

## **Culture and Society - Summary of responses and comments:**

### **Three responses received:**

1. Heather Hartwell (ST/HSC) and Ann Hemingway (HSC)
2. Carol Bond (HSC)
3. David Osselton, Wei-Jun Liang and Kevin McGhee (ApSci)

### **Alternative name suggestions:**

<b>Author</b>	<b>Name suggestion/s</b>	<b>Comments</b>
1. Hartwell and Hemingway	Wellbeing and quality of life	
2. Bond	None	
3. Osselton, Liang and McGhee	Living with environmental change - Health and Wellbeing in the Fast-changing Environments Functional Genomics and Integrated Systems Biology	

### **Brief theme summary:**

<b>Author</b>	<b>Summary</b>	<b>Comments</b>
1. Hartwell and Hemingway	Wellbeing as described by the World Health Organisation (WHO) in its constitution (2006) denotes ' <i>health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity</i> '. However, the concept is not new for example Aristotle described wellbeing in terms of 'ataraxia' (inner peace) and 'eudaimonia' (a feeling of wellbeing, happiness, contentment, pleasure, satisfaction and living the best life possible). Within the field of happiness economics, where the concept of subjective wellbeing is defined as life satisfaction, it can be both uni- or multi-dimensional. In other words from an economic standpoint, subjective wellbeing can be defined and measured as both satisfaction with life in general (uni-dimensional) and satisfaction with different aspects, or domains, of life (multi-dimensional). Happiness, although challenging to assess, as people will derive differing amounts of pleasure from the same experience, resonates with the 'set-point' theory of wellbeing where each individual is thought to have a set-point of happiness given by	

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	<p>genetics and personality. Life events may deflect above and below but in time hedonic adaptation will return an individual to this initial point. The theoretical framework for interpretation is the theory of 'Subjective Wellbeing Homeostasis' (Australian Unity, 2010), which proposes that everyone has a genetically determined 'set-point' for well-being that is internally maintained and defended, similarly to how body temperature is managed. Currently, the wellbeing debate anchors on two general perspectives: the hedonic approach, which defines wellbeing in terms of pleasure attainment; and the eudaimonic approach, which focuses on meaning and self-realization. The latter resonates with an emerging conceptualisation of public health which is to reject the model of ourselves as mechanics that diagnose and fix what is wrong to organic metaphors where we understand ourselves as 'gardeners', enabling the growth of what nourishes human life and spirit.</p>	
2. Bond	<ul style="list-style-type: none"> <li>• Understanding personal concepts of health and wellbeing, especially for people who face additional health challenges.</li> <li>• How healthcare systems and healthcare professionals can develop to support health and wellbeing.</li> </ul>	
3. Osselton, Liang and McGhee	<p>In the dynamic and fast-changing natural or social environments, we are exposed to a variety of pollutants, drugs, viruses and deadly pathogens. As the ages of our population are rising, so are degenerative diseases, such as cancer, cardiovascular and Alzheimer's diseases. Therefore, understanding those environmental impacts on human health and aging is paramount and becomes one of the top priorities in the vision of RCUK.</p> <p>Differences in genetic make-up between individuals and different populations make us respond differently to harmful agents including prescribed medicinal drugs, beneficial to some or detrimental to others. The desire to understand detailed mechanisms in order to provide better healthcare had been monumentally dispirited before we were able to reveal the detailed differences in our genomes. Ever since the completion of human genome sequencing in 2004, the advancement in genome sciences in conjunction with that of environmental sciences provides opportunities for substantiating the improvement of human health and wellbeing as well as management of healthcare of aging populations. Since the genomic sequences of many other important organisms have also been determined,</p>	

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	<p>comparative genomic studies between humans and amongst other organisms is currently the most powerful way to unravel the intricate interrelationships of human health and environment. In the post-genome era, this newer vision of biological sciences driven by the concept of systems biology is currently pursued internationally.</p> <p>With our expertise in molecular biology, human genetics, toxicology and analytical chemistry as well as some of the essential equipment, we can take advantage of functional genomics in order to drive the research theme in human health and wellbeing, and aging, in relation to environmental, social and cultural factors.</p>	

