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**Assessment Framework  
Report Summary**

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**2009/10**

# Assessment Framework Report Summary 2009/10

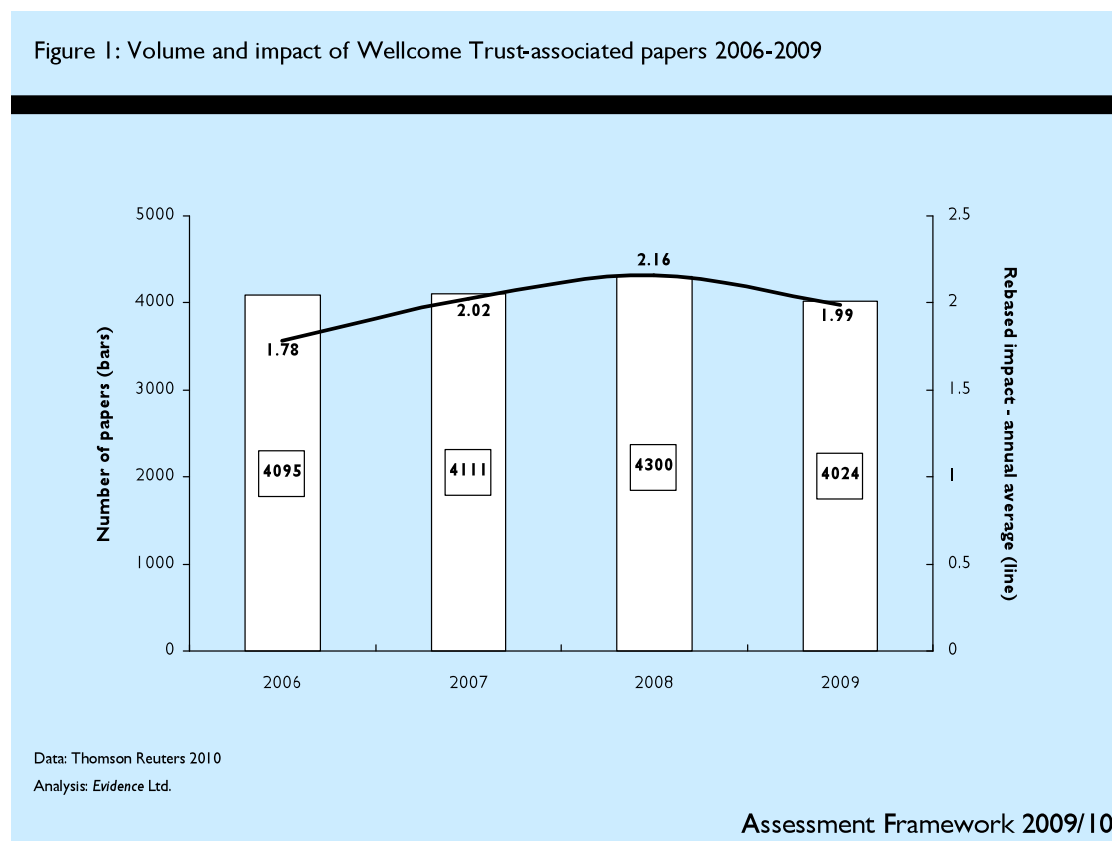
## Background

1. The Assessment Framework Report outlines the Wellcome Trust's achievements in relation to its new Strategic Plan for 2010–20, *Extraordinary Opportunities*. The Strategic Plan outlines six outcome measures and 12 indicators of progress, which we report against annually.
2. The Report contains quantitative and qualitative information that reflects the breadth and complexity of the impacts associated with Wellcome Trust funding support. Outputs and achievements associated with Trust activities predominate in the Report, although some new initiatives are included where these are considered to be key achievements. This summary provides highlights from the full Report.
3. Unless otherwise stated, **all data refer to outputs and achievements arising and reported during the Trust's financial year: 1 October 2009 to 30 September 2010.**
4. The Wellcome Trust's Assessment Framework Report will continue to be developed to help the Trust better track and understand the outputs and impacts of our funding and activities.

## 1. Discoveries

### 1.1 Significant advances in the generation of new knowledge and understanding

- For the 2009 calendar year, 4024 research papers associated with the Wellcome Trust were indexed on PubMed and appeared on Thomson Reuters databases. (This compares to 4300 papers in 2008, 4111 papers in 2007 and 4095 papers in 2006; see Figure 1.)



