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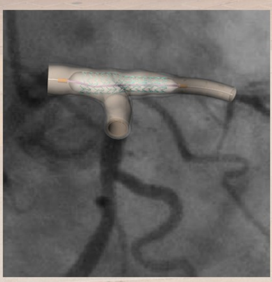
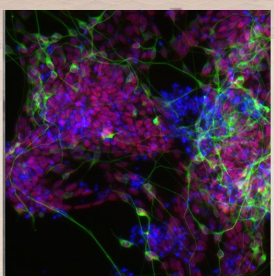
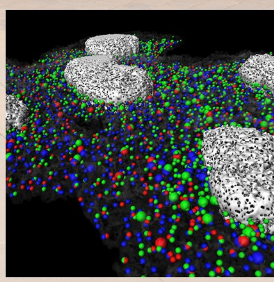
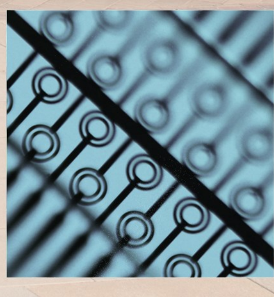
UNIVERSITY OF
Southampton

Central South Life Sciences.
A Solent Perspective

Institute

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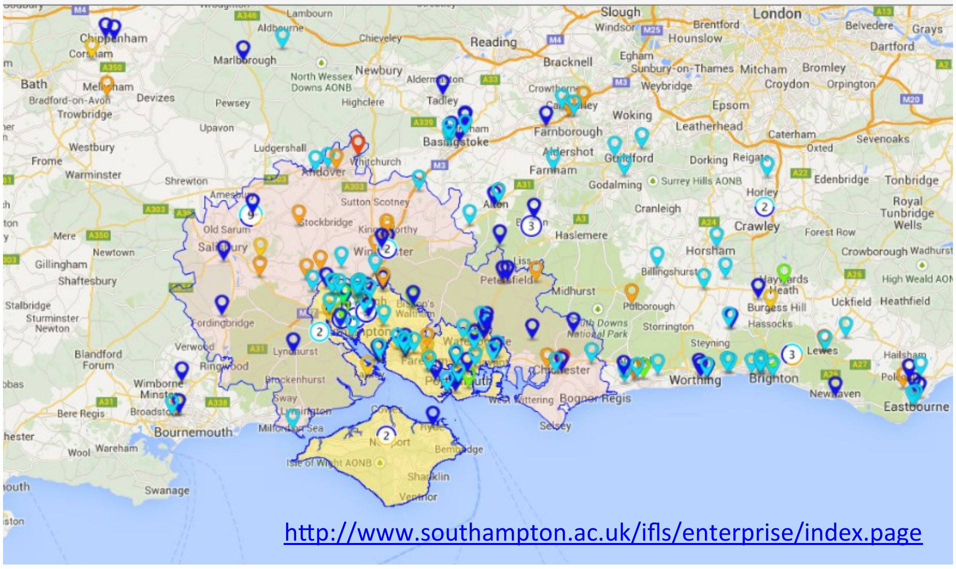
Central South Life Sciences—A Solent Perspective

Acknowledged in the Government Strategy for UK Life Sciences [1, 2], the UK has led the world in life sciences research and enterprise for over 40 years. We are now entering an 'Age of Life Sciences' where three primary societal concerns – Food, Fuel and Health – lie within its domain. Britain has much to contribute. Despite this, and despite apparent regional strengths, Life Sciences have not featured in the regional growth strategy for the Solent and South Central regions. Why? We would propose two obvious answers; the success and dominance of the marine and maritime sector but, also, a lack of information on the life sciences activities in the region itself. This is despite the clear impact of this sector in the Oxford and London catchments. Recognising that the marine sector is now a mature and world class enterprise for the Solent, that regional growth initiatives will become a better funded part of local government activities in the future, and the belief that life sciences within the Solent region and surrounds can provide new quality jobs and revenue, this project set about quantifying the current activity and potential for growth. We have concluded that unique strengths do exist and can be grown, particularly around healthcare, health technologies and data management.

