will build the national capacity for ageing research and create a network to bring together researchers with the wider community of practitioners and policy makers who are involved with the needs of older people. It is intended that the network should have a very broad appeal to all of those who are interested in using design, engineering and biological research to extend the quality of life, health and independence of older people.

The aim of SPARC is to:

- facilitate the capacity of the UK science base to undertake ageing research.
- work with EPSRC and BBSRC to initiate closer links between those who wish to undertake and to encourage ageing research.
- to provide financial support for small scale projects for newcomers to ageing research.
- to encourage networking between all stakeholders especially to encourage interdisciplinary and end-user perspectives.
- To contribute to a coherent, accessible and internationally competitive UK ageing research programme valued by policy makers, practitioners, users and other relevant stakeholders.

Some other challenges for the Network:

- to develop greater **awareness** amongst key institutions of how the needs of older people can be met through better research and more informed education programmes.
- direct interaction between those who influence and make **policies** which affect the quality of life of older people and those who undertake and support research.
- to create a better platform for the **application** and **dissemination** of current research by new and experienced researchers.
- to encourage high **quality** research through the sharing of expertise.

The benefits of the Network will:

- relate to the **needs** of society, the economy, and the public purse and especially those organisations involved with health care, both through research findings but also through growing research capacity
- influence research agendas & researchers towards those issues most **beneficial** to society.
- facilitate the pursuit of **value for money** in research by improving its co-ordination and quality.
- **integrate** findings from design, engineering and biology with those from other fields of research.
- provide a **platform** for presenting to users, representatives of users, government, charitable bodies and a range of industries, the latest research findings.
- be a **focal point** for those interested in the extent to which research-led practice can meet specific needs.
- **complement** rather than duplicate the activities of other organisations

The prospective membership includes:

researchers and academics, government – central, regional & local, policy makers including MPs, industry, professional bodies, national and local charitable bodies, national representative bodies and older people.

SPARC – Key Contacts

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