- These papers were spread across 118 of the 253 different research fields identified by Thomson Reuters; papers most commonly featured in *Biochemistry & Molecular Biology* (n = 563 papers, 14%).
- By the end of the 2009 calendar year, Trust-associated papers were performing well in terms of their citation impact. The average rebased impact (RBI) – a citation impact that takes account of the research field and year of publication – of the complete cohort of papers was 1.99.<sup>1</sup> This is nearly double the world average RBI of 1.00, but down slightly on the average RBI of 2.16<sup>2</sup> for Trust-associated papers published in 2008.
- Trust-associated papers in *Genetics & Heredity* performed particularly well against the international average paper in their research field in 2009, with an average RBI of 2.98.
- In 2007, the Trust introduced a system whereby all end-of-grant reports are reviewed by qualified staff to provide an indication of the overall ‘quality’ of the outputs associated with grants at a fixed point in time. Of the end-of-grant reports received and reviewed by the Trust between 1 October 2009 and 30 September 2010, 16% were rated as excellent/outstanding, 43% as good, 34% as satisfactory and 6% as poor.

<sup>1</sup> Data: Thomson Reuters, 2010; Analysis Evidence Ltd.

<sup>2</sup> Citation impact can change significantly over time – the 2008 cohort had an average RBI of 1.83 at the end of the 2008 calendar year, below the 2007 level it now exceeds – so the RBI for 2009 is also likely to change.

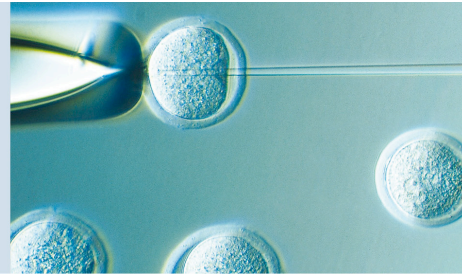
## 1.2 contributions to discoveries with tangible impacts on health

- A number of research projects supported by the Trust have delivered tangible impacts on health in 2009/10. For example, a study in *Behaviour Research and Therapy* by Professor Mark Williams, a Wellcome Trust Principal Research Fellow based at the University of Oxford, has demonstrated preliminary evidence that Mindfulness-Based Cognitive Therapy (MBCT) can be used to reduce symptoms in people with long-term depression.
- Professor Anita Thapar's laboratory at Cardiff University School of Medicine has provided the first direct evidence that attention deficit hyperactivity disorder (ADHD) can have a genetic component. Children with ADHD were more likely to have small segments of their DNA duplicated or missing than other children.
- Dr Matt Cottingham and researchers from the University of Oxford and Nova Bio-Pharma Technologies have developed a simple way of heat-stabilising vaccines and demonstrated its success for two viruses. This research is being used as the basis for novel vaccines in development.

Dr Mary Herbert  
Professor Doug Turnbull

### TRANSFERRING DNA BETWEEN TWO HUMAN EGGS TO PREVENT MITOCHONDRIAL DISEASE

- For the first time, scientists have successfully transferred DNA between two human eggs without transferring the mitochondria.
- This pioneering technique could help prevent transmission of devastating inherited mitochondrial disorders, and enable affected families to have healthy children.



Jenny Nichols/Wellcome Images

## 2. Applications of research

### 2.1 Contributions to the development of enabling technologies, products and devices

- Of the Wellcome Trust grants ending in 2009/10, 4% reported filing a patent associated with their research and 13% reported engaging with commercial collaborators during their research.
- As a result of Trust-funded projects, our investigators secured £107 million in additional venture capital finance to support the commercialisation of their R&D during 2009/10.
- In addition, the Trust consented to the commercial exploitation of intellectual property arising from the research it has sponsored in 15 new areas during 2009/10, and 12 new projects have been licensed successfully to industry partners for their ongoing development and commercialisation.
- During 2009/10, 17 inventions arose from Wellcome Trust Translation Awards, compared to seven in the previous year.

### 2.2 Uptake of research into policy and practice

- Overall, nearly one-third (30%) of Wellcome Trust grants ending during 2009/10 reported engagement with policy makers and healthcare professionals. As in previous years, grants supporting 'Populations and Public Health' research were most likely to have engaged with policy makers and health professionals, both during and as a result of their research (67%).
- Wellcome Trust-funded research has had a range of impacts upon policy and practice in 2009/10. For example:
  - The research findings of the Wellcome Trust's Major Overseas Programme in Vietnam played a central part in shaping the changes to the World Health Organization's new guidelines for the diagnosis, treatment, prevention and control of dengue fever.<sup>3</sup>
  - Professor Vikram Patel and colleagues investigated the impact of a community-based rehabilitation programme for people with psychotic disorders in rural India. The researchers concluded that community-based rehabilitation is a feasible and acceptable intervention with a beneficial impact on disability for the majority of people with psychotic disorders in low-resource settings.

Professor Anthony Costello

#### WOMEN'S SUPPORT GROUPS IN INDIA MAY IMPROVE NEONATAL SURVIVAL RATES

- Women's community groups may offer a cost-effective way of reducing neonatal mortality in certain settings.
- Added benefits for mothers include access to a wide support network, personal empowerment, improved decision-making and reduced depression.