Life Sciences Small and Medium-sized Enterprises (SMEs) are an important component of the Solent economy and include 97 companies concentrated within the domain of the Solent LEP. This region is bordered by a catchment that contains, minimally, another 50 companies including those at Porton and through to Chichester harbour. The wider Wessex region, extending in a broad band from Swindon in the north, through Salisbury, Winchester, Southampton, Portsmouth to the Brighton area in the east and including inland areas such as Basingstoke and the South Downs, contains approximately 250 companies and organisations. The Solent region is the dominant player.

Within the Solent region over 90% of the companies surveyed have an active research and development programme. 36% are connected to the University of Southampton and 10 companies are derived from the University itself. All companies responding found overlap with the Life Sciences challenges currently managed by the IfLS (**Appendix**) and in line with the UK Government's perceptions of national challenges and strengths – these areas are; New Pathways to Health, Life Technologies, Global Change and the Human Nexus (a.k.a. Data). We have identified clear strengths in the area of medical technology (36 Solent LEP companies), including information and communication technologies (ICT)/eHealth and telehealth (7), ophthalmic devices and production (5), as well as diagnostic and analytical equipment (4). Importantly, the strengths in life sciences mirror the regional strengths in material, engineering and physical sciences, distinguishing our activities from the nearby cluster in Oxford (**Table**).

Interactive map of life sciences enterprise in the Solent region created by OBN.



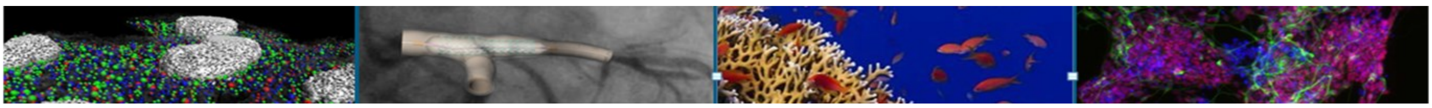
Companies within the Solent LEP area were mapped using a database of 31,230 postcodes, supplied by Hampshire County Council. The shape map used to illustrate the Solent LEP area was processed by eSpatial. Companies and organisations within the database are designated as belonging to Solent LEP (yellow shaded area), Extended Solent (pink) or extending into Sussex, Wiltshire and Dorset.

97 Life science SMEs in the Solent LEP region

36% have connections to University of Southampton

Smart specialisations:

- Opthalmology, materials and optics
- Orthopaedics, prosthetics and assistive technology
- Sensors, devices, nanotechnology and fluidics
- Information technology, data and web science



Further regional power exists in the integration of academic and enterprise activities around orthopaedics, prosthetics, rehabilitation technologies and care, as well as in complex and mixed data set integration. Since 2010 the Solent LEP region has seen the creation of 20 new small and medium sized life science companies and, within the 64% of the total SME life sciences activity for the Solent where data is available, have provided 4,236 jobs. [This does not include organisational employers in the Life Sciences – such as Higher Education Institutions and Hospital Trusts – major employers in the region]. As this activity has developed rather 'in the shadows' we are confident that incorporation within a Solent strategic plan and with attention to building a life sciences network, along with selective support mechanisms and moderate investment, this growth can be continued and accelerated.

Opportunities

We believe a number of opportunities exist to promote innovation, employment and skills growth in the Solent Life Sciences sector. Based on the overlap between existing enterprise activity, and areas of research excellence and critical mass within the region, we propose that the following areas are developed as 'Smart Specialisations':

- Ophthalmology, materials and optics
- Orthopaedics, prosthetics and assistive technologies
- Sensors, devices, nanotechnology and fluidics
- Information technology, data and web sciences

This could be achieved in a number of ways.