**Scope of theme: what is included:**

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1. Hartwell and Hemingway	<p>The cross university wellbeing theme currently with 113 staff registered has identified the following foci of activity:</p> <ul style="list-style-type: none"> <li>• Quality of life, wellness, wellbeing</li> <li>• Public Health</li> <li>• Health behaviours, physical activity, nutrition</li> <li>• Economic wellbeing</li> <li>• Health systems</li> <li>• Assistive and enabling technologies</li> <li>• Wellbeing in the workplace, learning environment, caring environment</li> <li>• Social inclusion and cohesion</li> <li>• Use of Media to influence Public Wellbeing</li> <li>• Emotions</li> <li>• Human right and ethics</li> </ul>	<p>Kirsty Stanley (HSC) - One addition to the scope that I would like to see would be to do with engagement in daily life (or occupations). Concepts such as occupational balance could be considered and, like Heather noted about the wellbeing 'set-point' this is not a simple divide of time equally between different responsibilities but will be individually measured.</p> <p>David Osselton, Wei-Jun Liang &amp; Kevin McGhee (ApSci) - Genomics is beginning to make significant inroads into the newly emerging area of personalised medicine where patients are now being considered as having individual polymorphic traits that will allow tailored treatment including, but not limited to, prediction of individual responses to drugs, drug efficacy, toxicity and side effects rather than the traditional generic approach to treatment where all patients are given the same treatment but success rates amongst individuals differ widely. The application of genomics can have a significant impact on society ranging from improvements in Healthcare provision e.g. the improvement of patient care, alleviation of suffering, reduction of the cost associated with ineffective prescribing; Economics – the cost of miss prescribing drugs and adverse drug interactions runs into millions of dollars per year; and Law and order with the emergence of a new field known as "Personalised Justice". There have recently been a number of successful lawsuits where the courts have ruled</p>

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		that individuals have suffered as a result of medical treatment that would not have been administered had the genetic profile of the individuals been determined prior to treatment. We are well placed to drive a number of projects in this area and would recommend that genomics be placed within the scope of Health and Well Being.
2. Bond	<ul style="list-style-type: none"> <li>• Concepts of health in people who have additional health needs</li> <li>• Health care professionals (education, development, ethics, attitudes, culture, power)</li> <li>• Experience of people with additional health needs (i.e. living with long term conditions and disability)</li> <li>• People's experiences of healthcare (systems, providers, treatments, care) – and using this to improve systems and care</li> <li>• 'New' technologies in health, such as use of the internet, web 2.0 etc by people to support their own health needs and self management,</li> </ul>	<p>Heather Hartwell (ST/HSC) and Ann Hemingway (HSC) - While the health and wellbeing of people with additional health needs is clearly very important as are health professionals, wellbeing encompasses a much broader church of disciplines and these should be acknowledged. As a university we have many strengths and the synergy this produces is powerful in itself. We are part of a much wider community and need to consider promoting wellbeing for the population.</p> <p>Kirsty Stanley (HSC) – Health and wellbeing should be considered for all populations. Wellbeing in particular is an important consideration in the lives of all and a focus on this could help reduce future long term disability and long term conditions, especially in relation to mental health.</p>
3. Osselton, Liang and McGhee	<p>Our current on-going research embraces the following areas:</p> <p><b>Pharmacogenomics</b></p> <ul style="list-style-type: none"> <li>• Molecular networks of integrin-linked mechanical signalling in relation to human heart disease – Bioimaging (in collaboration with Professor Jiang Jun Zhang of Media School and Professor Adrian Podoleanu of Kent University).</li> <li>• Impacts of SNP (genetic variations) on the toxicities of methadone amongst populations (in collaboration with Professor David Paunder of Dundee University).</li> <li>• Impacts of SNP (genetic variations) on the efficacy of morphine in patient pain management (collaboration with Tamas Hikish of Royal Bournemouth Hospital and Dr Joy Ross of Royal Marsden Hospital in London).</li> </ul> <p><b>Biodiversities and conservation</b></p> <ul style="list-style-type: none"> <li>• Evaluation and protection of local red squirrel populations in Dorset (in collaboration with Dr Kathy Hodder).</li> <li>• Evaluation and protection of local <i>Padina</i> species to exploit their</li> </ul>	

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	<p>economic potential (in collaboration with Dr Roger Herbert).</p> <ul style="list-style-type: none"> <li>• Molecular mechanisms of pheromone-communications of diverse species (in collaboration with Professor Rudy Gozlan).</li> <li>• DNA profiling for human and animal identifications in the fields of anthropology and archaeology.</li> </ul> <p><b><i>Our topics of interests in the immediate future:</i></b></p> <ul style="list-style-type: none"> <li>• Human vitamin C transport and its impact on human degenerative diseases, such as cardiovascular and Alzheimer's diseases.</li> <li>• Human detoxification pathways in relation to the glucuronidation and transport, and personalised medicine (in collaboration with Prof Stephen Wong of Wake Forest University, USA)</li> <li>• Molecular mechanisms of infectious disease (in collaboration with Professor Rudy Gozlan).</li> </ul>	

#### Scope of theme: what is excluded:

Author	Summary	Comments
1. Hartwell and Hemingway	Infectious diseases.	
2. Bond	Medicine / Development of clinical procedures (focus should be on better understanding the 'patient' experience and using this to improve care).	
3. Osselton, Liang and McGhee	Not sure.	

