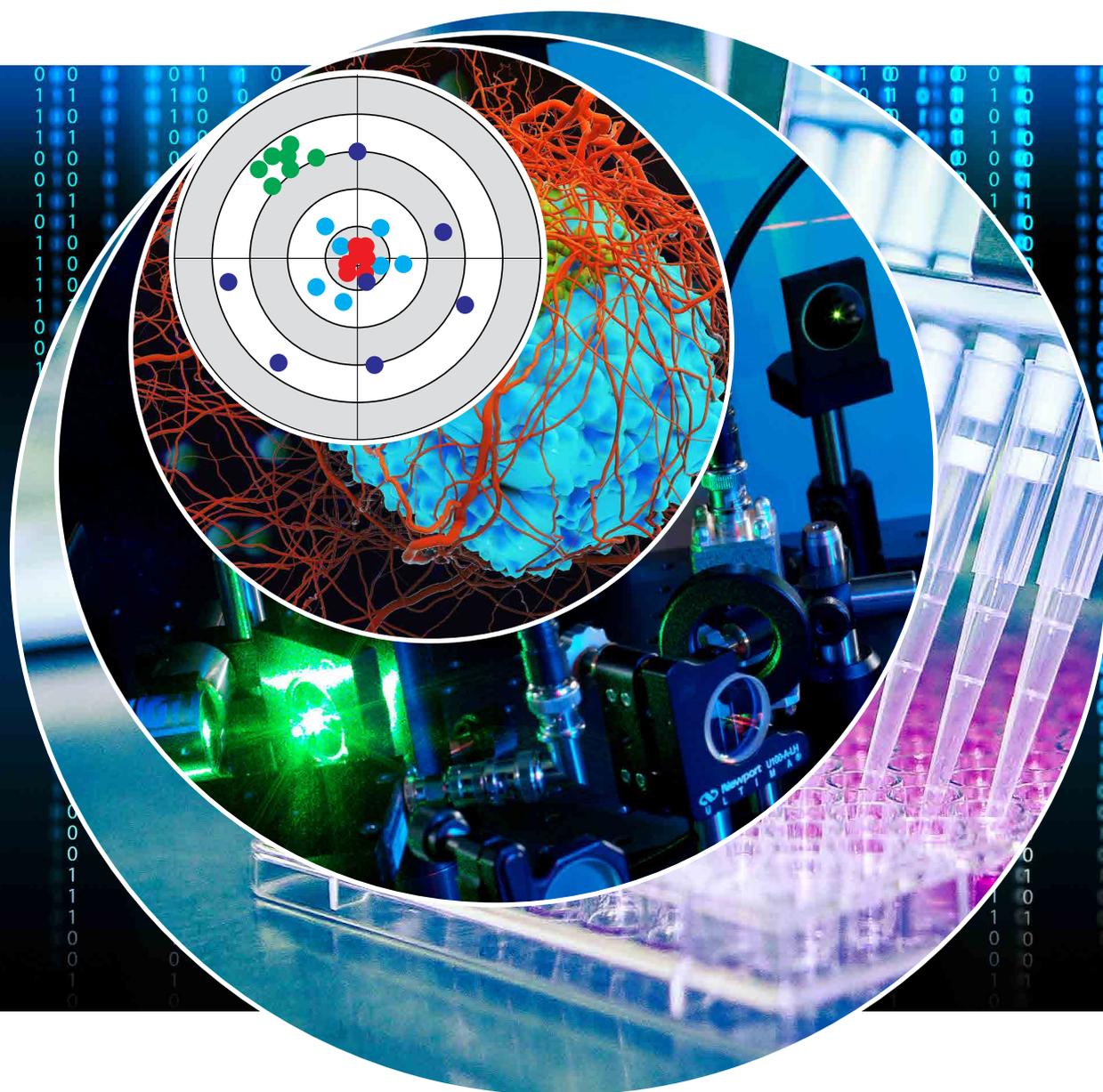# Improving Reproducibility in Research:
## The Role of Measurement Science

1-3 May 2018

NPL Teddington, Hampton Road, Teddington, Middlesex TW11 0LW

We live in a world in which it is increasingly easy to collect enormous amounts of data, in which research frequently spans physical, chemical, and biological sciences. Despite these advances, many scientific research results in recent years have proven to be difficult to reproduce.
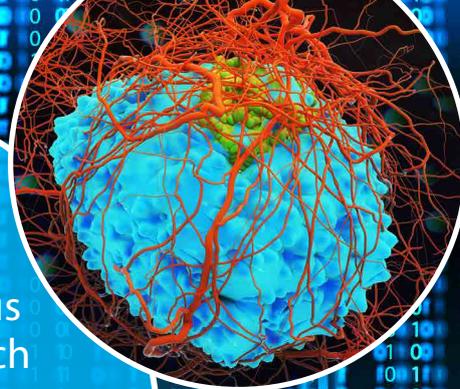
The goal of this workshop is to bring together experts from the measurement and wider research communities to understand the issues and to explore how good measurement practice and principles can foster confidence in research findings; including how we can tackle the challenge posed by increasing data volumes in both industry and research. It is important to recognize that there is no process that can entirely eliminate measurement uncertainty, but a good measurement process can lead to an appropriate interpretation of the data. Collecting and reporting the control experiments and systems and the details of and computational process will add confidence to results, improve the efficiency of follow-up studies, and establish a more reasonable basis for conclusions. Such practices can also add to our knowledge in ways that simply reproducing an experiment cannot.

The international network of National Metrology Institutes, coordinated by the International Bureau of Weights and Measures (Bureau International des Poids et Measures, BIPM), develops novel measurement methods, conducts cross-validation studies, and provides expertise in experiment design and uncertainty analysis and characterization. By bringing together practitioners from the metrology community with discipline scientists and representatives of scholarly publishers we hope to establish better awareness and adoption of best practices in measurement. The workshop organizers intend to produce a report describing the actions the network of NMIs might take moving forward. In this way we may mitigate the "reproducibility crisis" and increase confidence in evidence-based decision-making.

Invited Speakers:

Sir Mark Walport, Chief Executive UKRI, (UK)
Barend Mons, Leiden University Medical Center / GO FAIR (NL)
Geoffrey Boulton, University of Edinburgh / CODATA (UK)
Tony Hey, Science and Technology Facilities Council (UK)
Natalie De Souza, Nature Methods (US)
Owen Sansom, Cancer Research UK Beatson Institute, (UK)
Martin Milton, Bureau International des Poids et Mesures (FR)
Antonio Possolo, National Institute of Standards and Technology (US)
Leslie McIntosh Borelli, Rensselaer Polytechnic Institute / Research Data Alliance (US)

Organising Committee: Robert Hanisch, NIST (US), Anne Plant, NIST (US), Martyn Sene, NPL (UK), J.T. Janssen, NPL (UK), Ian Gilmore, NPL (UK), Michael Oldham, NPL (UK), Stephen Ellison, LGC Group (UK), Hendrik Emons, European Commission (BE), Saascha Eichstaedt, PTB (DE), Christian Schneider, NIBSC (UK) and Hyun Kyoon Lim, KRISS (KR)

Free registration at: https://www.regonline.co.uk/IRR2018