Continue Market Research and Build Better Links

- Follow-up study to further understand the value of the sector
- Strengthen enterprise liaison and engagement
- Develop a coherent business plan, as already carried out for Wiltshire
- Link in with other LEPs and Councils

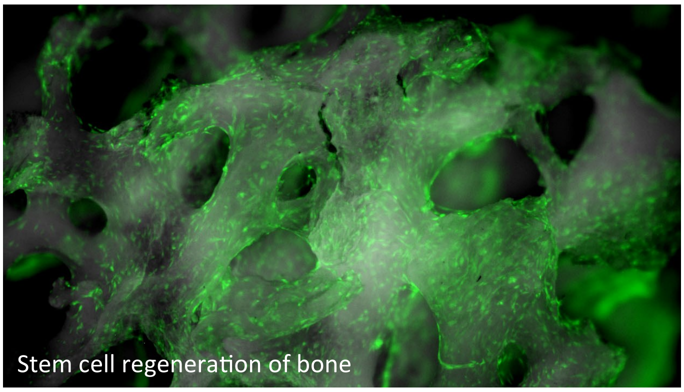
Pathways to Collaboration and Enterprise Support

- Support HEI and Enterprise engagement through knowledge transfer and facility support, e.g. for equipment sharing initiatives
- Develop our Smart Specialisations as regional opportunities
- Stimulate growth through local investment in the enterprise-NHS pipeline – work with the AHSN
- Explore EU opportunities from a strong, knowledge-based foundation
- Targeted support for new business creation; attract new companies

Aim High with an Innovation Hub

- Bring together all regional stakeholders to develop an innovation hub covering orthopaedics, rehabilitation, assistive technology and prosthetics.

These proposals have been influenced by the views gathered during this survey and our discussions with regional stakeholders. The Institute for Life Sciences (IfLS) at the University of Southampton is engaged with a scoping exercise into the enterprise activities in the life sciences for South Central England with a primary focus on the Solent LEP region. We are grateful to the Solent LEP and the Wessex Academic Health Science Network (WAHSN) for funding this project and to OBN for its execution. OBN is a membership organisation supporting and bringing together the UK's emerging life sciences companies, corporate partners and investors. The IfLS contracted OBN as a neutral partner, removing any regional or professional bias in assessing the enterprise activity, its uniqueness, and overlap with regional strengths. Data have been provided to the project by Southampton City Council, Portsmouth City Council, Hampshire County Council, the University of Southampton and the WAHSN. As such we are confident with the outcomes and are enthused by the opportunities that lie before us.