#### Which big societal questions are addressed by this theme?

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1. Hartwell and Hemingway	Behavioural and lifestyle factors are major contributors to ill health and death some are well known such as unhealthy diet and lack of exercise however some are less obvious such as social isolation which is associated with increasing the risk of mental illness and coronary heart disease. A strong evidence base is required that will	

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	<p>change the focus of our 'National Sickness Service' to one of prevention. In the Public Health White Paper, 2010, the emphasis is on research that can demonstrate new and cost effective ways of encouraging healthy behaviour.</p> <p>The current fifth wave of public health identifies three main challenges:</p> <ul style="list-style-type: none"> <li>• How can the social and commercial changes which have conspired to make overweight/obesity more 'normal' be reversed?</li> <li>• How can the social inequality gap be reduced?</li> <li>• How can the rise in the levels of depression and anxiety with the associated loss of mental and emotional wellbeing be addressed?</li> </ul>	
2. Bond	<ul style="list-style-type: none"> <li>• How can publicly funded healthcare systems (the NHS) cope with the increase in people living with long term conditions?</li> <li>• How can people be supported / encouraged to take more responsibility for managing their own health?</li> <li>• How can the NHS achieve its aims of creating a 'revolution for patients – "putting patients first" – giving people more information and control and greater choice about their care'?</li> </ul>	
3. Osselton, Liang and McGhee	<p>Humans are exposed to a variety of pollutants, drugs, viruses and deadly pathogens in the modern fast-changing environments. Degenerative diseases, such as cancer, cardiovascular and Alzheimer's diseases are often associated with aging. To effectively maintain human health and wellbeing, understanding those environmental impacts on human health and aging using the approaches of functional genomics and systems biology is paramount and becomes one of the top priorities in the vision of RCUK.</p>	

### How do these link to the priorities of the major funding bodies?

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1. Hartwell and Hemingway	<p><b>AHRC</b> – Lifelong Health and Wellbeing (LLHW) is a major cross-council initiative supporting multi-disciplinary research addressing factors across the life course that influence healthy ageing and wellbeing in later life.</p>	

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	<p><b>ESRC STRATEGIC PRIORITIES 2011-2015</b> – There are three refined primary strategic research objectives, which will guide future funding from the ESRC, in light of the comprehensive spending review – health and wellbeing would be incorporated within: Influencing Behaviour and Informing Interventions – Create a better understanding of how and why people and organisations make decisions, and how these can be managed or influenced.</p> <p><b>EU – FP7 Activity 2.2 Fork to farm: Food (including seafood),</b> health and well being – Understanding consumer behaviour and consumer preferences as a major factor in the competitiveness of the food industry and the impact of food on the health, and well-being of the European citizen.</p> <p><b>National Institute of Health Research (NIHR)</b> Funding stream on applied research focusing on dementia prevention, diagnosis and care and specifically on promoting the wellbeing of sufferers</p>	
2. Bond	Not stated.	
3. Osselton, Liang and McGhee	<p>Health and well being is one of the most important research areas funded by some of the CRUK, namely, the BBSRC, the Wellcome Trust, the MRC, the Royal Society, from which we could sort future funding.</p> <p>Our proposed research theme fits very well to the <u>underlined</u> strategic research priorities of the Two Current Research Priority Themes of the MRC:</p> <ul style="list-style-type: none"> <li>• <b>Resilience, repair and replacement</b> (<i>Natural protection, Tissue disease and degeneration, Mental health and wellbeing, and Repair and replacement</i>).</li> <li>• <b>Living a long and healthy life</b> (<i>Genetics and disease, Life course perspective, Lifestyles affecting health, Environment and health</i>).</li> </ul> <p>As highlighted by the BBSRC, systems biology is the pivotal approach for addressing issues in human health, aging and diseases. It is an effective way forward to study human health in the aspects of epidemiology, such as parasites, virus, and infectious disease. Our research theme also fits well to strategic research priorities of the</p>	