Freemjam/Flickr

<sup>3</sup> [whqlibdoc.who.int/publications/2009/9789241547871\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241547871_eng.pdf)

### 3. Engagement

#### 3.1 Enhanced level of informed debate on biomedical science issues

- Overall, 26% of Trust grants ending during 2009/10 reported some media coverage associated with their research.
- The report of the first full survey of the Wellcome Monitor<sup>4</sup> was published in March 2010. This is a survey of UK adults' and young people's views of medical research that seeks to develop a systematic approach to describing and understanding trends in public interest, knowledge and attitudes towards medical research and its associated advances and applications. Key findings include:
  - Evidence of an overwhelmingly positive attitude towards medical research among the general public. Almost all respondents (95% of adults; 93% of young people) thought that medical research should be supported and encouraged, even if this involves the investment of public monies. Support was particularly strong for clinical research.
  - Young people are engaged with science education: 81% of young people find science lessons interesting, with nearly a quarter describing them as very interesting.
  - Young people look favourably at science as a possible career choice: 44% said they were interested in pursuing a career in science, with medicine, forensic science and engineering being the most popular choices.

#### 3.2 Significant engagement of key audiences in biomedical science, and increased audience reach

- Wellcome Collection achieved more than 410 000 visits, a 22% increase on the previous year. The *Skin* exhibition (10 June–26 September 2010) was the most visited temporary exhibition since the venue opened in 2007, with just over 84 000 visits.
- The Identity Project – a nine-month season of activity – included a major exhibition and diverse events presented in Wellcome Collection, plus exhibitions, performances and films at other venues across the UK. As part of the Project, Wellcome Collection staged its first performance/gig/installation: *Pressure Drop*, a drama of passion and prejudice that saw theatre-makers On Theatre joining forces with singer-songwriter Billy Bragg to explore English identity and loyalty. *Pressure Drop* took the audience to the heart of one family's struggle to define home, and gave a passionate account of what it is to be English today.
- Just over two-fifths (41%) of Trust grants ending during 2009/10 reported presenting their work to non-academic audiences and 37% to research participants and related communities.

Mark Storer

#### FOR THE BEST – CHILDREN'S EXPERIENCE OF DIALYSIS

- Over 100 children took part in an innovative, dynamic participatory process – involving challenges and creative expression – to develop and perform a play based on their experience of dialysis at the Evelina Children's Hospital in London.
- It won a national award, a five-star rating in the *Guardian*, and prompted an invitation from Culture Liverpool to develop a new play.



Andrew Whittuck

<sup>4</sup> [www.wellcome.ac.uk/About-us/Publications/Reports/Public-engagement/wtx058859.htm](http://www.wellcome.ac.uk/About-us/Publications/Reports/Public-engagement/wtx058859.htm)

## 4. Research leaders

### 4.1 Development of a cadre of research leaders

### 4.2 Evidence of significant career progression among those we support

- In the *Times Eureka* 'Top 100', a list of the most influential people in contemporary British science, just over a quarter (n = 28) of those listed had either current or previous associations with the Trust, including Sir Paul Nurse (Director of the UKCMRI) placed first, Sir Mark Walport (second), Sir John Sulston (sixth), Dame Kay Davies (29th) and Professor Mike Stratton (36th).
- Based on publication output over the last decade (January 2000–10):<sup>5</sup>
  - Four of the top ten most highly cited researchers in the field of *Neuroscience & Behaviour* have received major amounts of Trust funding in recent years; Professor Ray Dolan, Director of the Wellcome Trust Centre for Neuroimaging, and Professor Trevor Robbins, Head of the Department of Experimental Psychology at the University of Cambridge, were placed first and second respectively.
  - Dr Julian Parkhill and Dr Michael Quail, two of the top ten most highly cited researchers in the field of *Microbiology*, have received major funding from the Trust.
- Researchers who have received a significant amount of Wellcome Trust funding in recent years have been awarded a range of high profile prizes during 2009/10, including:
  - Dr Venki Ramakrishnan, a structural biologist at the Cambridge Laboratory of Molecular Biology, was awarded the 2009 Nobel Prize in Chemistry for mapping the structure of the ribosome to the atomic level using X-ray crystallography. Dr Ramakrishnan was awarded a programme grant from the Wellcome Trust in 2007 to build on his earlier crystallography research.
  - Professor Nick White, Chairman of the Wellcome Trust South-east Asia Clinical Research Network, and Professor Peter Ratcliffe, Head of the Nuffield Department of Clinical Medicine at the University of Oxford, both received Canada Gairdner Awards.
  - Professor Sir David Weatherall, former Trust Governor, was awarded the Lasker–Koshland Special Achievement Award in Medical Science.
  - *Troubled Minds*, an acclaimed series of short animated documentaries by Mosaic Films, won a BAFTA in November 2009 in addition to winning the Royal Television Society Education Award in the 14–19 Year Old category in June 2009.
  - *The English Surgeon* has been awarded numerous accolades over the last two years, including the Outstanding Science and Technology Programming category at the 31st Annual News & Documentary Emmy Awards in September 2010 from the National Academy of Television Arts and Sciences.

