



# Defining and Measuring Research ~~Impact~~ Success

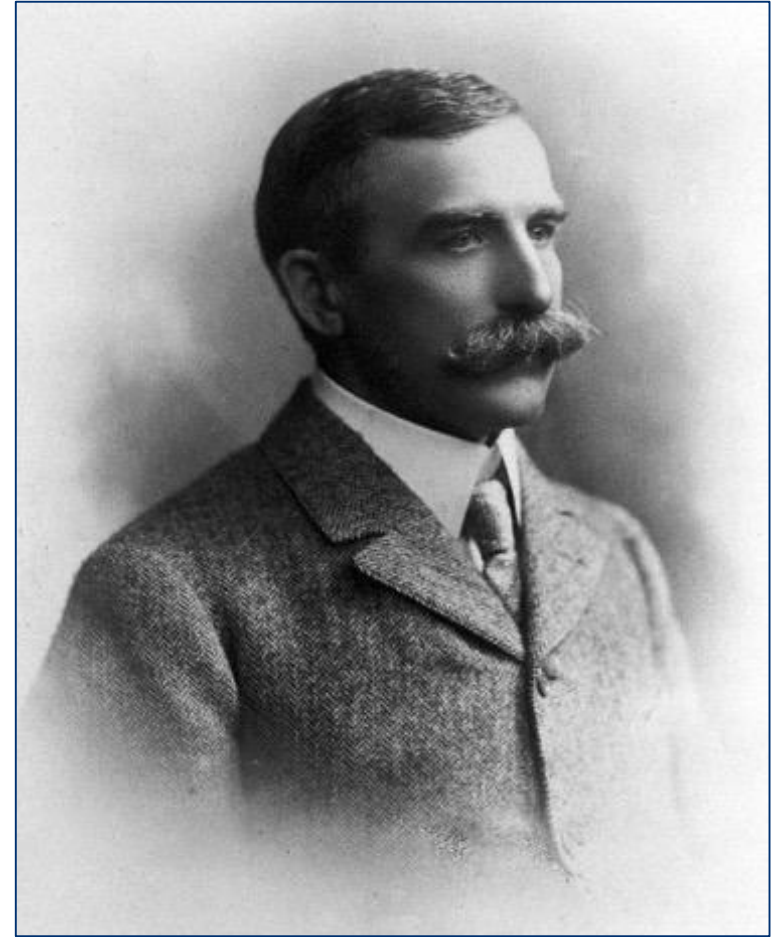
A funder's perspective

Chonnetia Jones, PhD  
Director of Insight and Analysis  
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".



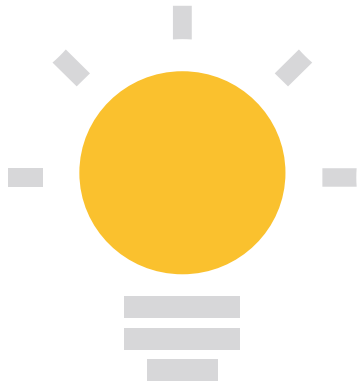
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**Wellcome's mission is to improve health for everyone by helping great ideas to thrive.**

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# 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.

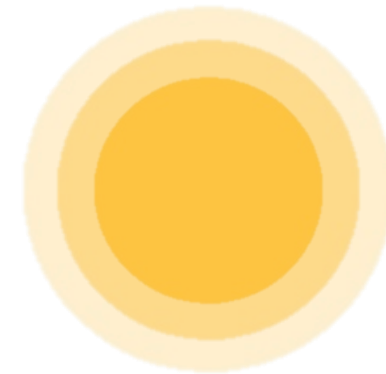
20 years and beyond



## Seizing opportunities

We bring ideas together to make a difference.

