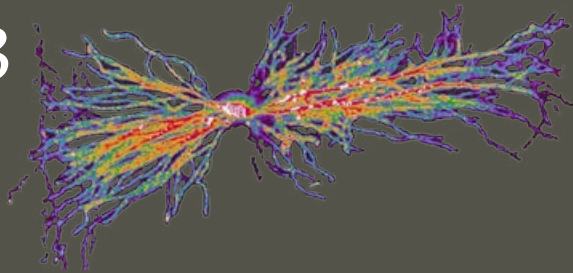


Summary Report

2012/13

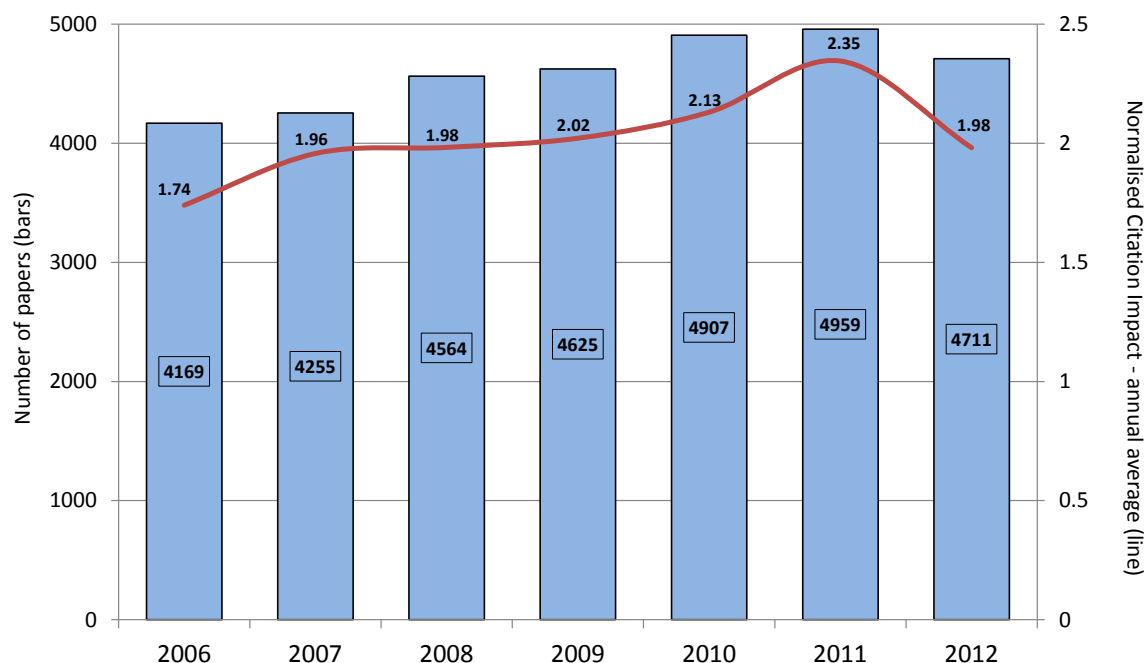


1. Discoveries

1.1 Significant advances in the generation of new knowledge and understanding

- In 2012¹, 4711 new scientific research papers associated with the Wellcome Trust were published, indexed on PubMed and appeared on Thomson Reuters Web of Knowledge².
- Overall, there has been a gradual increase in the annual volume of Trust-associated publications since 2006, although the 19 per cent increase in annual papers between 2006 and 2011 is slightly less than the overall increase of 20 per cent in all papers covered by the Web of Knowledge over the same period³.

Figure 1: Volume and impact of Wellcome Trust-associated papers, 2006–12



Source: Data drawn from Thomson Reuters Web of KnowledgeSM; analysis by Thomson Reuters.