Professor  
Ray Dolan

#### HUMAN EMOTION AND ITS INFLUENCE ON COGNITION

- Studies of neurobehaviour, in particular using computational fMRI, have transformed our understanding of decision-making in the brain, and how this is influenced by emotion.
- Professor Dolan's work has particular implications for the understanding and treatment of brain disorders such as Parkinson's disease and depression.



Wellcome Images

<sup>5</sup> Source: Thomson Reuters Essential Science Indicators (Thomson Scientific); 2010.

## 5. Research environment

### 5.1 Key contributions to the creation, development and maintenance of major research resources

- 8% of grants ending during 2009/10 reported the production of software and/or databases during their research, a similar proportion to previous years.
- In 2009/10 2706 researchers from academia and industry used Diamond Light Source, reporting a high level of user satisfaction. In the last two years, 434 papers using results obtained at Diamond have been published, and 270 structures have been deposited in the Protein Data Bank.
- Since 2004, the Structural Genomics Consortium has applied high-throughput techniques to unravel the structures of proteins of medical relevance and make these available free from restriction, in the public domain. In September 2010, the Consortium announced the release of its 1000th structure into the public domain.
- User visits to the Wellcome Library increased to 43 945 in 2009/10 (up from 38 246 in the previous year)

### 5.2 Contributions to the growth of centres of excellence

- Based on publication output over the last decade (January 2000–June 2010),<sup>6</sup> the Wellcome Trust Sanger Institute is ranked second in the world in terms of citations per paper in the field of *Microbiology*, and fourth in the field of *Biology & Biochemistry*.
- The Sanger Institute was reviewed by an International Review Committee in May 2010 that considered the Institute to be “world-class”. In October 2010 the Trust’s Board of Governors endorsed the Institute’s new strategic plan and approved funding of £392.6 million.

Professor Martin Prince

#### THE 10/66 DEMENTIA RESEARCH GROUP

- The Group has developed a dementia diagnosis tool that allows data to be compared between countries and social groups.
- The archive of data of 20 000 adults from three continents is freely available to the wider research community and is being used in many other projects around the world.



Oudeschool/Flickr

<sup>6</sup> Source: Thomson Reuters Essential Science Indicators (Thomson Scientific); 2010.



## 6. Influence

### 6.1 Significant impact on science funding and policy developments

- During 2009/10, the Trust provided written evidence to seven Parliamentary Committees, and members of staff from the Trust have given oral evidence about the European Alternative Investment Fund Managers Directive and the teaching of science, technology, engineering and mathematics (STEM) subjects.
- The Trust co-funded a major international study to model the health effects of different policies to reduce greenhouse gas emissions, to inform discussions at the UN Climate Change Conference in Copenhagen. The results of the research were published in a special series in the *Lancet* in November 2009 and presented at a launch event, attended by the UK Secretary of State for Health and video-linked to a simultaneous event in Washington.

### 6.2 Significant impact on global research priorities

- The Wellcome Trust, together with World Health Organization and the Heads of International Research Organisations (HIROS), is developing a research 'road map' to identify gaps in knowledge to improve scientific understanding of influenza – in the areas of vaccines and prevention, therapeutics and disease pathology, and population sciences.
- In partnership with the Global Forum for Health Research the Trust is producing a map of trends in health research systems.
- The Trust held a number of Frontiers Meetings and workshops in 2009/10, including:
  - Antibiotic Resistance (Cape Town, February 2010)
  - Research to Strengthen the Public Health Response in Disasters and Humanitarian Emergencies (June 2010).

#### CLIMATE CHANGE MITIGATION STRATEGIES CAN IMPROVE PUBLIC HEALTH

- A series of *Lancet* papers showed that strategies to reduce greenhouse gases have substantial public health co-benefits that offset their costs.
- The findings informed the UN Conference in Copenhagen in December 2009, underlining the importance of health when tackling climate change.



## **The Wellcome Trust**

We are a global charitable foundation dedicated to achieving extraordinary improvements in human and animal health. We support the brightest minds in biomedical research and the medical humanities. Our breadth of support includes public engagement, education and the application of research to improve health.

We are independent of both political and commercial interests.

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