5 to 10 years

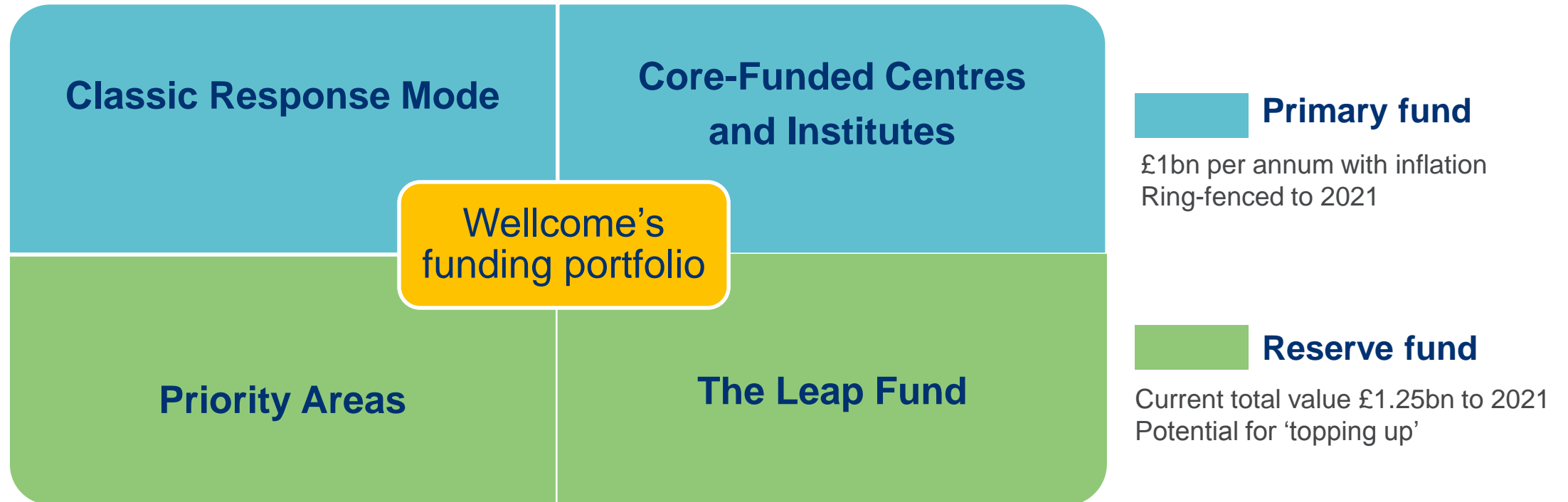


## Driving reform

We change ways of working so more ideas can flourish.

3 to 5 years

# Diversified funding portfolio



# 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

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**What does success look like?**

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# 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.