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	<p>BBSRC, in exploiting new ways of working were outline as:</p> <ul style="list-style-type: none"> <li>• Data driven biology</li> <li>• Synthetic biology</li> <li>• Systems approaches to the biosciences</li> <li>• Technology development for the biosciences</li> </ul> <p>Our research theme also fits <i>well to The Cross-Council Priorities</i> outlined by the BBSRC:</p> <ul style="list-style-type: none"> <li>• <i>Ageing research: lifelong health and wellbeing.</i></li> <li>• <i>Global uncertainties.</i></li> <li>• <i>Living with environmental change.</i></li> </ul> <p>The Wellcome Trust also focuses on health and wellbeing associated with functional genomics. The Royal Society promotes international collaborations, and is encouraging collaborative studies on human health, wellbeing and aging impacted by population single nucleotide polymorphisms (SNPs) coincided with human life style and different ethnicities in the diverse living environments.</p> <p>To follow the strategies outlined by RCUK in promoting 3Rs (Replacement, Refinement and Reduction of Animals in Research), we propose to use the cost-effective and well characterised model organisms, fruit-fly and zebra fish to study the molecular mechanisms in conjunction with survey data from human subjects. The genome information of those model organisms is known and the organisms are amendable to genetic defects and molecular manipulations. Moreover, at least 75% of human disease genes have their counterparts in their genomes.</p>	

**How does this theme interlink with the other BU themes currently under consideration:**

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1. Hartwell and Hemingway	<p>This theme will link with:</p> <ul style="list-style-type: none"> <li>• recreation and leisure (serious leisure and physical activity)</li> <li>• society and social change</li> <li>• green economy (slow travel)</li> <li>• aging</li> </ul>	Richard Shipway (ST) - It's interesting that a leading Sports University, Brunel, have just launched a new research centre called 'Brunel Centre for Sport Health and Wellbeing'. Perhaps this also serves to reinforce the strong links between some of the BU proposed themes, and opens up an interesting debate about where sport,

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	<p>Currently, there is much interest from local and national colleagues, for example locally, Dr Adrian Dawson (Director of Public Health) and social enterprises such as BH Live and Active Dorset. Nationally, the Department of Health and the Royal Society for Public Health are engaged with the HEIF Wellbeing in the Workforce project. A horizontal wellbeing theme links the relationship between research and policy and hence provides an opportunity to demonstrate impact.</p> <p>Key dates are:</p> <ul style="list-style-type: none"> <li>• May 27<sup>th</sup> (cross university meeting with the Director of Public Health)</li> <li>• July 6<sup>th</sup> (Innovation in Wellbeing Conference, HEIF Wellbeing in the Workplace project)</li> <li>• July 13<sup>th</sup> (cross university meeting with BH Live)</li> </ul> <p>In addition, this theme will build on the work of CeWQoL, with its many local, national and international partners, and is a vertical stream within HSC, as it is within the School of Tourism through the Centre for Events and Sport Research.</p> <p>Just to note:</p> <ul style="list-style-type: none"> <li>• BU has a Memorandum of Understanding with the Royal Society for Public Health, a powerful and strategic leader within this discipline.</li> <li>• BU is part of the Healthy University network.</li> </ul>	<p>leisure, recreation should be positioned?</p>
2. Bond	<p>If the theme is Society &amp; Social Change rather than Culture and Society I can see a link with this theme in the area of changing public expectations of health services and society's attitudes towards health (e.g. disability, body image, mental health) and the way that society impacts on personal health and wellbeing. There are also links with Aging, as a lot of people experience new health challenges along with the aging process.</p>	
3. Osselton, Liang and McGhee	<p>Our research theme is complementary to the existing research in HSC and will be of interest to local hospitals and communities. Although a small team, we have the expertise in molecular biology, toxicology, and analytical chemistry with some of the essential</p>	

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	<p>equipment. Our current research orientations already fit well with the remit of our university research and enterprise strategies. We certainly would like to contribute to the existing theme of research orientations, particularly, health and well being, aging, environmental sciences, and social and cultural sciences within the university. Our expertise will enable us to form close link with the existing research groups that have already formed critical mass, particularly in the ApSci and HSC.</p> <p>Through our research, we have already formed strong links with the Media School of BU and Physics Department in the University of Kent for bioimaging and biomodelling. We have already submitted a strong interdisciplinary research proposal to the MRC, addressing the impacts of genome on heart diseases. We will maintain this collaborative consortium and continuously formulate research proposals to address issues involved in human health and wellbeing. We have also established strong links with Dr Helen Machitia of Glasgow University, Joy Gill of Imperial College School of Medicine for collaborative research in science and society.</p> <p>Since we already have the expertise and facilities in fish studies in the School of Applied Sciences, it is logical and efficient to use the well characterised model organism, zebra fish to address questions in human health, fish conservation and environment issues.</p>	

**Further comments from interested academics, groups and/or Schools:**

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