- Thomson Reuters allocates papers to one or more of 254 research fields according to the journal in which they are published; the 2012 cohort of Trust-associated papers is published across 145 fields, from the field with the largest number, 'biochemistry and molecular biology' (838 papers), to 'religion' and 'robotics' (both one paper).
- For all Trust-associated papers published in 2012, the Normalised Citation Impact⁴ (NCI, a measure of the citation performance of a paper), was 1.98, almost double the world average NCI of 1⁵.
- The NCIs of Trust-associated papers published in 2010–12 compare favourably to the world average across all major biomedical research fields, with the average NCIs for 'tropical medicine' and 'oncology' particularly high (3.67 and 5.86 respectively).

¹ To enable the Wellcome Trust to draw on international benchmarks, unless otherwise stated, all bibliometric analysis refers to scientific research papers – defined as articles and reviews, and excluding editorials, letters and other publication types – published within a specific calendar year (so for this report January–December 2012).

² Although this is a decrease of almost 5 per cent (n=248) on 2011, PubMed processes mean that some papers are indexed as being Trust-associated a significant time after publication, so the 2012 data is expected to rise over time.

³ Figures as of 18 October 2013. Increase measured on 2006–11 data and not 2012 data, due to the time lag on PubMed processing mentioned above.

⁴ This standardised metric assesses the citation performance of a research paper in relation to the performance of the average paper published in the same research field at the same time.

⁵ Citation impact can change significantly over time – the 2011 cohort had an average NCI of 2.02 at the end of 2011, below the 2010 level it now exceeds – so the 2012 level of NCI is also likely to change.

1.2 Discoveries with potential impacts on health

- Professor Sharon Peacock and colleagues have used advanced DNA-sequencing technologies to confirm the presence of an ongoing outbreak of methicillin-resistant *Staphylococcus aureus* (MRSA) in a Special Care Baby Unit in real time. This helped the outbreak to be stopped earlier, preventing possible harm to patients and revealed that the outbreak had extended into the wider community – thus opening the opportunity for more rapid diagnostic techniques. They also used sequencing to link the outbreak to an unsuspecting carrier, who was treated to eradicate MRSA.
- Professor John Todd and colleagues have begun a clinical trial for a potential new treatment for type 1 diabetes that could eventually mean patients are able to reduce insulin treatment from several times a day to once or twice a week. The new treatment is a direct result of previous research which identified variants of one particular gene – interleukin-2, or IL2 – that seem to have a prominent role in the disease. IL-2 is important in helping to regulate the immune system.
- Professor Jonathan Corcoran has identified compounds, now undergoing preclinical development, that target the brain's retinoid signalling system. This method of action is one of the first to target the progression of Alzheimer's disease, not just its symptoms.
- Researchers, led by Dr Frank Tanser, at the Africa Centre for Health and Population Studies in South Africa, have shown for the first time the positive impact of antiretroviral therapy (ART) on the rate of new HIV infections in a community setting. Nurse-led, public-sector and community-based ART programmes can deliver substantial population-level reductions in the rate of new HIV infections.

2. Applications of research

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

- Of the Wellcome Trust grants ending in 2012/13, 6 per cent of grant holders reported filing a patent associated with their research and 17 per cent reported engaging with commercial collaborators during their research. These are slight increases on previous years (the proportions over 2009/10–2011/12 were 5 per cent and 14 per cent respectively).
- Trust-funded investigators secured £218 million in venture capital finance to support the commercialisation of their R&D during 2012/13, an increase for the fourth year in a row (2009/10: £107m, 2010/11: £122m, 2011/12: £185m).
- Forty inventions arose from Wellcome Trust Translation Awards during 2012/13, compared to 11 in the previous year. These included software for an image-guided surgery system for localised prostate cancer and a cardio-pulmonary resuscitation device.
- Professor John Duncan and team have developed software to build detailed 3D models of the brain, allowing neurosurgeons to carry out complex operations more safely. A prototype for the technology is helping surgeons plan and carry out surgery for epilepsy.
- GE Healthcare is developing an MRI scanner for use in neonatal intensive care units. The new scanner will be smaller and quieter than conventional machines; this should minimise disturbance and stress to sick infants when being scanned.