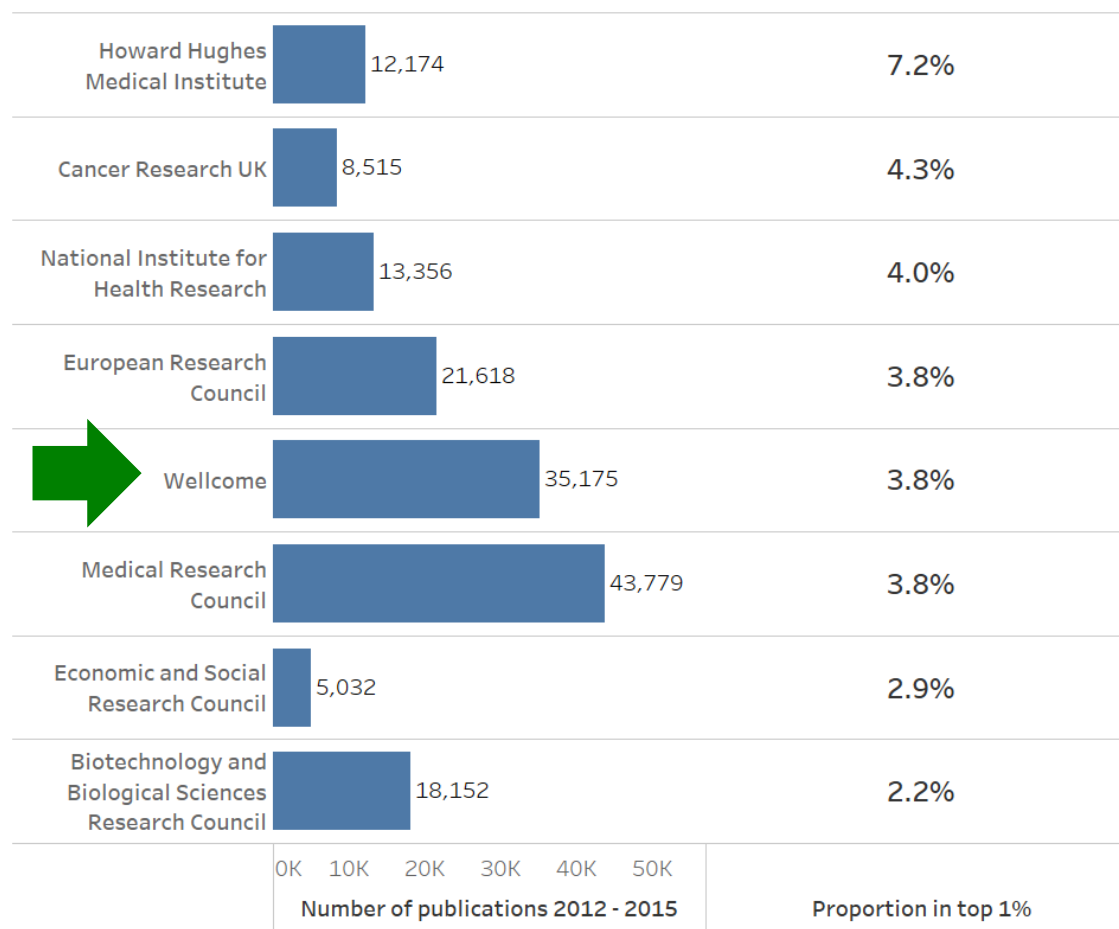
**78.6%** Of awards supported research

**~8000** New publications acknowledge Wellcome per annum

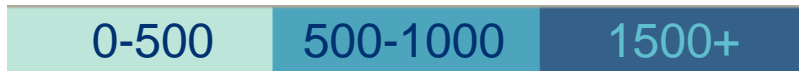
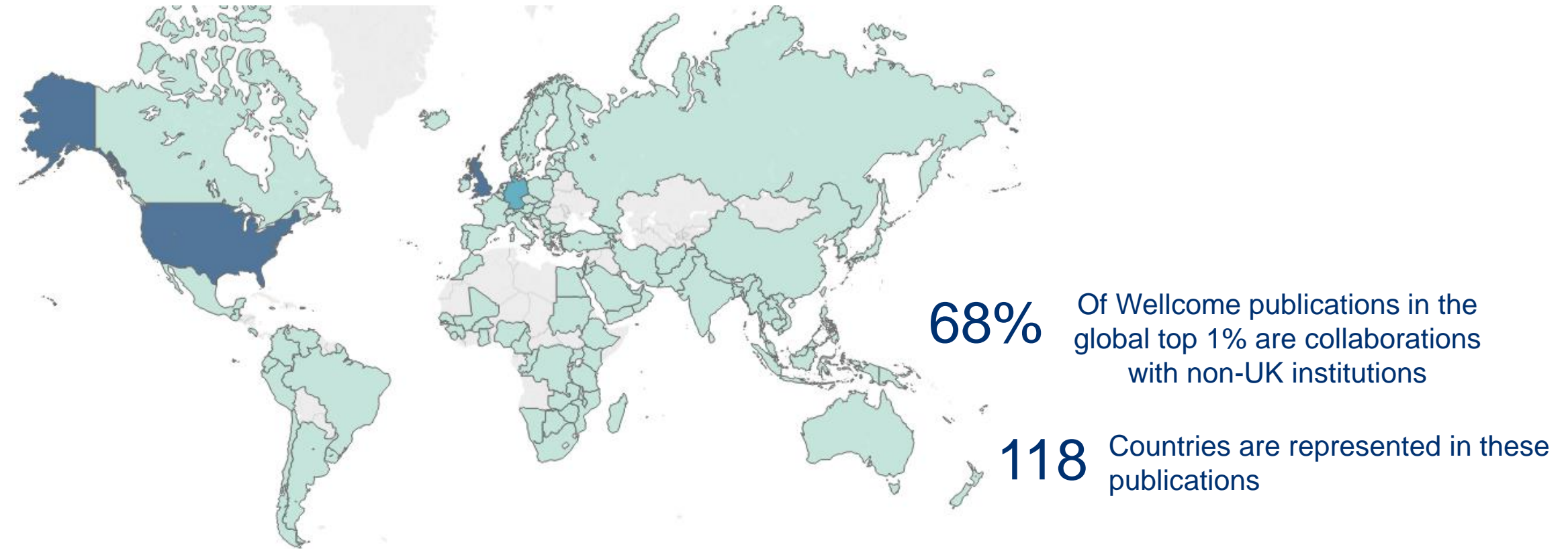
**15.5%** Of Wellcome publications that are among the world's top 5% most cited articles

**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



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



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

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

## Data resources

“An integrated encyclopaedia of DNA elements in the human genome”

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

“Bayesian Phylogenetics with BEAUti and the BEAST 1.7”

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?**

## Epidemiology

“The global distribution and burden of dengue”

