

# University of Southampton Neuroscience Group



Neuroscience impacts on an extraordinarily diverse range of problems facing society, from ageing and dementia through to pest control. The Southampton Neurosciences Group (SoNG) is engaging with stakeholders to translate scientific advances into societal benefit.

Two important challenges face researchers in bioscience today: How to translate advances in basic science into societal benefit and how to convey the importance, and value of publicly funded research to the wider community.

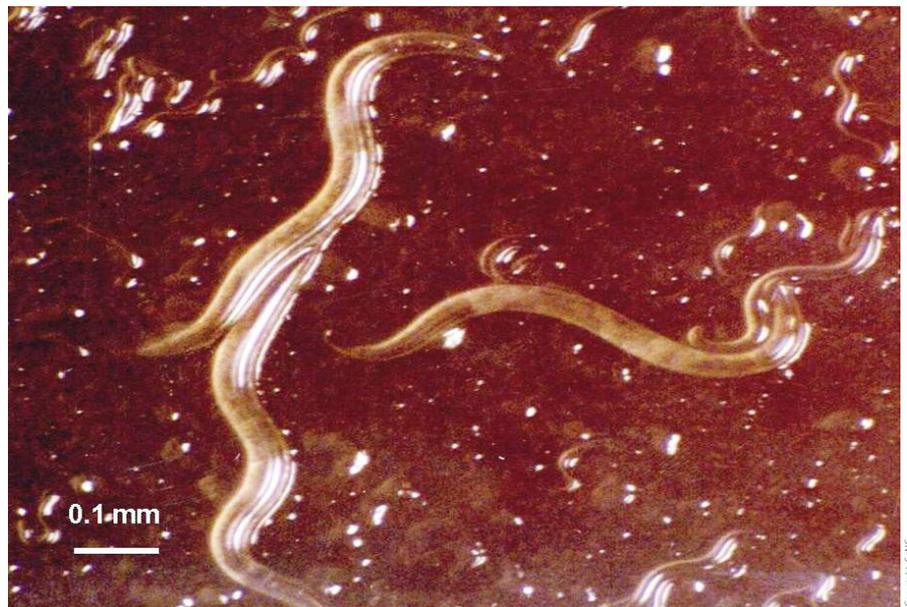
Neuroscientists at the University of Southampton have addressed this challenge by establishing a University wide network (SoNG) which provides a platform for effectively engaging with stakeholders and the local community. In 2009 this was extended to proactively engage early career neuroscience researchers in implementing these goals.

## Delivering Impact

An early career researcher network (ECnR) was established in recognition of the importance of inspiring the next generation of scientists to understand and value the societal context of their research. Led by the Southampton Neurosciences Group ([www.southampton.ac.uk/song](http://www.southampton.ac.uk/song)), a multidisciplinary steering group of ECnRs drawn from Biological Sciences, Clinical Neurosciences, Psychology, Health Sciences and Engineering has driven the impact agenda. It has organised training in translational aspects of neuroscience and opportunities for novel science/art projects with Winchester School of Art. In 2011 it now engages more than 100 postdoctoral and postgraduate scientists across a range of disciplines, in activities which enhance personal development and at the same time provide a focus for developing excellence, impact and outreach in neuroscience research.

Annual events incorporating Science Week, a Careers and Enterprise Day, SoNG Annual Meeting and an Annual Outreach Workshop will continue to promote enterprise and outreach in the early career researchers. Winchester School of Art has linked their undergraduate degree programme with SoNG to deliver neuroscience inspired art and fashion. Dr Shmma Quraisha (School of Biological Sciences) comments:

*"I now have an open mind as to the ways in which research can be disseminated. Our understanding of complex systems can be so beautifully and powerfully portrayed by visual graphic art: this art in turn can stimulate conversations and raise awareness of the value of neuroscience research."*

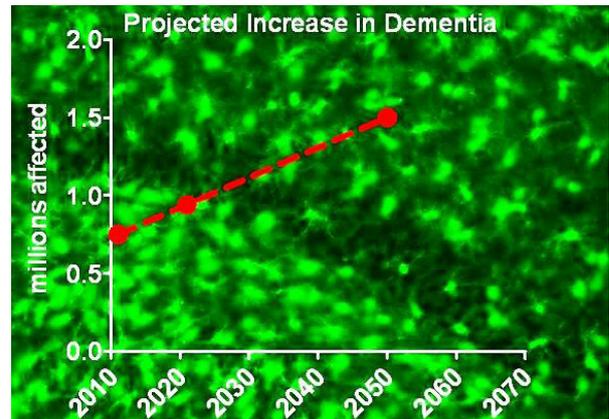


Fighting back against pests: SoNG neuroscientists have collaborated with industry for the last 20 years to provide safer chemicals for controlling invertebrate pests which damage crops and livestock. Pictured: the nematode *C. elegans*, a laboratory model for understanding invertebrate nervous systems.

## Understanding healthy ageing of the brain

BBSRC funded neuroscientists in collaboration with clinical neuroscientists, have revealed an important link between common infections, such as a cold, stomach bug or urine infection and an increase in inflammation-like reactions in the diseased brain which accelerates the rate of cognitive decline. This has led to the recommendation that people with Alzheimer's disease who develop an infection need to be treated as soon as possible to prevent it worsening their dementia.

The potential for delaying the progression of dementia has huge implications for quality of life in these patients and for health care costs, which currently stand at £23b year.



We have identified a fundamental link between brain microglia (imaged in the background) infections and cognitive ability. This provides new insight into dementia, a disease of the elderly predicted to double in incidence by 2050.

## Alcohol; a simple worm to unpick a complex problem

Alcohol use and abuse cost the UK an estimated £20b annually. Central to alcohol dependency is the cycle of intoxication and withdrawal which can be relieved by a further drink. Unpicking the brain mechanisms that underpin these alcohol-induced behavioural states can be facilitated by fundamental biological research. To this end, SoNG scientists have deployed the powerful genetics available for the simple nematode *C. elegans* and induced intoxication and withdrawal in this animal in order to define molecular determinants of alcohol's neuractive properties. This contributes to the science base to improve understanding of a significant cultural problem in society.



Alcohol is a drug: The image shows ethanol (alcohol) in a distillation flask. BBSRC funded scientists investigating ethanol's effects on nerve circuits are linked to psychiatrists specialising in the treatment of alcohol dependency, and those involved in public education and policy through the Wessex Alcohol Research Collaborative (<http://www.southampton.ac.uk/warc>)

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