2.2 Uptake of research into policy and practice

- Overall 28 per cent of Trust grants ending during 2012/13 reported engagement with policy makers and healthcare professionals. As in previous years, grants from the Populations and Public Health funding stream are most likely to have engaged in this way (76 per cent).
- Professor Stephen Wilkinson's research on the ethics of modern genetics, along with other Trust-funded researchers Professors Rosamund Scott and Julian Savulescu, was cited several times in the report of the UK Parliament Inquiry into Abortion on the Grounds of Disability. Their work provided evidence to support the Inquiry's recommendation to keep the current time limit for abortion on the grounds of disability at birth.
- Professor Ulf Schmidt's work on the ethical, political and legal dimensions of Britain's chemical and biological warfare programme during the Cold War has helped inform the discussion between the Ministry of Defence and the Porton Down Veterans' Support Group. This resulted in a comprehensive compensation scheme for the veterans from the government, and an apology in the House of Commons.
- Dr Abdisalan Noor's analysis of malaria risk and control has made major contributions to policy changes in some of Africa's most vulnerable countries. His research has underpinned the current Kenyan National Malaria Strategy, influenced regional policy and led the WHO to revise their guidelines.

3. Engagement

3.1 Enhanced level of informed debate on biomedical science issues

- Thirty per cent of Trust grants ending during 2012/13 reported some media coverage associated with their research (the proportion over 2009/10–2011/12 was 27 per cent).
- The Trust has received extensive media coverage both on the research it funds and to facilitate its policy and engagement work. Examples include:
 - Research stories, comment pieces and leader articles were coordinated by the Trust and partners to make the case for continued investment in research in the government Spending Round and against the proposals to transfer medical research and training to the Department of Health.
 - A Q&A session with Professors Doug Turnbull and Susan Golombok on the website Mumsnet about the implications of the new techniques to prevent the transmission of mitochondrial diseases.
 - Professor Andrew Hattersley and colleagues in Exeter identified the genetic cause of an extremely rare condition, known to affect only eight individuals worldwide. As a direct result of coverage on BBC online, three new cases were identified.

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

- Forty-four per cent of Trust grants ending during 2012/13 reported presenting their work to non-academic audiences and 31 per cent reported presenting to research participants and related communities (the proportions over 2009/10–2011/12 were 43 per cent and 35 per cent, respectively).
- 2012/13 was Wellcome Collection's busiest year to date, with total visits numbering over half a million for the first time. Exhibitions included the last weeks of *Superhuman*, *Death: A self-portrait* and *Souzou: Outsider art from Japan*.
- Wellcome Collection's temporary exhibition *Brains: The mind as matter*, which attracted over 100 000 visitors from March to June 2012 and received critical acclaim, has been restaged in Manchester's Museum of Science and Industry.
- The Trust collaborated with the British Neuroscience Association and the Barbican Centre to convene *Wonder: Art and Science on the Brain*, bringing together neuroscience and the arts. Around 15 000 people attended events as part of *Wonder* and over 200 neuroscientists were directly involved in delivering public events at the Barbican. The Barbican integrated neuroscience into its film, theatre and creative learning programmes, and is now using the project as a model for working across creative programming and corporate hire teams.

4. Research leaders

4.1 Development of a cadre of research leaders

- Funding was renewed for 12 Basic Science and four Clinical PhD Programmes in the recent PhD Programme competition. Additionally, two new Programmes were also supported (at Imperial College London and University College London).
- The Research Leadership Development Programme was established in 2013, aiming to provide a world-class, innovative and immersive programme to enhance the leadership style, impact and resilience of researchers.

4.2 Evidence of significant career progression among those we support

- Recipients of Trust funding⁶ have been awarded a range of high-profile prizes during 2012/13, including:
 - Professor Mike Stratton was awarded the Louis-Jeantet Prize and a Knighthood for his services to medical science.
 - Professor Gero Miesenböck was awarded the Brain Prize and The Jacob Heskel Gabbay Award in Biotechnology and Medicine.
 - Dr Tracey Gloster and Dr Katie Hampson were awarded L’Oreal-UNESCO for Women in Science Awards.
 - Philip Winfield won the Best Immersive Cinema (Fulldome) category at the Jackson Hole Science Media Awards in the USA for his film *Cell! Cell! Cell!*
 - Professor Kevin Brindle won the European Society of Molecular Imaging Award.