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?**

# 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.

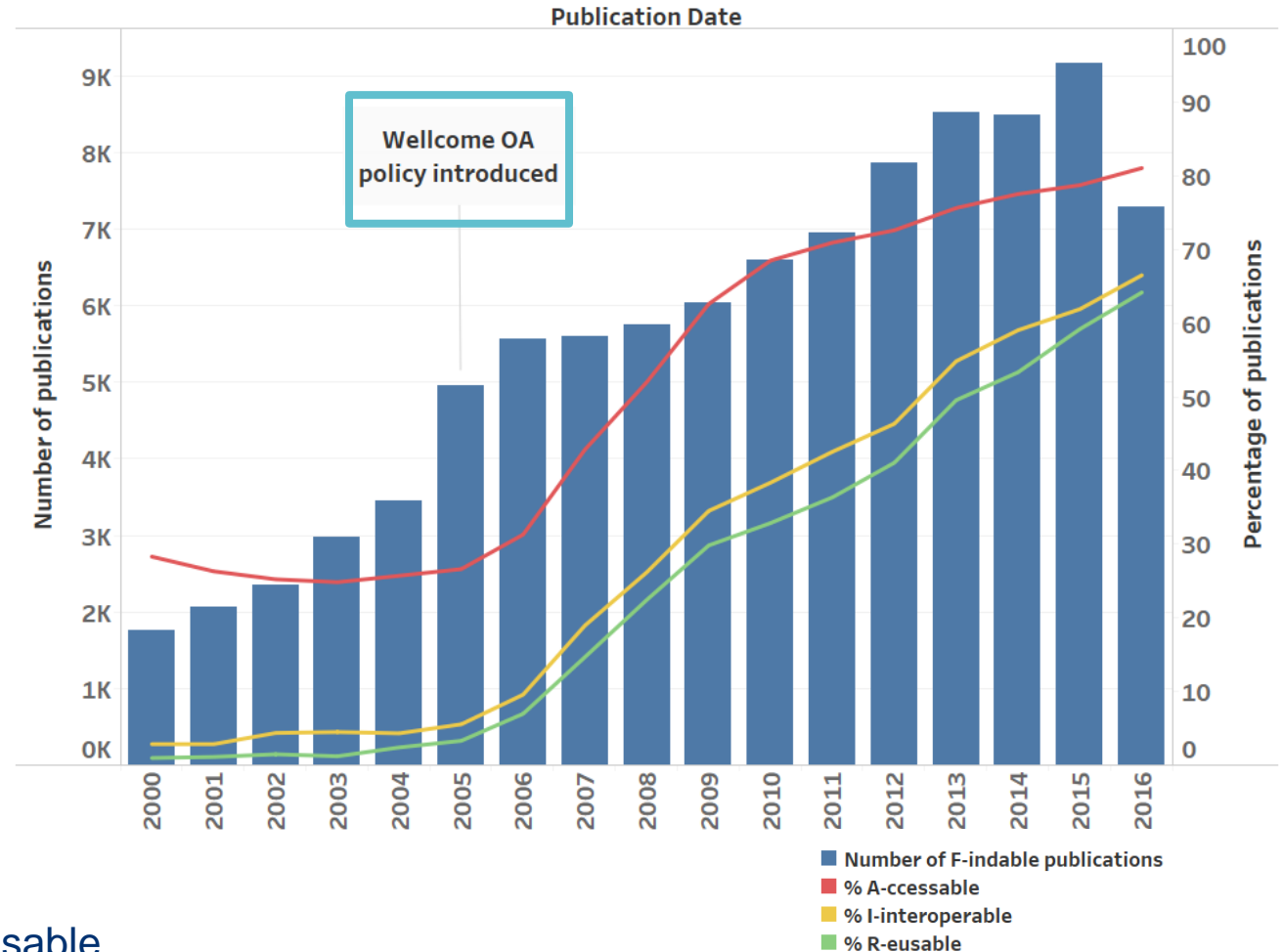
The application of findability, accessibility, interoperability, and reusability (FAIR) principles help make research open, and maximise the potential benefits of contemporary digital publishing.

# 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





# 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?



**Open Research**

# 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**

European science funders ban grantees from publishing in paywalled journals

By Martin Enserink | Sep. 4, 2018 , 3:15 AM

NEWS • 04 SEPTEMBER 2018

Radical open-access plan could spell end to journal subscriptions

*Eleven research funders in Europe announce ‘Plan S’ to make all scientific works free to read as soon as they are published.*

An explosion of openness is about to hit scientific publishing

# 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 14<sup>th</sup> 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](#)

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[Probing Plasmodium falciparum sexual commitment at the single-cell level](#)

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[Smartphones for community health in rural Cambodia: A feasibility study](#)



# 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



[wellcome.ac.uk](http://wellcome.ac.uk)   