The SPARC Initiative

Strategic Promotion of Ageing Research Capacity

SPARC is an 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.

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
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Professor Helen Petrie, York University
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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 jam 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.
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 irregular heart rate and heart attack.

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.

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

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.
Getting Out and About

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 possessing. 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.

SPARC Workshops 2005

*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
SPARC
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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.

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