Stem cell regeneration of bone

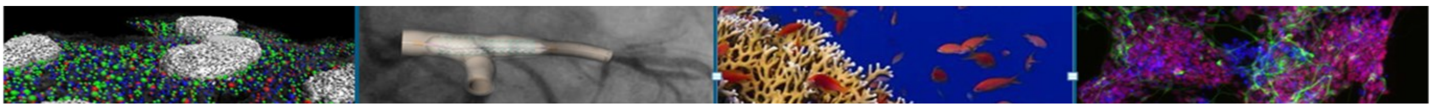

Intelligent prosthetic liner


Stroke rehabilitation

References

1. Strategy for UK Life Sciences. Department of Business, Innovation and Skills, 5 December 2011

2. Strategy for UK Life Sciences: One Year On. Department of Business, Innovation and Skills, 10 December 2012

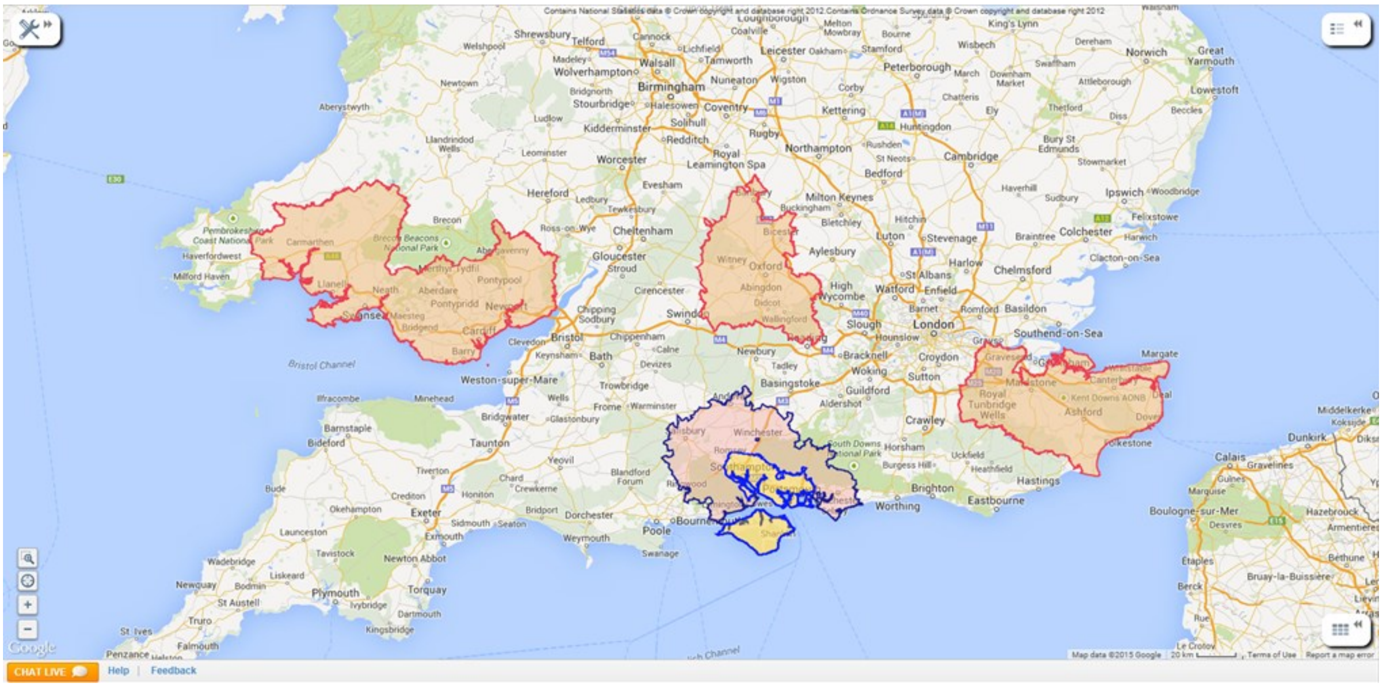


Comparison of Solent with other areas in the UK.

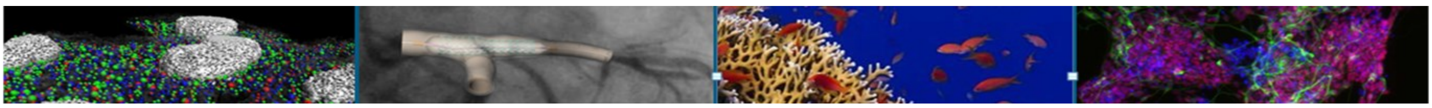
Sector	Solent	Extended Solent	Wessex	Kent	Wales	Oxford
Academic Institution	4	4	4			3
Agriculture	0	2	2	1		
Contract Manufacturing Organisation	**0**	**0**	**6**	**9**	**7**	**4**
Consultancy	**5**	**16**	**23**	**16**	**4**	**33**
Contract Research Organisation	**11**	**14**	**17**	**22**	**15**	**22**
Engineering & Materials	17	18	19			
Governmental & Non-governmental	6	9	9	3		10
Healthcare	3	3	6			7
Industrial & other biotechnology	**2**	**2**	**3**	**8**	**17**	**4**
Information Technology	5	5	5			
Medtech	**36**	**51**	**92**	**68**	**115**	**84**
Research & Development support	**8**	**13**	**24**	**16**	**7**	**31**
Therapeutic Discovery & Development	**9**	**15**	**31**	**14**	**9**	**42**
Other	1	1	1			
TOTAL	**107**	**153**	**242**	**157**	**174**	**240**

