Defining and Measuring Research Impact Success

A funder’s perspective

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December 2018
Our origins

Founded in 1936, we remain true to the vision and values of our founder, Sir Henry Wellcome, an entrepreneur, collector and philanthropist.

His will established a charity for "the advancement of medical and scientific research to improve mankind's wellbeing". 
Wellcome’s mission is to improve health for everyone by helping great ideas to thrive.
Our strategic approach

Is a living plan, describes our philosophy and establishes a framework that gives us the **flexibility to set new priorities** and **agility to respond to emerging opportunities**.

**Advancing ideas**
We support great ideas and inspired thinking.

20 years and beyond

**Seizing opportunities**
We bring ideas together to make a difference.

5 to 10 years

**Driving reform**
We change ways of working so more ideas can flourish.

3 to 5 years
Diversified funding portfolio

- **Primary fund**
  - £1bn per annum with inflation
  - Ring-fenced to 2021

- **Reserve fund**
  - Current total value £1.25bn to 2021
  - Potential for ‘topping up’
Headline facts & figures - 2017

**Current portfolio**

£4.4bn
Value of grant portfolio for 3,436 active grants across Science, Innovations and Culture & Society

43%
Of grant portfolio supports individual researchers (e.g. Investigator Awards, Fellowships, Studentships)

19%
Of awards in cultural and social contexts of health, public engagement and education, 5% by spend

**Applications & Awards**

£5.1bn
Requests for funding, 6,200 preliminary and full grant applications

45%
Growth in number of applications over past 5 years

57%
Growth in spending over past 5 years

£1.1bn
Awarded in grant funding

**People we fund**

15,000
People supported on grants (12,000 in the UK, 3,000 overseas)

63%
Of grant holders are UK nationals

20%
Of personal award holders are from non-UK EU countries

**Places we fund**

100
Number of different countries where we fund

76%
Of funding for UK-based research, 24% outside of the UK (9% support research in low- and middle-income countries)

26%
Of grant portfolio supports places, including Centres and Institutes
What does success look like?
Impact or success?

• How do we evidence the success of research relative to where it sits on the innovation pathway, rather than expecting all research to have a demonstrable, direct impact such as improving patient outcomes or changing society?

• How do we support research that does not have an immediate demonstrable impact, but is still essential to progressing knowledge along the innovation pathway towards producing tangible improvements to human health or society?

• How do we evaluate the broad range of contributions that result from research and use the appropriate success measures?
Wellcome Success Framework

The framework sets out 9 ambitions to explain ‘what success looks’ like to Wellcome. It helps us to:

- Communicate to our communities, networks and partners what matters to us, what we’re doing, and how it contributes to our mission.
- Make the necessary links to address emerging challenges and maximise opportunities.
- Take an organisation-wide view to better understand and assess the results of our work.
- Work collaboratively to become greater than the sum of our parts.
Ambition 1

Our understanding of science and health is transformed by research.

Research encompasses many aspects of science, social science and the humanities. It includes blue skies and discovery-led research that helps us to understand the systems and pathways that underpin life. It covers behaviour, history, ethics and technology, and many other fields.
Outcome 1a. Wellcome-funded research is influential within and across research fields.

78.6% Of awards supported research

~8000 New publications acknowledge Wellcome per annum

15.5% Of Wellcome publications that are among the world’s top 5% most cited articles

3.8% Of Wellcome publications that are among the world’s top 1% most cited articles

The proportion of publications in the global 1% most cited articles for Wellcome and comparators

<table>
<thead>
<tr>
<th>Institute</th>
<th>Number of Publications</th>
<th>Proportion in top 1%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howard Hughes Medical Institute</td>
<td>12,174</td>
<td>7.2%</td>
</tr>
<tr>
<td>Cancer Research UK</td>
<td>8,515</td>
<td>4.3%</td>
</tr>
<tr>
<td>National Institute for Health Research</td>
<td>13,356</td>
<td>4.0%</td>
</tr>
<tr>
<td>European Research Council</td>
<td>21,618</td>
<td>3.8%</td>
</tr>
<tr>
<td>Wellcome</td>
<td>35,175</td>
<td>3.8%</td>
</tr>
<tr>
<td>Medical Research Council</td>
<td>43,779</td>
<td>3.8%</td>
</tr>
<tr>
<td>Economic and Social Research Council</td>
<td>5,032</td>
<td>2.9%</td>
</tr>
<tr>
<td>Biotechnology and Biological Sciences Research Council</td>
<td>18,152</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

Number of publications 2012 - 2015: 8,515, 13,356, 21,618, 35,175, 43,779, 5,032, 18,152
Outcome 1a. Wellcome-funded research is influential within and across research fields.