⁶ It should be noted that these may be awarded for a body of work and not solely for Trust-funded work.

5. Research environment

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

- Fourteen per cent of grants ending during 2012/13 reported the production of software and/or databases during their research, an increase on previous years (the proportion over 2009/10–2011/12 was 9 per cent).
- Professor Jason Swedlow and colleagues have further developed and released the open source Open Microscopy Environment used by thousands of labs worldwide for imaging research.
- This year has seen a significant expansion in interest in and engagement with ORCID (Open Researcher and Contributor ID), the global registry of unique researcher identifiers. In its first year, more than 300 000 researchers across the world have signed up for an ORCID ID and are increasingly able to use this in aspects of the research ecosystem.
- The new Wellcome Library website was launched in November 2012, with the subsequent launch of ‘Codebreakers: Makers of Modern Genetics’ in March 2013. This online resource is the first release of content from the Library’s digitisation programme, which so far has digitised over two million pages of books and archives.
- Through the Research Resources in Medical History grant scheme, the Trust has preserved and archived the collections of a number of significant scientific and medical practitioners for future generations, including: cataloguing the personal papers of Professor Sir Klug (Nobel Prize-winning chemist and biophysicist, and former Director of the Medical Research Council Laboratory of Molecular Biology and President of the Royal Society), and cataloguing and preserving the HIV/AIDS Collections at the London School of Hygiene and Tropical Medicine.

5.2 Contributions to the growth of centres of excellence

- In the field of ‘neurosciences and behaviour’, the Wellcome Trust Centre for Neuroimaging at University College London continues to be a world leader: over the last 10 years, the Centre has received more citations per paper than any other institution.
- The Wellcome Unit for the History of Medicine at the University of Oxford has become the world’s leading centre for the study of the history of medicine in the former British colonies and in the history of war and medicine.

6. Influence

6.1 Significant impact on science funding and policy developments

- In 2012/13, the Trust submitted written evidence to 14 Parliamentary Committee inquiries and gave oral evidence at three Committee inquiries (clinical trials; regenerative medicine; and the Joint Committee scrutiny of the Care and Support Bill). The Trust worked with other research organisations to brief peers on key aspects of the Care Bill.
- In the lead-up to the government's Spending Round, the Trust submitted evidence to HM Treasury and the Department for Business, Innovation and Skills, and worked with a cross-sector group of stakeholders and the Biomedicine Forum to ensure consistent messages about the importance of investment in science. The resulting announcement was positive for science, with a flat cash settlement and additional long-term investment for infrastructure. Importantly, proposals to transfer medical research and training to the Department of Health were abandoned.
- The Trust has explored the complex issues surrounding the disclosure of health-related findings. The Trust, the Medical Research Council and the Health Research Authority have developed a framework, to be published in early 2014, to help researchers consider whether – and how – to provide feedback.
- The Trust has had some significant influences on science education policy. Examples include:
 - the Trust's statement of Recommended Practice for Boards of Governors has been widely disseminated and referred to in the Education Select Committee's report in this area
 - a joint paper produced with the Gatsby Foundation on assessing practical science, discussed with the Council for Technology and Ofqual, has been influential in retaining direct assessment of science practical work in GCSE proposals (and is referenced in Ofqual documentation).

6.2 Significant impact on global research priorities

- The Trust has hosted/convened a number of Frontiers Meetings and workshops during 2012/13, including:
 - Rare Disease Workshop
 - Showcasing British Neuroscience
 - Evington Initiative – Dementia meeting
 - Antibiotic Action meeting
 - Neurodegenerative Diseases Initiative Workshop.

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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