The data presented above are derived from work carried out by OBN as follows: southern Wales (Feb 2012), Kent (Feb 2013), Oxford postcode region (Autumn 2014). Core areas for which the data are more uniform across the different regions are highlighted in blue. Where cells are empty data are not available e.g. in the work carried out for Kent and Wales, academic institutions did not form part of the analysis and no data about these were gathered.

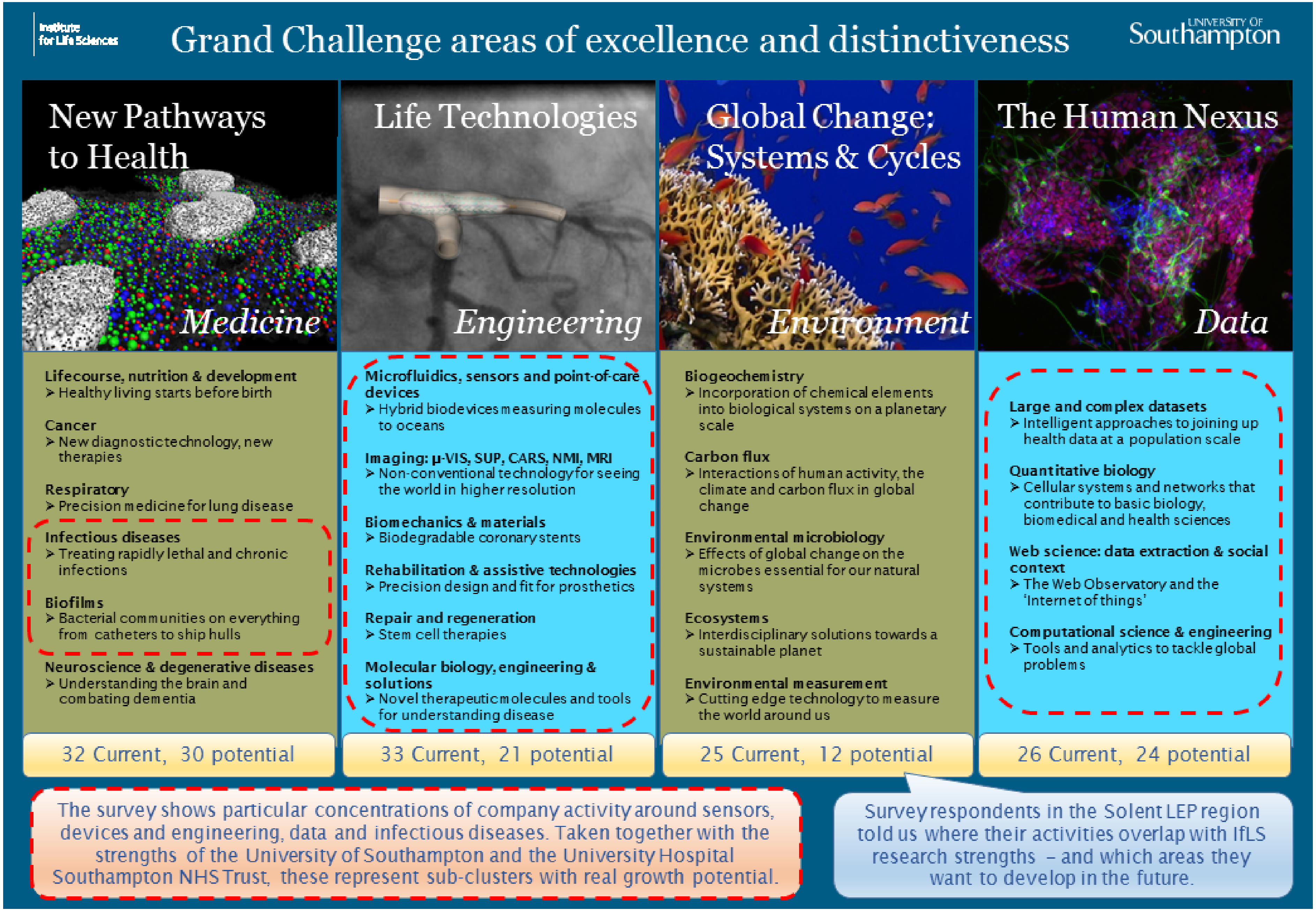
The south Wales, Oxford and Kent comparator regions.