- Of Wellcome publications in the global top 1% are collaborations with non-UK institutions: 68%
- Countries are represented in these publications: 118

Number of times an institution from this country collaborated on a Wellcome publication in the global top 1%:
### Epidemiology

**Wellcome contributions:**
- AAP (Vietnam)
- Senior Research Fellowship (Simon Hay)

- Applied a new methodology to map the public health burden of dengue in 2010.
- Predicts 300% more dengue infections occur per year than existing best estimates

**What more can Wellcome do to support research that will inform clinical practice and policy?**

### Data resources

**Wellcome contributions:**
- Investigator Awards, Sanger Institute, EMBL-EBI and various others

- The Encyclopedia of DNA Elements (ENCODE) project systematically mapped the function of 80% of the human genome
- The newly identified elements improve interpretation of genetic variation linked to disease

**What more can Wellcome do to support team collaborations to advance scientific discoveries?**

### Technologies

**Wellcome contribution:**
- Collaborative Award (Andrew Rambaut)

- An open source software package for the analysis and understanding of molecular sequencing data
- Can be applied to trace outbreaks of infectious diseases using genomic surveillance

**What can Wellcome do to support the dissemination of technologies that can accelerate the pace of discovery?**

### Outcome 1a. Wellcome-funded research is influential within and across research fields.
Prospective questions

• How well does Wellcome-funded research meet our expectations – in terms of productivity, reach, influence?
• What are the ways by which Wellcome can support specific types or areas of research to achieve greater impact – e.g. support for team science, international collaborations?
• How can Wellcome support the dissemination of knowledge and discovery that have the highest potential of impact?
Ambition 3

Knowledge and discoveries are shared, accessed and used in a manner that maximises health benefit.

The application of findability, accessibility, interoperability, and reusability (FAIR) principles help make research open, and maximise the potential benefits of contemporary digital publishing.
Outcome 3b. Research outputs are findable, accessible, interoperable and re-usable (FAIR).

The proportion of Wellcome publications that are FAIR

81% Of Wellcome publications were openly accessible in 2016

5% Average annual increase in proportion of OA publications since OA policy introduced

FAIR = Findable, Accessible, Interoperable and Reusable
Prospective questions

• How can Wellcome encourage widespread adoption of FAIR principles and open data?
• What more can Wellcome do to ensure that a broad range of research outputs that underpin research (e.g. new technologies, software or datasets) are recognised and rewarded?
• How can Wellcome incentivise open practice and support systems for the reward and recognition of all research outputs?
Fostering open research

Open Research activities fall into three broad categories:

- **Policy leadership** – taking a lead in developing our policies and practices as a funder to support, incentivise and sustain open research

- **Community-led activities** – supporting researchers and innovators to develop and test cutting-edge approaches to openness; piloting discipline-specific initiatives

- **Funder-led activities** – developing major initiatives in areas where funders can take a lead in supporting the community and driving change
San Francisco Declaration on Research Assessment (DORA)

• Signed DORA, publicly committing that we will consider all research outputs and support a broader range of qualitative measures of impact, such as influence on policy and clinical practice.

• Provided funding to DORA to promote the adoption of these principles and to collect evidence of good practice.

• Modified grant application forms to ask researchers for all outputs, which may include (but are not limited to) preprints, datasets, software, research materials and inventions, patents and other commercial activities.

• Ensure advisory committees are fully aware of our values during their induction; they are advised to focus on the content and quality of publications when reviewing applications, rather than their number or the impact factors of the journals in which they were published.
Output sharing policy

• We expect our researchers to maximise the availability of research data, software and materials with as few restrictions as possible.

• As a minimum, the data underpinning research papers should be made available to other researchers at the time of publication, as well as any original software that is required to view datasets or to replicate analyses.

• Where research data relates to public health emergencies, researchers are expected to share quality-assured interim and final data as rapidly and widely as possible, and in advance of journal publication.
Open Access Policy

1. **Require immediate open access**
   Previously we allowed a 6-month embargo

2. **All articles must be published under a CCBY licence**
   Previously the CCBY only applied to Version of Record articles

3. **Fund publication costs - for fully open access journals & platforms**
   Previously supported / funded hybrid OA

4. **Mandating pre-prints for public health emergencies**
   New requirement

5. **Institutions in receipt of our funding expected to adhere to DORA principles**
   New requirement
Alignment with “Plan S”

- New plan from Science Europe and EC to deliver OA by 2020
- Key principle
  - After 1 January 2020 scientific publications on the results from research funded by public grants provided by national and European research councils and funding bodies, must be published in compliant Open Access Journals or on compliant Open Access Platforms
- Now endorsed by 16 funders - including UKRI, EC/ERC, Gates and Wellcome
Other supporting activities

• Working with UKRI and ALPSP to fund a study to explore how learned societies can adapt and thrive under Plan S
  • Call for tenders [closing date 14th January 2019]

• Plan S signatories agreed to commission:
  • Gap analysis to identify fields/disciplines where there is a need to increase number of OA journals and platforms and will establish incentives to fill this gap
  • Study of OA APC costs

• Working with Jisc Collections on agreeing which “transformative agreements” are Wellcome compliant
  • Highly likely Wiley will have a compliant agreement, thus ensuring that researchers who wish to publish with this company can continue to do so (at least until 2022)
Wellcome Open Research

A new way for Wellcome-funded researchers to rapidly publish any results they think are worth sharing.

Submit Your Research

Browse Articles →

13 June 2018
Experimental huts trial of the efficacy of pyrethroids/piperonyl butoxide (PBO) net...
Measuring the success of open research

What is needed?

Build evidence that open research delivers greater benefits than the closed model

Develop a toolkit consisting of a ‘codebook’ of indicators, their definitions, sources, qualitative methods, and associated guidance

What does success look like for open research?

1) Increased efficiency and quality of scientific outputs
2) Accelerated innovation and impact
3) Increased trust and accountability of the research enterprise
4) Increased equity in research
5) Better opportunities and recognition of early career researchers
6) Positive economic impact
Thank you