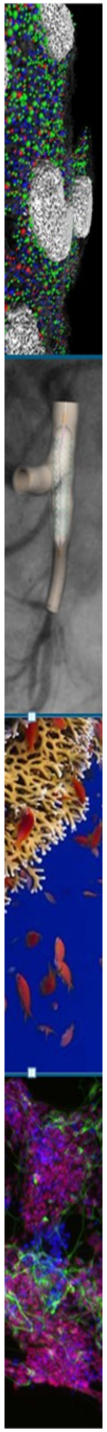


The regions bordered in red (South Wales, Oxfordshire and Kent) have been surveyed by OBN and provide the comparison data in the **Table.**



Appendix


Institute for Life Sciences
Grand Challenge areas of excellence and distinctiveness
University of Southampton
New Pathways to Health
Medicine
Life Technologies
Engineering
Global Change: Systems & Cycles
Environment
The Human Nexus
Data
Lifecourse, nutrition & development
➢ Healthy living starts before birth
Cancer
➢ New diagnostic technology, new therapies
Respiratory
➢ Precision medicine for lung disease
Infectious diseases
➢ Treating rapidly lethal and chronic infections
Biofilms
➢ Bacterial communities on everything from catheters to ship hulls
Neuroscience & degenerative diseases
➢ Understanding the brain and combating dementia
Microfluidics, sensors and point-of-care devices
➢ Hybrid biodevices measuring molecules to oceans
Imaging: μ-VIS, SUP, CARS, NMI, MRI
➢ Non-conventional technology for seeing the world in higher resolution
Biomechanics & materials
➢ Biodegradable coronary stents
Rehabilitation & assistive technologies
➢ Precision design and fit for prosthetics
Repair and regeneration
➢ Stem cell therapies
Molecular biology, engineering & solutions
➢ Novel therapeutic molecules and tools for understanding disease
Biogeochemistry
➢ Incorporation of chemical elements into biological systems on a planetary scale
Carbon flux
➢ Interactions of human activity, the climate and carbon flux in global change
Environmental microbiology
➢ Effects of global change on the microbes essential for our natural systems
Ecosystems
➢ Interdisciplinary solutions towards a sustainable planet
Environmental measurement
➢ Cutting edge technology to measure the world around us
Large and complex datasets
➢ Intelligent approaches to joining up health data at a population scale
Quantitative biology
➢ Cellular systems and networks that contribute to basic biology, biomedical and health sciences
Web science: data extraction & social context
➢ The Web Observatory and the 'Internet of things'
Computational science & engineering
➢ Tools and analytics to tackle global problems
32 Current, 30 potential
33 Current, 21 potential
25 Current, 12 potential
26 Current, 24 potential
The survey shows particular concentrations of company activity around sensors, devices and engineering, data and infectious diseases. Taken together with the strengths of the University of Southampton and the University Hospital Southampton NHS Trust, these represent sub-clusters with real growth potential.
Survey respondents in the Solent LEP region told us where their activities overlap with IfLS research strengths – and which areas they want to develop in the future.



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